THE WATER QUALITY CONTROL PLAN (BASIN PLAN)

FOR THE

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

CENTRAL VALLEY REGION

FIFTH EDITION

Revised February 2019 (with Approved Amendments)

THE SACRAMENTO RIVER BASIN AND THE SAN JOAQUIN RIVER BASIN

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD CENTRAL VALLEY REGION

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Basin plan amendments adopted by the Regional Central Valley Water Board must be approved by the State Water Board and the Office of Administrative Law before becoming effective. If the amendment involves adopting or revising a standard which relates to surface waters it must also be approved by the U.S. Environmental Protection Agency (USEPA) before becoming effective. However, standards revisions disapproved by USEPA prior to 30 May 2000 remain in effect until they are revised by the basin planning process, or USEPA promulgates its own rule to supersede the standard revision [40 CFR Section 131.21(c)]

Each version of the Basin Plan includes all amendments that are in effect as of the date of the version. It is the intent of the Central Valley Water Board to release updated editions of the Basin Plan as soon as adopted amendments are approved and in effect

The following are all the amendments adopted by the Regional Water Board since 1975, that are now in effect:

	Subject	Date Adopted By Reg. Bd.	Regional Board Resolution No.	Date in Effect
1.	Adopting Water Quality Control Plans for Sacramento River Basin, Sacramento-San Joaquin Delta Basin, San Joaquin River Basin and Tulare Lake Basin	7/25/1975	R5-1975-0185	8/21/1975
2.	Revision and Amendment of the Water Quality Control Plan, Sacramento River Basin, by the Addition of a Prohibition of Waste Discharge from Leaching and Percolation Systems within the Adin Community Services District, Modoc County	11/21/1975	R5-1975-0272	1/22/1976
3.	Revision and Amendment of the Water Quality Control Plan, Sacramento River Basin, by the Addition of a Prohibition of Waste Discharge from Leaching and Percolation Systems within the Community of Fall River Mills, a portion of the Fall River Mills Community Services District, Shasta County	11/21/1975	R5-1975-0273	1/22/1976
4.	Revision and Amendment of the Water Quality Control Plan, Sacramento River Basin, by the Addition of a Prohibition of Waste Discharge from Leaching and Percolation Systems within the Bell Road Community (including Panorama and Pearl Subdivisions) Auburn, Placer County	11/21/1975	R5-1975-0274	1/22/1976

	Subject	Date Adopted By Reg. Bd.	Regional Board Resolution No.	Date in Effect
5.	Revision and Amendment of the Water Quality Control Plan, Sacramento River Basin, by the Addition of a Prohibition of Waste Discharge from Leaching and Percolation Systems within the Communities of Nice and Lucerne, Lake County	2/27/1976	R5-1976-0058	4/15/1976
6.	Revision and Amendment of the Water Quality Control Plan, Sacramento-San Joaquin Delta Basin, by the Addition of a Prohibition of Waste Discharge from Leaching and Percolation Systems within the Courtland Sanitation District, Sacramento County	2/27/1976	R5-1976-0059	4/15/1976
7.	Revision and Amendment of the Water Quality Control Plan, San Joaquin River Basin, by the Addition of a Prohibition of Waste Discharge from Leaching and Percolation Systems within Six-Mile Village, Calaveras County	2/27/1976	R5-1976-0060	4/15/1976
8.	Revision and Amendment of the Water Quality Control Plan, Sacramento River Basin, by the Addition of a Prohibition of Waste Discharge from Leaching and Percolation Systems within the Communities of Clearlake Highlands and Clearlake Park, Lake County	3/26/1976	R5-1976-0089	5/20/1976
9.	Revision and Amendment of the Water Quality Control Plan, Sacramento River Basin, by the Addition of a Prohibition of Waste Discharge from Leaching and Percolation Systems within the Taylorville County Service Area, Plumas County	5/28/1976	R5-1976-0129	8/19/1976
10.	Revision and Amendment of the Water Quality Control Plan, Sacramento River Basin, by the Addition of a Prohibition of Waste Discharge from Leaching and Percolation Systems within the Community of South Lakeshore Assessment District, Lake County	9/24/1976	R5-1976-0215	4/21/1977

Subject	Date Adopted By Reg. Bd.	Regional Board Resolution No.	Date in Effect
11. Revision and Amendment of the Water Quality Control Plan, Sacramento River Basin, by the Addition of a Prohibition of Waste Discharge from Leaching and Percolation Systems within the Anderson-Cottonwood Irrigation District, Community of Cottonwood, Shasta County	10/22/1976	R5-1976-0230	1/20/1977
12. Revision and Amendment of the Water Quality Control Plan, Sacramento River Basin, by the Addition of a Prohibition of Waste Discharge from Leaching and Percolation Systems within the Daphnedale Area, Modoc County	10/22/1976	R5-1976-0231	1/20/1977
13. Amending the Water Quality Control Plan for Sacramento River Basin, Sacramento-San Joaquin Delta Basin, and San Joaquin River Basin	12/17/1976	R5-1976-0262	2/17/1977
14. Amending the Water Quality Control Plan for Removal of Waste Discharge Prohibition for Woods Creek, Tuolumne County	5/27/1977	R5-1977-0097	7/21/1977
15. Adoption of Amendments to the Water Quality Control Plan	6/22/1979	R5-1979-0149	8/16/1979
16. Adoption of Amendments to the Water Quality Control Plan	7/27/1979	R5-1979-0180	8/16/1979
17. Adoption of Amendments to the Water Quality Control Plan for Groundwater Management in N.E. Fresno County and Surface Water Runoff Management in Solano County	9/28/1979	R5-1979-0220	10/18/1979

Subject	Date Adopted By Reg. Bd.	Regional Board Resolution No.	Date in Effect
18. Adoption of Amendments to the Water Quality Control Plan for Wastewater Management in the Communities of Paradise and Magalia in Butte County and Erosion Control and Creek Bed Management in Lake County and Wastewater Management in the Lake Yosemite Area of Merced County and Erosion Control and Wastewater Management in Mariposa County	12/14/1979	R5-1979-0255	2/21/1980
19. Adoption of Amendments to the Water Quality Control Plan for Best Management Practices for Control of Erosion from Land Development Activities in Shasta County and Best Management Practices for Control of Erosion and Use of Individual Wastewater Disposal Systems in Nevada County	12/5/1980	R5-1980-0219	2/19/1981
20. Amending the Water Quality Control Plan for Removal of Waste Discharge Prohibition for Jackson Creek above Jackson Creek Reservoir, Amador County	1/28/1983	R5-1983-0018	4/21/1983
21. Adoption of an Amendment to Part I of the Water Quality Control Plans for the Sacramento River, Sacramento-San Joaquin Delta, San Joaquin River, and Tulare Lake Basins for Land Disposal of Stillage Waste from Wineries	8/12/1983	R5-1983-0105	12/15/1983
22. Amending the Water Quality Control Plan for Guidelines for Protection of Water Quality During Construction and Operation of Small Hydro Projects	10/28/1983	R5-1983-0135	3/15/1984
23. Amending the Water Quality Control Plan for Water Quality Objectives for Copper (Cu), Zinc (Zn) and Cadmium (Cd) in the Upper Sacramento River Basin	4/27/1984	R5-1984-0054	8/16/1984

Subject	Date Adopted By Reg. Bd.	Regional Board Resolution No.	Date in Effect
24. Revision and Amendment of the Water Quality Control Plan, Sacramento River Basin, by the Addition of Prohibition of Waste Discharge from Individual Disposal Systems in the Chico Urban Area, Butte County	10/27/1988	R5-1988-0177	10/19/1989
25. Adoption of Amendments to the Water Quality Control Plan for the San Joaquin River Basin	12/8/1988	R5-1988-0195	9/21/1989
26. Amendment of the Water Quality Control Plan for the Sacramento River, Sacramento-San Joaquin Delta, and San Joaquin Basins	3/31/1989	R5-1989-0056	3/22/1990
27. Amendment of the Water Quality Control Plan for the Sacramento River, Sacramento-San Joaquin Delta, and San Joaquin Basins	1/26/1990	R5-1990-0028	2/15/1990
28. Revision of the Water Quality Control Plan, Sacramento River Basin, by the Addition of Prohibition of Waste Discharge from Individual Disposal Systems in the Chico Urban Area, Butte County	4/27/1990	R5-1990-0126	7/19/1990
29. Water Quality Control Plan Amendment for City of West Sacramento Wet Weather Municipal Waste Discharge, Yolo County	11/22/1991	R5-1991-0207	5/18/1992
30. Amendment of the Water Quality Control Plan for the Sacramento River, Sacramento-San Joaquin Delta, and San Joaquin Basins	12/9/1994	R5-1994-0380	5/9/1995
31. Amending the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins to include Compliance Schedules	5/26/1995	R5-1995-0142	9/25/1995
32. Amending the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins to Address the Control of Agricultural Subsurface Drainage	5/3/1996	R5-1996-0147	1/10/1997

Subject	Date Adopted By Reg. Bd.	Regional Board Resolution No.	Date in Effect
33. Adoption of Site Specific Water Quality Objectives for pH and Turbidity for Deer Creek in El Dorado County	7/19/2002	R5-2002-0127	10/21/2003
34. Adoption of Corrective Language Adoption of a Control Program for Mercury in Clear Lake, including COMM use for Clear Lake and Mercury Objectives for Fish Tissue	9/6/2002	R5-2002-0151	1/27/2004
35. Adoption of a Control Program for Mercury in Clear Lake, including COMM use for Clear Lake and Mercury Objectives for Fish Tissue	12/6/2002	R5-2002-0207	10/2/2003
36. Adoption of a Control Program for Orchard Pesticide Runoff and Diazinon Runoff into the Sacramento and Feather Rivers, including Site-Specific Water Quality Objectives for Diazinon	10/16/2003	R5-2003-0148	8/11/2004
37. Adoption of Site-specific Temperature Objectives for Deer Creek in El Dorado and Sacramento Counties	1/31/2003 9/16/2005	R5-2003-0006 R5-2005-0119	5/17/2006
38. Amendment for the Control of Salt and Boron Discharges into the Lower San Joaquin River	9/10/2004	R5-2004-0108	7/28/2006
39. Amendment to De-Designate Four Beneficial Uses of Old Alamo Creek, Solano County	4/28/2005	R5-2005-0053	8/7/2006
40. Amendment for the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel	1/27/2005	R5-2005-0005	8/23/2006
41. Amendment for the Control of Diazinon and Chlorpyrifos Runoff into the San Joaquin River	10/21/2005	R5-2005-0138	12/20/2006
42. Amendment for the Control of Mercury in Cache creek, Bear Creek, Sulphur Creek and Harley Gulch	10/21/2005	R5-2005-0146	2/6/2007

Subject	Date Adopted By Reg. Bd.	Regional Board Resolution No.	Date in Effect
43. Amendment for the Control of Nutrients in Clear Lake	6/23/2006	R5-2006-0060	7/12/2007
44. Amendment for the Control of Diazinon and Chlorpyrifos Runoff into the Sacramento-San Joaquin Delta	6/23/2006	R5-2006-0061	10/10/2007
45. Amendment for the Control of Diazinon and Chlorpyrifos Runoff into the Sacramento and Feather Rivers	5/3/2007	R5-2007-0034	8/11/2008
46. Amendment to Revise Water Quality Objectives for pH and Turbidity	10/25/2007	R5-2007-0136	7/7/2009
47. Amendment to Determine Certain Beneficial Uses are not Applicable and Establish Water Quality Objectives in Sulphur Creek, Colusa County	3/16/2007	R5-2007-0021	9/4/2009
48. Non-Regulatory Amendments to Correct Editing Errors and Update Language	8/13/2009	R5-2009-0069	5/18/2011
49. Amendments to Control Methylmercury and Total Mercury in the Sacramento-San Joaquin Delta Estuary	4/22/2010	R5-2010-0043	10/20/2011
50. Non-Regulatory Amendments to Provide a Cost Estimate and Potential Sources of Financing for a Long-Term Irrigated Lands Program	10/13/2011	R5-2011-0075	12/14/2012
51. Amendments to Establish Site-Specific Water Quality Objectives for Chloroform, Chlorodibromomethane, and Dichlorobromomethane for New Alamo and Ulatis Creeks, Solano County, and Permit Implementation Provisions	5/27/2010	R5-2010-0047	4/9/2013*
52. Amendments for the Control of Selenium in the Lower San Joaquin River Basin	5/27/2010	R5-2010-0046	11/7/2013

* For R5-2010-0047, U.S. Environmental Protection Agency specifically did not approve the implementation provisions.

Subject	Date Adopted By Reg. Bd.	Regional Board Resolution No.	Date in Effect
53. Amendment to Establish a Drinking Water Policy for Surface Waters of the Delta and Its Upstream Tributaries	7/26/2013	R5-2013-0098	11/20/2014
54. Amendments to the Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin Regarding Onsite Wastewater System Implementation Program	3/27/2014	R5-2014-0036	1/26/2015
55. Amendments to Edit and Update Language	3/27/2014	R5-2014-0037	1/26/2015
56. Amendment to Provide a Groundwater Regulatory Framework Towards Closure of the Royal Mountain King Mine Site, Calaveras County	3/28/2014	R5-2014-0047	6/17/2015
57. Amendment to Remove the Municipal and Domestic Supply (MUN) Beneficial Use in Twelve Constructed and/or Modified Water Bodies in the Sacramento River Basin that Receive Treated Municipal Wastewater from the Cities of Biggs, Colusa, Live Oak or Willows	4/16/2015	R5-2015-0022	4/21/2016
58. Amendments to the Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin to Add Policies for Variances from Surface Water Quality Standards for Point Source Dischargers, Variance Program for Salinity, and Exception from Implementation of Water Quality Objectives for Salinity	6/6/2014	R5-2014-0074	7/8/2016
59. Amendment to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Diazinon and Chlorpyrifos Discharges	3/28/2014	R5-2014-0041	8/16/2017

Subject	Date Adopted By Reg. Bd.	Regional Board Resolution No.	Date in Effect
60. Amendment to the Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin to Add Electrical Conductivity Water Quality Objectives in the San Joaquin River Between the Mouth of the Merced River and the Airport Way Bridge Near Vernalis	6/9/2017	R5-2017-0062	4/19/2018
61. Amendments to Reformat the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins and Water Quality Control Plan for the Tulare Lake Basin	10/20/2017	R5-2017-0106	5/24/2018
62. Amendment to the Water Quality Control Plans for the Sacramento River and San Joaquin River Basins for the Control of Pyrethroid Pesticide Discharges	6/8/2017	R5-2017-0057	2/19/2019

Table of Contents

I Foreword to the Fourth Edition (1998)

The preparation and adoption of water quality control plans (Basin Plans) is required by the California Water Code (Section 13240) and supported by the Federal Clean Water Act. Section 303 of the Clean Water Act requires states to adopt water quality standards which "consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses." According to Section 13050 of the California Water Code, Basin Plans consist of a designation or establishment for the waters within a specified area of beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives. State law also requires that Basin Plans conform to the policies set forth in the Water Code beginning with Section 13000 and any state policy for water quality control. Since beneficial uses, together with their corresponding water quality objectives, can be defined per federal regulations as water quality standards, the Basin Plans are regulatory references for meeting the state and federal requirements for water quality control (40 CFR 131.20). One significant difference between the state and federal programs is that California's basin plans establish standards for ground waters in addition to surface waters.

Basin Plans are adopted and amended by Regional Water Boards under a structured process involving full public participation and state environmental review. Basin Plans and amendments thereto, do not become effective until approved by the State Water Resources Control Board (State Water Board). Regulatory provisions must be approved by the Office of Administrative Law. Adoption or revision of surface water standards are subject to the approval of the U.S. Environmental Protection Agency.

Basin Plans complement water quality control plans adopted by the State Water Board, such as the Water Quality Control Plans for Temperature Control and Ocean Waters. It is the intent of the State and Regional Water Boards to maintain the Basin Plans in an updated and readily available edition that reflects the current water quality control program.

This Basin Plan covers the entire Sacramento and San Joaquin River Basins. A separate Basin Plan covers the Tulare Lake Basin. The Basin Plan was first adopted in 1975. In 1989, a second edition was published. The second edition incorporated all the amendments which were adopted and approved since 1975, updated the Basin Plan to include new state policies and programs, restructured and edited the Basin Plan for clarity, and incorporated the results of triennial reviews conducted in 1984 and 1987. The Third Edition - 1994 incorporated all amendments approved between 1989 and 1994, included new state policies and programs, edited and restructured the Basin Plan to make it consistent with other regional and state plans, and substantively amended sections dealing with beneficial uses, objectives, and implementation programs. The current edition (Fourth Edition - 1998) incorporates two new amendments approved since 1994. One amendment deals with compliance schedules in permits and the other addresses agricultural subsurface drainage discharges.

In this Basin Plan, "Regional Water Board" refers to the Central Valley Regional Water Quality Control Board and "State Water Board" refers to the State Water Resources Control Board.

1.1 BASIN DESCRIPTION

This Basin Plan covers the entire area included in the Sacramento and San Joaquin River drainage basins (see maps in pocket* and Figure 2-1). The basins are bound by the crests of the Sierra Nevada on the east and the Coast Range and Klamath Mountains on the west. They extend some 400 miles from the California - Oregon border southward to the headwaters of the San Joaquin River.

*NOTE: The planning boundary between the San Joaquin River Basin and the Tulare Lake Basin follows the southern watershed boundaries of the Little Panoche Creek, Moreno Gulch, and Capita Canyon to boundary of the Westlands Water District. From here, the boundary follows the northern edge of the Westlands Water District until its intersection with the Firebaugh Canal Company's Main Lift Canal. The basin boundary then follows the Main Lift Canal to the Mendota Pool and continues eastward along the channel of the San Joaquin River to the southern boundary of the Little Dry Creek watershed (Hydrologic Subareas No. 540.70 and 545.30) and then follows along the southern boundary of the San Joaquin River drainage basin.

The Sacramento River and San Joaquin River Basins cover about one fourth of the total area of the State and over 30% of the State's irrigable land. The Sacramento and San Joaquin Rivers furnish roughly 51% of the State's water supply. Surface water from the two drainage basins meet and form the Delta, which ultimately drains to San Francisco Bay. Two major water projects, the Federal Central Valley Project and the State Water Project, deliver water from the Delta to Southern California, the San Joaquin Valley, Tulare Lake Basin, the San Francisco Bay area, as well as within the Delta boundaries.

The Delta is a maze of river channels and diked islands covering roughly 1,150 square miles, including 78 square miles of water area. The legal boundary of the Delta is described in Section 12220 of the Water Code (also see Figure 3-1 of this Basin Plan).

Ground water is defined as subsurface water that occurs beneath the ground surface in fully saturated zones within soils and other geologic formations. Where ground water occurs in a saturated geologic unit that contains sufficient permeability and thickness to yield significant quantities of water to wells or springs, it can be defined as an aquifer (USGS, Water Supply Paper 1988, 1972). A ground water basin is defined as a hydrogeologic unit containing one large aquifer or several connected and interrelated aquifers (Todd, *Groundwater Hydrology*, 1980).

Major ground water basins underlie both valley floors, and there are scattered smaller basins in the foothill areas and mountain valleys. In many parts of the Region, usable ground waters occur outside of these currently identified basins. There are water-bearing geologic units within ground water basins in the Region that do not meet the definition of an aquifer. Therefore, for basin planning and regulatory purposes, the term "ground water" includes all subsurface waters that occur in fully saturated zones and fractures within soils and other geologic formations, whether or not these waters meet the definition of an aquifer or occur within identified ground water basins.

1.1.1 Sacramento River Basin

The Sacramento River Basin covers 27,210 square miles and includes the entire area drained by the Sacramento River. For planning purposes, this includes all watersheds tributary to the Sacramento River that are north of the Cosumnes River watershed. It also includes the closed basin of Goose Lake and drainage sub-basins of Cache and Putah Creeks.

The principal streams are the Sacramento River and its larger tributaries: the Pit, Feather, Yuba, Bear, and American Rivers to the east; and Cottonwood, Stony, Cache, and Putah Creeks to the west. Major reservoirs and lakes include Shasta, Oroville, Folsom, Clear Lake, and Lake Berryessa.

DWR Bulletin 118-80 identifies 63 ground water basins in the Sacramento watershed area. The Sacramento Valley floor is divided into 2 ground water basins. Other basins are in the foothills or mountain valleys. There are areas other than those identified in the DWR Bulletin with ground waters that have beneficial uses.

1.1.2 San Joaquin River Basin

The San Joaquin River Basin covers 15,880 square miles and includes the entire area drained by the San Joaquin River. It includes all watersheds tributary to the San Joaquin River and the Delta south of the Sacramento River and south of the American River watershed. The southern planning boundary is described in the first paragraph of the previous page.

The principal streams in the basin are the San Joaquin River and its larger tributaries: the Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno Rivers. Major reservoirs and lakes include Pardee, New Hogan, Millerton, McClure, Don Pedro, and New Melones.

DWR Bulletin 118-80 identifies 39 ground water basins in the San Joaquin watershed area. The San Joaquin Valley floor is divided into 15 separate ground water basins, largely based on political considerations. Other basins are in the foothills or mountain valleys. There are areas other than those identified in the DWR Bulletin with ground waters that have beneficial uses.

1.1.2.1 Grassland Watershed

The Grassland watershed is a valley floor sub-basin of the San Joaquin River Basin. The portion of the watershed for which agricultural subsurface drainage policies and regulations apply covers an area of approximately 370,000 acres and is bounded on the north by the alluvial fan of Orestimba Creek and by the Tulare Lake Basin to the south. The San Joaquin River forms the eastern boundary and Interstate Highway 5 forms the approximate western boundary. The San Joaquin River forms a wide flood plain in the region of the Grassland watershed.

The hydrology of the watershed has been irreversibly altered due to water projects and is presently governed by land uses. These uses are primarily, managed wetlands and agriculture. The wetlands form important waterfowl habitat for migratory waterfowl using the Pacific Flyway. The alluvial fans of the western and southern portions of the watershed contain salts and selenium which can be mobilized through irrigation practices and can impact beneficial uses of surface waters and wetlands if not properly regulated.

1.1.2.2 Lower San Joaquin River Watershed and Subareas

Technical descriptions of the Lower San Joaquin River (LSJR) and its component subareas are contained in Appendix 41. General descriptions follow: The LSJR watershed encompasses approximately 4,580 square miles in Merced County and portions of Fresno, Madera, San Joaquin, and Stanislaus counties. For planning purposes, the LSJR watershed is defined as the area draining to the San Joaquin River downstream of the Mendota Dam and upstream of the Airport Way Bridge near Vernalis, excluding the areas upstream of dams on the major Eastside reservoirs: New Don Pedro, New Melones, Lake McClure, and similar Eastside reservoirs in the LSJR system. The LSJR watershed excludes all lands within Calaveras, Tuolumne, San Benito,

and Mariposa Counties. The LSJR watershed has been subdivided into seven major sub areas. In some cases major subareas have been further subdivided into minor subareas to facilitate more effective and focused water quality planning (Table 1-1).

TABLE 1-1 LOWER SAN JOAQUIN RIVER SUBAREAS

Major Subareas		Minor Subareas	
1	LSJR upstream of Salt Slough	1a	Bear Creek
		1b	Fresno-Chowchilla
2	Grasslands	--	--
3	East Valley Floor	3a	Northeast Bank
		3b	North Stanislaus
		3c	Stevinson
		3d	Turlock Area
4	Northwest Side	4a	Greater Orestimba
		4b	Westside Creeks
		4c	Vernalis North
5	Merced River	--	--
6	Tuolumne River	--	--
7	Stanislaus River	--	--

1. Lower San Joaquin River upstream of Salt Slough

This subarea drains approximately 1,480 square miles on the east side of the LSJR upstream of the Salt Slough confluence. The subarea includes the portions of the Bear Creek, Chowchilla River and Fresno River watersheds that are contained within Merced and Madera Counties. The northern boundary of the subarea generally abuts the Merced River Watershed. The western and southern boundaries follow the San Joaquin River from the Lander Avenue Bridge to Friant, except for the lands within the Columbia Canal Company, which are excluded. Columbia Canal Company lands are included in the Grassland Subarea. This subarea is composed of the following drainage areas:

1a. Bear Creek (effective drainage area)

This minor subarea is a 620 square mile subset of lands within the LSJR upstream of Salt Slough Subarea. The Bear Creek Minor Subarea is predominantly comprised of the portion of the Bear Creek Watershed that is contained within Merced County.

1b. Fresno-Chowchilla

The Fresno-Chowchilla Minor Subarea is comprised of approximately 860 square miles of land within the southern portion of the LSJR upstream of Salt Slough Subarea. This minor subarea is located in southeastern Merced County and western Madera County and contains the land area that drains into the LSJR between Sack Dam and the Bear Creek confluence, including the drainages of the Fresno and Chowchilla Rivers.

2. Grassland

The Grassland Subarea drains approximately 1,370 square miles on the west side of the LSJR in portions of Merced, Stanislaus, and Fresno Counties. This subarea includes the Mud Slough, Salt Slough, and Los Banos Creek watersheds. The eastern boundary of this subarea is generally formed by the LSJR between the Merced River confluence and the Mendota Dam. The Grassland Subarea extends across the LSJR, into the east side of the San Joaquin Valley, to include the lands within the Columbia Canal Company. The western boundary of the subarea

generally follows the crest of the Coast Range with the exception of lands within San Benito County, which are excluded.

3. East Valley Floor

This subarea includes approximately 413 square miles of land on the east side of the LSJR that drains directly to the LSJR between the Airport Way Bridge near Vernalis and the Salt Slough confluence. The subarea is largely comprised of the land between the major east-side drainages of the Tuolumne, Stanislaus, and Merced Rivers. This subarea lies within central Stanislaus County and north-central Merced County. Numerous drainage canals and natural drainages occur in this subarea. The subarea is comprised of the following minor subareas:

3a. Northeast Bank

This minor subarea of the East Valley Floor contains all of the land draining the east side of the San Joaquin River between the Maze Boulevard Bridge and the Crows Landing Road Bridge, except for the Tuolumne River subarea. The Northeast Bank covers approximately 123 square miles in central Stanislaus County.

3b. North Stanislaus

The North Stanislaus minor subarea is a subset of lands within the East Valley Floor Subarea. This minor subarea drains approximately 68 square miles of land between the Stanislaus and Tuolumne River watersheds that flows into the San Joaquin River between the Airport Way Bridge near Vernalis and the Maze Boulevard Bridge.

3c. Stevinson

This minor subarea of the East Valley Floor contains all of the land draining to the LSJR between the Merced River confluence and the Lander Avenue (Highway 165) Bridge. The Stevinson Minor Subarea occupies approximately 44 square miles in north-central Merced County.

3d. Turlock Area

This minor subarea of the East Valley Floor contains all of the land draining to the LSJR between the Crows Landing Road Bridge and the Merced River confluence. The Turlock Area Minor Subarea occupies approximately 178 square miles in south-central Stanislaus County and northern Merced County.

4. Northwest Side

This 574 square mile area generally includes the lands on the West side of the LSJR between the Airport Way Bridge near Vernalis and the Newman Waste way confluence. This subarea includes the entire drainage area of Orestimba, Del Puerto, and Hospital/Ingram Creeks. The subarea is primarily located in Western Stanislaus County except for a small area that extends into Merced County near the town of Newman and the Central California Irrigation District Main Canal.

4a. Greater Orestimba

The Greater Orestimba Minor Subarea is a 285 square mile subset of the Northwest Side Subarea located in southwest Stanislaus County and a small portion of western Merced County. It contains the entire Orestimba Creek watershed and the remaining area that drains into the LSJR from the west between the Crows Landing Road Bridge and the confluence of the Merced River, including Little Salad and Crow Creeks.

4b. Westside Creeks

This Minor Subarea is comprised of 277 square miles of the Northwest Side Subarea in western Stanislaus County. It consists of the areas that drain into the west side of the San

Joaquin River between Maze Boulevard and Crows Landing Road, including the drainages of Del Puerto, Hospital, and Ingram Creeks.

4c. Vernalis North

The Vernalis North Minor Subarea is a 12 square mile subset of land within the most northern portion of the Northwest Side Subarea. It contains the land draining to the San Joaquin River from the west between the Maze Boulevard Bridge and the Airport Way Bridge near Vernalis.

5. Merced River

This 294 square mile subarea is comprised of the Merced River watershed downstream of the Merced-Mariposa county line and upstream of the River Road Bridge. The Merced River subarea includes a 13-square-mile “island” of land (located between the East Valley Floor and the Tuolumne River Subareas) that is hydrologically connected to the Merced River by the Highline Canal.

6. Tuolumne River

This 294 square mile subarea is comprised of the Tuolumne River watershed downstream of the Stanislaus-Tuolumne county line, including the drainage of Turlock Lake, and upstream of the Shiloh Road Bridge.

7. Stanislaus River

This 157 square mile subarea is comprised of the Stanislaus River watershed downstream of the Stanislaus-Calaveras county line and upstream of Caswell State Park.

2 EXISTING AND POTENTIAL BENEFICIAL USES

Beneficial uses are critical to water quality management in California. State law defines beneficial uses of California's waters that may be protected against quality degradation to include (and not be limited to) "...domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves" (Water Code Section 13050(f)). Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning.

Significant points concerning the concept of beneficial uses are:

1. All water quality problems can be stated in terms of whether there is water of sufficient quantity or quality to protect or enhance beneficial uses.

2. Beneficial uses do not include all of the reasonable uses of water. For example, disposal of wastewaters is not included as a beneficial use. This is not to say that disposal of wastewaters is a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses. Similarly, the use of water for the dilution of salts is not a beneficial use although it may, in some cases, be a reasonable and desirable use of water.

3. The protection and enhancement of beneficial uses require that certain quality and quantity objectives be met for surface and ground waters.

4. Fish, plants, and other wildlife, as well as humans, use water beneficially.

Beneficial use designation (and water quality objectives, see Chapter 3, or variance of a water quality standard, see Chapter 4) must be reviewed at least once during each three-year period for the purpose of modification as appropriate (40 CFR 131.20).

The beneficial uses, and abbreviations, listed below are standard basin plan designations.

Municipal and Domestic Supply (MUN) - Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

Agricultural Supply (AGR) - Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation (including leaching of salts), stock watering, or support of vegetation for range grazing.

Industrial Service Supply (IND) - Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.

Industrial Process Supply (PRO) - Uses of water for industrial activities that depend primarily on water quality.

Ground Water Recharge (GWR) - Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.

Freshwater Replenishment (FRSH) - Uses of water for natural or artificial maintenance of surface water quantity or quality.

Navigation (NAV) - Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.

Hydropower Generation (POW) - Uses of water for hydropower generation.

Water Contact Recreation (REC-1) - Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.

Non-contact Water Recreation (REC-2) - Uses of water for recreational activities involving proximity to water, but where there is generally no body contact with water, nor any likelihood of ingestion of water. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

Commercial and Sport Fishing (COMM) - Uses of water for commercial or recreational collection of fish, shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.

Aquaculture (AQUA) - Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.

Warm Freshwater Habitat (WARM) - Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Cold Freshwater Habitat (COLD) - Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Estuarine Habitat (EST) - Uses of water that support estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds).

Wildlife Habitat (WILD) - Uses of water that support terrestrial or wetland ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Preservation of Biological Habitats of Special Significance (BIOL) - Uses of water that support designated areas or habitats, such as established refuges, parks, sanctuaries, ecological reserves, or Areas of Special Biological Significance (ASBS), where the preservation or enhancement of natural resources requires special protection.

Rare, Threatened, or Endangered Species (RARE) - Uses of water that support aquatic habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered.

Migration of Aquatic Organisms (MIGR) - Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish.

Spawning, Reproduction, and/or Early Development (SPWN) - Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

Shellfish Harvesting (SHELL) - Uses of water that support habitats suitable for the collection of filter-feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial, or sports purposes.

2.1 SURFACE WATERS

Existing and potential beneficial uses which currently apply to surface waters of the basins are presented in Figure 2-1 and Table 2-1. The beneficial uses of any specifically identified water body generally apply to its tributary streams, except as provided below:

- MUN, COLD, MIGR and SPWN do not apply to Old Alamo Creek (Solano County) from its headwaters to the confluence with New Alamo Creek

- MUN and the human consumption of aquatic organisms do not apply to Sulphur Creek (Colusa County) from Schoolhouse Canyon to the confluence with Bear Creek

In some cases a beneficial use may not be applicable to the entire body of water. In these cases the Regional Water Board's judgment will be applied.

It should be noted that it is impractical to list every surface water body in the Region. For unidentified water bodies, the beneficial uses will be evaluated on a case-by-case basis.

Water Bodies within the basins that do not have beneficial uses designated in Table 2-1 are assigned MUN designations in accordance with the provisions of State Water Board Resolution No. 88-63 which is, by reference, a part of this Basin Plan, except as provided below:

- Old Alamo Creek (Solano County) from its headwaters to the confluence with New Alamo Creek

- Water bodies listed in Appendix 44, Water Bodies That Meet One or More Sources of Drinking Water Policy (Resolution 88-63) Exceptions

These MUN designations in no way affect the presence or absence of other beneficial use designations in these water bodies.

In making any exemptions to the beneficial use designation of MUN, the Regional Board will apply the exceptions listed in Resolution 88-63 (Appendix Item 8) and the excepted water bodies will be listed in Appendix 44.

2.2 GROUND WATERS

Beneficial uses of ground waters of the basins are presented below. For the purposes of assigning beneficial uses, the term ground water is defined in Chapter 1.

Unless otherwise designated by the Regional Water Board, all ground waters in the Region are considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO).

2.2.1 Beneficial Use De-designations

Ground waters at the Royal Mountain King Mine Site are de-designated for MUN and AGR in the de-designation area shown in Figure 2-2.

In making any exceptions to the beneficial use designation of municipal and domestic supply (MUN), the Regional Water Board will apply the criteria in State Water Board Resolution No. 88-63, 'Sources of Drinking Water Policy'. The criteria for exceptions are:

- "The total dissolved solids (TDS) exceed 3,000 mg/l (5,000 &mhos/cm, electrical conductivity) and it is not reasonably expected by the Regional Water Board [for the ground water] to supply a public water system, or

- "There is contamination, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or

- "The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day, or

- "The aquifer is regulated as a geothermal energy producing source or has been exempted administratively pursuant to 40 CFR, Section 146.4 for the purpose of underground injection of fluids associated with the production of hydrocarbon or geothermal energy, provided that these fluids do not constitute a hazardous waste under 40 CFR Section 261.3."

To be consistent with State Water Board Resolution No. 88-63 in making exceptions to beneficial use designations other than municipal and domestic supply (MUN), the Regional Water Board will consider criteria for exceptions, parallel to Resolution No. 88-63 exception criteria, which would indicate limitations on those other beneficial uses as follows:

In making any exceptions to the beneficial use designation of agricultural supply (AGR), the Regional Water Board will consider the following criteria:

- There is pollution, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for agricultural use using either Best Management Practices or best economically achievable treatment practices, or

- The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day, or

- The aquifer is regulated as a geothermal energy producing source or has been exempted administratively pursuant to 40 CFR, Section 146.4 for the purpose of underground injection of fluids associated with the production of hydrocarbon or geothermal energy, provided that these fluids do not constitute a hazardous waste under 40 CFR Section 261.3.

In making any exceptions to the beneficial use designation of industrial supply (IND or PRO), the Regional Water Board will consider the following criteria:

- There is pollution, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for industrial use using either Best Management Practices or best economically achievable treatment practices, or

- The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

FIGURE 2-1: SURFACE WATER BODIES AND BENEFICIAL USES

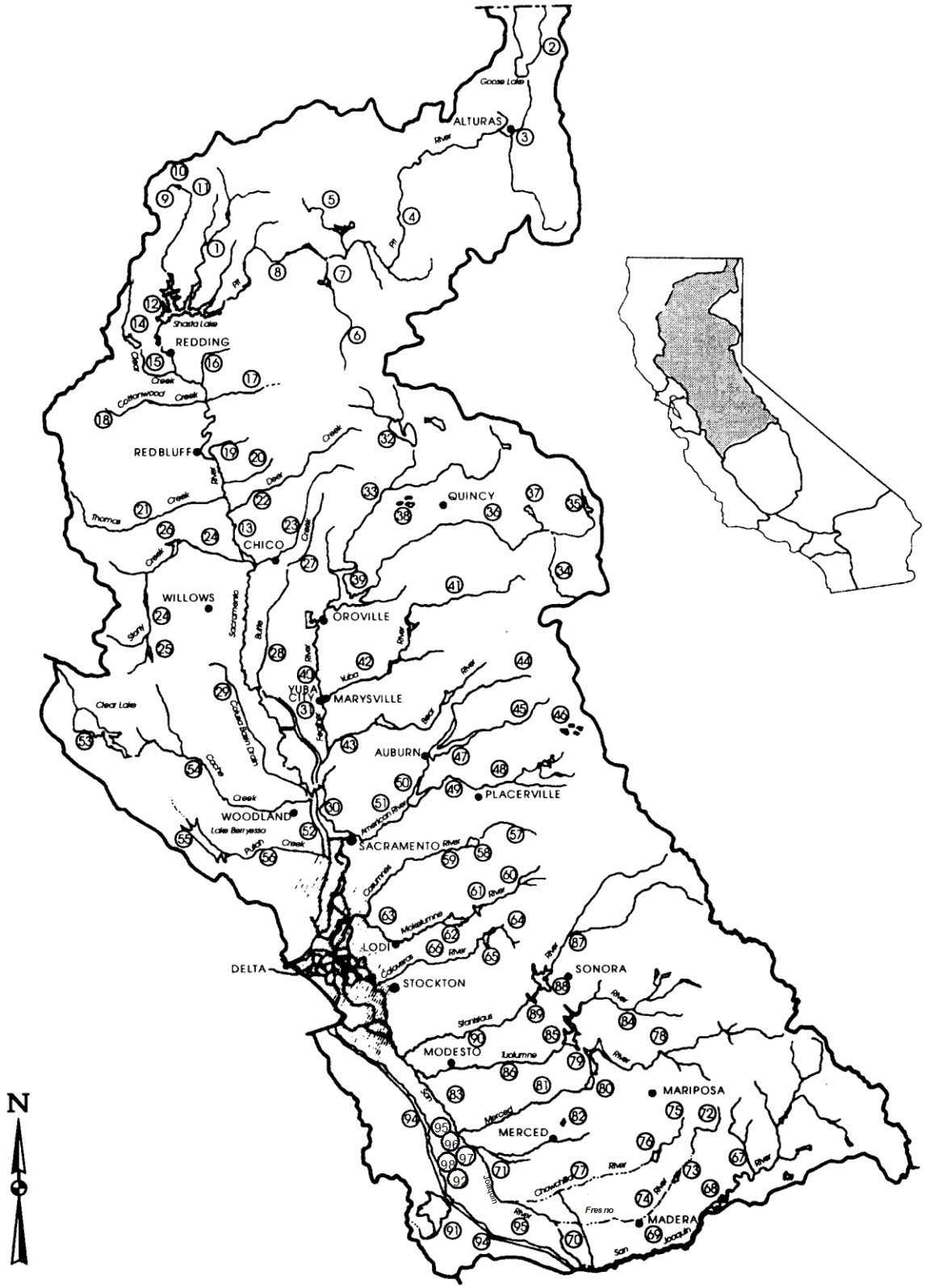


TABLE 2-1

SURFACE WATER BODIES AND BENEFICIAL USES

	SURFACE WATER BODIES	HYDRO UNIT NUMBER	MUNICIPAL AND DOMESTIC SUPPLY	AGRICULTURE: IRRIGATION	AGRICULTURE: STOCK WATERING	INDUSTRY: PROCESS	INDUSTRY: SERVICE SUPPLY	INDUSTRY: POWER	RECREATION: CONTACT	RECREATION: CANOEING AND RAFTING (1)	RECREATION: OTHER NONCONTACT	FRESH-WATER HABITAT (2): WARM	FRESH-WATER HABITAT (2): COLD	MIGRATION: WARM (3)	MIGRATION: COLD (4)	SPAWNING: WARM (3)	SPAWNING: COLD (4)	WILDLIFE HABITAT	NAVIGATION
			MUN	AGR		PROC	IND	POW	REC-1		REC-2	WARM	COLD	MIGR		SPWN		WILD	NAV
1	McCLOUD RIVER	505.	E					E	E	P	E		E				E	E	
2	GOOSE LAKE	527.2		E	E				E		E	E	E					E	
	PIT RIVER																		
3	NORTH FORK, SOUTH FORK, PIT RIVER	526.00	E	E	E				E	P	E	E	E			E	E	E	
4	CONFLUENCE OF FORKS TO HAT CREEK	526.35	E	E	E			E	E	E	E	E	E			E		E	
5	FALL RIVER	526.41	E	E	E			E	E	E	E	E	E					E	
6	HAT CREEK	526.30		E				E	E		E	E	E				E	E	
7	BAUM LAKE	526.34						E	E		E		E				P	E	
8	MOUTH OF HAT CREEK TO SHASTA LAKE	526.	E	E	E			E	E	E	E	P	E			E	E	E	
	SACRAMENTO RIVER																		
9	SOURCE TO BOX CANYON RESERVOIR	525.22		E	E				E		E		E					E	
10	LAKE SISKIYOU	525.22							E		E	E	E				P	E	
11	BOX CANYON DAM TO SHASTA LAKE	525.2		E	E				E	E	E		E				E	E	
12	SHASTA LAKE	506.10	E	E				E	E		E	E	E			E	E	E	
13	SHASTA DAM TO COLUSA BASIN DRAIN		E	E	E		E	E	E	E	E	E	E	E	E	E	E	E	E

Notes are located after the table.

SURFACE WATER BODIES AND BENEFICIAL USES

	SURFACE WATER BODIES	HYDRO UNIT NUMBER	MUN	AGRICUL-TURE		INDUSTRY			RECREATION			FRESH-WATER HABITAT (2)		MIGRA-TION		SPAW-NING		WILD	NAV
			MUN	AGR		PROC	IND	POW	REC-1		REC-2	WARM	COLD	MIGR		SPWN		WILD	NAV
			MUNICIPAL AND DOMESTIC SUPPLY	IRRIGATION	STOCK WATERING	PROCESS	SERVICE SUPPLY	POWER	CONTACT	CANOEING AND RAFTING (1)	OTHER NONCONTACT	WARM	COLD	WARM (3)	COLD (4)	WARM (3)	COLD (4)	WILDLIFE HABITAT	NAVIGATION
14	WHISKEY TOWN RESERVOIR	524.61	E	E	E			E	E		E	E	E			E		E	
15	CLEAR CREEK BELOW WHISKEYTOWN RESERVOIR	524.62	E	E	E				E	E	E	E	E		E	E	E	E	
16	COW CREEK	507.3	P	E	E			E	E	P	E		E		E	E	E	E	
17	BATTLE CREEK	507.12		E	E			E	E	E	E	E	E		E	E	E	E	
18	COTTONWOOD CREEK	524.3	E	E	E	P	P	P	E	E	E	E	E		E	E	E	E	
19	ANTELOPE CREEK	509.63	E	E	E				E		E	E	E		E	E	E	E	
20	MILL CREEK	509.42	E	E	E				E		E	E	E		E	E	E	E	
21	THOMES CREEK	523.10		E	E			P	E		E	E	E		E	E	E	E	
22	DEER CREEK	509.20	E	E	E				E	E	E	E	E		E	E	E	E	
23	BIG CHICO CREEK	509.14		E	E				E	E	E	E	E		E	E	E	E	
24	STONY CREEK	522.00		E	E				E	E	E	E	P		E	E	E	E	
25	EAST PARK RESERVOIR	522.33							E		E	E	P			E		E	
26	BLACK BUTTE RESERVOIR	522.12		E	E				E		E	E				E		E	
	BUTTE CREEK																		
27	SOURCES TO CHICO	521.30	E	E	E			E	E			E	E		E	E	E	E	
28	BELOW CHICO, INCLUDING BUTTE SLOUGH	520.40		E	E				E	E		E	E		E	E		E	
29	COLUSA BASIN DRAIN	520.21		E	E				E	E		E	P	E		E		E	

Notes are located after the table.

SURFACE WATER BODIES AND BENEFICIAL USES

	SURFACE WATER BODIES	HYDRO UNIT NUMBER	MUN	AGRICUL-TURE		INDUSTRY			RECREATION			FRESH-WATER HABITAT (2)		MIGRA-TION		SPAW-NING		WILD	NAV
			MUN	AGR		PROC	IND	POW	REC-1		REC-2	WARM	COLD	MIGR		SPWN		WILD	NAV
			MUNICIPAL AND DOMESTIC SUPPLY	IRRIGATION	STOCK WATERING	PROCESS	SERVICE SUPPLY	POWER	CONTACT	CANOEING AND RAFTING (1)	OTHER NONCONTACT	WARM	COLD	WARM (3)	COLD (4)	WARM (3)	COLD (4)	WILDLIFE HABITAT	NAVIGATION
30	COLUSA BASIN DRAIN TO EYE ("I") STREET BRIDGE	520.00	E	E					E	E	E	E	E	E	E	E	E	E	E
31	SUTTER BYPASS	520.3		E					E			E			E		E	E	
	FEATHER RIVER																		
32	LAKE ALMANOR	518.41						E	E			E	E			E		E	
33	NORTH FORK, FEATHER RIVER	518.4	E					E	E	E	E		E				E	E	
	MIDDLE FORK, FEATHER RIVER																		
34	SOURCE TO LITTLE LAST CHANCE CREEK	518.35		E	E				E	E	E	E	E				E	E	
35	FRENCHMAN RESERVOIR	518.36							E		E	P	E				E	E	
36	LITTLE LAST CHANCE CREEK TO LAKE OROVILLE	518.3	E						E	E	E	E	E				E	E	
37	LAKE DAVIS	518.34							E		E	P	E				E	E	
38	LAKES BASIN LAKES	518.5							E		E		E				E	E	
39	LAKE OROVILLE	518.12	E	E				E	E		E	E	E			E	E	E	
40	FISH BARRIER DAM TO SACRAMENTO RIVER	515.	E	E					E	E	E	E	E	E	E	E	E	E	
	YUBA RIVER																		
41	SOURCES TO ENGLEBRIGHT RESERVOIR	517	E	E	E			E	E	E	E		E				E	E	
42	ENCLEBRIGHT DAM TO FEATHER RIVER	515.3		E	E			E	E	E	E	E	E	E	E	E	E	E	

Notes are located after the table.

SURFACE WATER BODIES AND BENEFICIAL USES

	SURFACE WATER BODIES	HYDRO UNIT NUMBER	MUN	AGRICUL-TURE		INDUSTRY			RECREATION			FRESH-WATER HABITAT (2)		MIGRA-TION		SPAW-NING		WILD	NAV
			MUN	AGR		PROC	IND	POW	REC-1		REC-2	WARM	COLD	MIGR		SPWN		WILD	NAV
			MUNICIPAL AND DOMESTIC SUPPLY	IRRIGATION	STOCK WATERING	PROCESS	SERVICE SUPPLY	POWER	CONTACT	CANOEING AND RAFTING (1)	OTHER NONCONTACT	WARM	COLD	WARM (3)	COLD (4)	WARM (3)	COLD (4)	WILDLIFE HABITAT	NAVIGATION
43	BEAR RIVER	515.1	E	E	E			E	E	E	E	E	E	P	P	P	P	E	
	AMERICAN RIVER																		
44	NORTH FORK, SOURCE TO FOLSOM LAKE	514.5	E	E					E	E	E	P	E				E	E	
45	MIDDLE FORK, SOURCE TO FOLSOM LAKE	514.4	E	E	E			E	E	E	E	P	E				E	E	
46	DESOLATION VALLEY LAKES	514.4							E		E		E				E	E	
	SOUTH FORK																		
48	SOURCE TO PLACERVILLE	514.3	E					E	E	E	E	P	E				E	E	
49	PLACERVILLE TO FOLSOM LAKE	514.32	E	E				E	E	E	E	E	E					E	
50	FOLSOM LAKE	514.23	E	E			P	E	E		E	E	E			E		E	
51	FOLSOM DAM TO SACRAMENTO RIVER	519.21	E	E			E	E	E	E	E	E	E	E	E	E	E	E	
52	YOLO BYPASS (7)	510.		E	E				E		E	E	P	E	E	E		E	
	CACHE CREEK																		
53	CLEAR LAKE (a)	513.52	E	E	E				E		E	E	P			E		E	
54	CLEAR LAKE TO YOLO BYPASS (d)	511/ 513	E	E	E	E	E		E	E	E	E	P			E	E	E	
	PUTAH CREEK																		
55	LAKE BERRYESSA	512.21	E	E	E			P	E		E	E	E			E		E	
56	LAKE BERRYESSA TO YOLO BYPASS	510/ 511	E	E	E				E	E	E	E	P			E		E	

Notes are located after the table.

SURFACE WATER BODIES AND BENEFICIAL USES

	SURFACE WATER BODIES	HYDRO UNIT NUMBER	MUN	AGRICUL-TURE		INDUSTRY			RECREATION			FRESH-WATER HABITAT (2)		MIGRA-TION		SPAW-NING		WILD	NAV
			MUN	AGR		PROC	IND	POW	REC-1		REC-2	WARM	COLD	MIGR		SPWN		WILD	NAV
			MUNICIPAL AND DOMESTIC SUPPLY	IRRIGATION	STOCK WATERING	PROCESS	SERVICE SUPPLY	POWER	CONTACT	CANOEING AND RAFTING (1)	OTHER NONCONTACT	WARM	COLD	WARM (3)	COLD (4)	WARM (3)	COLD (4)	WILDLIFE HABITAT	NAVIGATION
	OTHER LAKES AND RESERVOIRS IN SACRAMENTO R. BASIN 5A (5)		E	E	E	E		E	E		E	E	E				E	E	
	COSUMNES RIVER																		
57	SOURCES TO NASHVILLE RESERVOIR (PROPOSED)	532.	E	E					E		E		E				E	E	
58	NASHVILLE RESERVOIR (PROPOSED)	532.	P					P	P		P	P	P	P		P	P	P	
59	SOURCE TO DELTA	531/ 532	E	E	E				E	E	E	E	E	E	E	E	E	E	
	MOKELUMNE RIVER																		
60	SOURCES TO PARDEE RESERVOIR	532.6	E					E	E	E	E	E	E	E		E	E	E	
61	PARDEE RESERVOIR (6)	532.6	E					E	E		E	E	E			E	E	E	
62	CAMANCHE RESERVOIR	531.2	E	E	E				E		E	E	E	E		E	E	E	
63	CAMANCHE RESERVOIR TO DELTA	531.2		E	E				E	E	E	E	E	E	E	E	E	E	
	CALAVERAS RIVER																		
64	SOURCE TO NEW HOGAN RESERVOIR	533.							E	E	E	E	E	E		E	E	E	
65	NEW HOGAN RESERVOIR	533.1							E		E	E	E	E		E	E	E	
66	NEW HOGAN RESERVOIR TO DELTA	531.3	E	E	E	P	P		E	E	E	E	E	E	E	E	E	E	
	OTHER LAKES AND RESERVOIRS IN HYDRO UNIT NOS.531, 532, 533, 543, 544 (5)		E	E	E	E		E	E		E	E	E				E	E	

Notes are located after the table.

SURFACE WATER BODIES AND BENEFICIAL USES

	SURFACE WATER BODIES	HYDRO UNIT NUMBER	MUN	AGRICUL-TURE		INDUSTRY			RECREATION			FRESH-WATER HABITAT (2)		MIGRA-TION		SPAW-NING		WILD	NAV
			MUN	AGR		PROC	IND	POW	REC-1		REC-2	WARM	COLD	MIGR		SPWN		WILD	NAV
			MUNICIPAL AND DOMESTIC SUPPLY	IRRIGATION	STOCK WATERING	PROCESS	SERVICE SUPPLY	POWER	CONTACT	CANOEING AND RAFTING (1)	OTHER NONCONTACT	WARM	COLD	WARM (3)	COLD (4)	WARM (3)	COLD (4)	WILDLIFE HABITAT	NAVIGATION
	SAN JOAQUIN RIVER																		
67	SOURCES TO MILLERTON LAKE	540.	E	E	E			E	E	E	E	E	E					E	
68	MILLERTON LAKE	540.12	P	E	E				E		E	E	P					E	
69	FRIANT DAM TO MENDOTA POOL	545.	E	E	E	E			E	E	E	E	E	E	E	E	P	E	
70	MENDOTA DAM TO SACK DAM	545.1	P	E	E	E			E	E	E	E		E	E	E	P	E	
71	SACK DAM TO MOUTH OF MERCED RIVER	535.7	P	E	E	E			E	E	E	E		E	E	E	P	E	
	FRESNO RIVER																		
72	SOURCE TO HIDDEN RESERVOIR A/	539.31	E	E	E				E		E	E	E					E	
73	HIDDEN RESERVOIR A/	539.32	E		E				E		E	E						E	
74	HIDDEN RESERVOIR TO SAN JOAQUIN RIVER	545.	P	E	E				E	P	E	E						E	
	CHOWCHILLA RIVER																		
75	SOURCE TO BUCHANAN RESERVOIR B/	539.11							E		E	E	E					E	
76	BUCHANAN RESERVOIR B/	539.12	E	E	E				E		E	E						E	
77	BUCHANAN RESERVOIR TO SAN JOAQUIN RIVER	535/ 545	P	E		E			E	P	E	E						E	
	MERCED RIVER																		
78	SOURCE TO McCLURE LAKE	537.	P	E				E	E	E	E	E	E					E	
79	McCLURE LAKE	537.22	P	E				E	E		E	E	E					E	

Notes are located after the table.

SURFACE WATER BODIES AND BENEFICIAL USES

	SURFACE WATER BODIES	HYDRO UNIT NUMBER	MUN	AGRICUL-TURE		INDUSTRY			RECREATION			FRESH-WATER HABITAT (2)		MIGRA-TION		SPAW-NING		WILD	NAV
			MUN	AGR		PROC	IND	POW	REC-1		REC-2	WARM	COLD	MIGR		SPWN		WILD	NAV
			MUNICIPAL AND DOMESTIC SUPPLY	IRRIGATION	STOCK WATERING	PROCESS	SERVICE SUPPLY	POWER	CONTACT	CANOEING AND RAFTING (1)	OTHER NONCONTACT	WARM	COLD	WARM (3)	COLD (4)	WARM (3)	COLD (4)	WILDLIFE HABITAT	NAVIGATION
80	McSWAIN RESERVOIR	537.1	P	E				E	E		E	E	E					E	
81	McSWAIN RESERVOIR TO SAN JOAQUIN RIVER	535.	E		E	E	E	E	E	E	E	E	E	E	E	E	E	E	
82	YOSEMITE LAKE	535.9							E		E	E	E					E	
83	MOUTH OF MERCED RIVER TO VERNALIS	535/ 541	P	E	E	E			E	E	E	E		E	E	E		E	
	TUOLUMNE RIVER																		
84	SOURCE TO (NEW) DON PEDRO RESERVOIR	536.	E	E	E			E	E	E	E	E	E					E	
85	NEW DON PEDRO RESERVOIR	536.32	P					E	E		E	E	E					E	
86	NEW DON PEDRO RESERVOIR TO SAN JOAQUIN RIVER	535.	P	E	E				E	E	E	E	E		E	E	E	E	
	STANISLAUS RIVER																		
87	SOURCE TO NEW MELONES RESERVOIR (PROPOSED)	534.	E	E	E			E	E	E	E	E	E					E	
88	NEW MELONES RESERVOIR	534.21	E	E	E			E	E		E		E					E	
89	TULLOCH RESERVOIR	534.22	P	E	E			E	E		E	E						E	
90	GOODWIN DAM TO SAN JOAQUIN RIVER	535.	P	E	E	E	E	E	E	E	E	E	E		E	E	E	E	
91	SAN LUIS RESERVOIR	542.32	E	E	E		E	E	E		E	E						E	
92	O'NEILL RESERVOIR	541.2	E	E	E				E		E	E							

Notes are located after the table.

SURFACE WATER BODIES AND BENEFICIAL USES

	SURFACE WATER BODIES	HYDRO UNIT NUMBER	MUN	AGRICUL-TURE		INDUSTRY			RECREATION			FRESH-WATER HABITAT (2)		MIGRA-TION		SPAW-NING		WILD	NAV
			MUN	AGR		PROC	IND	POW	REC-1		REC-2	WARM	COLD	MIGR		SPWN		WILD	NAV
			MUNICIPAL AND DOMESTIC SUPPLY	IRRIGATION	STOCK WATERING	PROCESS	SERVICE SUPPLY	POWER	CONTACT	CANOEING AND RAFTING (1)	OTHER NONCONTACT	WARM	COLD	WARM (3)	COLD (4)	WARM (3)	COLD (4)	WILDLIFE HABITAT	NAVIGATION
93	OTHER LAKES AND RESERVOIRS IN SAN JOAQUIN R. BASIN (EXCLUDING HYDRO UNIT NOS. 531-533, 543, 544) (5)		E					E	E		E	E	E				E	E	
94	CALIFORNIA AQUEDUCT	541.	E	E	E	E	E	E	E		E							E	
95	DELTA-MENDOTA CANAL	541/ 543	E	E	E				E		E	E						E	
	GRASSLAND WATERSHED (a)	541.2																	
96	MUD SLOUGH (NORTH)			L (b)	E				E		E	E				E		E	
97	SALT SLOUGH			E	E				E		E	E				E		E	
98	WETLAND WATER SUPPLY CHANNELS (9)			L (b)	E							L (c)						E	
C	SACRAMENTO SAN JOAQUIN DELTA (7, 8)	544.	E	E	E	E	E		E		E	E	E	E	E	E		E	E

Notes are located after the table.

SURFACE WATER BODIES AND BENEFICIAL USES

LEGEND

E = EXISTING BENEFICIAL USES

P = POTENTIAL BENEFICIAL USES

L = EXISTING LIMITED BENEFICIAL USE

NOTE:

Surface waters with the beneficial uses of Groundwater Recharge (GWR), Freshwater Replenishment (FRSH), and Preservation of Rare and Endangered Species (RARE) have not been identified in this plan. Surface waters of the Sacramento and San Joaquin River Basins falling within these beneficial use categories will be identified in the future as part of the continuous planning process to be conducted by the State Water Resources Control Board.

(1) Shown for streams and rivers only with the implication that certain flows are required for this beneficial use.

(2) Resident does not include anadromous. Any Segments with both COLD and WARM beneficial use designations will be considered COLD water bodies for the application of water quality objectives.

(3) Striped bass, sturgeon, and shad.

(4) Salmon and steelhead

(5) The indicated beneficial uses are to be protected for all waters except in specific cases where evidence indicates the appropriateness of additional or alternative beneficial use designations.

(6) Sport fishing is the only recreation activity permitted.

(7) Beneficial uses vary throughout the Delta and will be evaluated on a case-by-case basis. COMM is a designated beneficial use for the Sacramento San Joaquin Delta and Yolo Bypass waterways listed in Appendix 43 and not any tributaries to the listed waterways or portions of the listed waterways outside of the legal Delta boundary unless specifically designated.

(8) Per State Water Board Resolution No. 90-28, Marsh Creek and Marsh Creek Reservoir in Contra Costa County are assigned the following beneficial uses: REC1 and REC2 (potential uses), WARM, WILD and RARE. COMM is a designated beneficial use for Marsh Creek and its tributaries listed in Appendix 43 within the legal Delta boundary.

(9) Wetland water supply channels for which beneficial uses are designated are defined in Appendix 40

A/ Hidden Reservoir = Hensley Lake

B/ Buchanan Reservoir = Eastman Lake

(a) The following beneficial uses EXIST in addition to those noted in Table 2-1

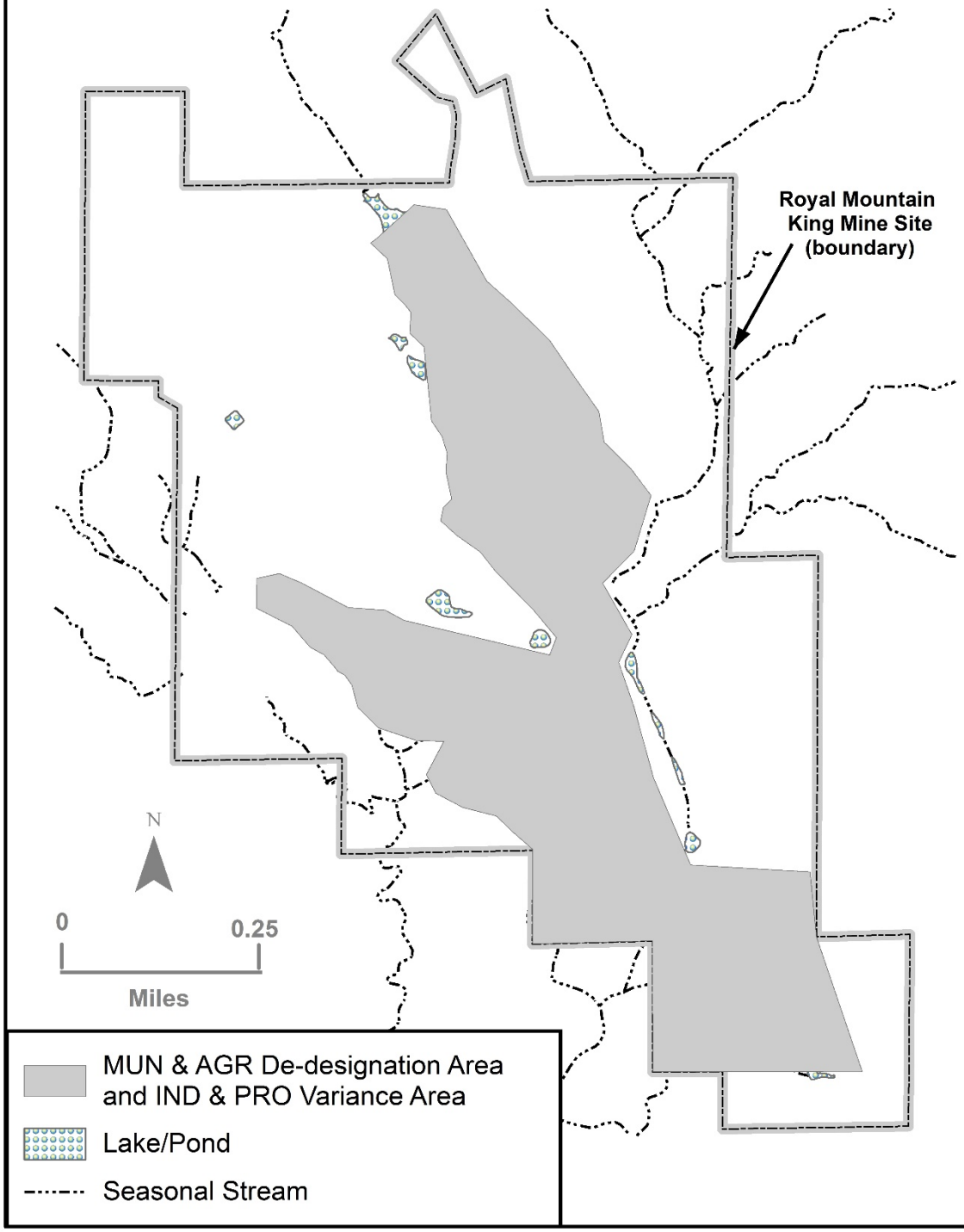
Mud Slough (north): COMM and SHELL
Salt Slough: COMM, BIOL, and SHELL
Wetland Water Supply Channels: BIOL
Clear Lake: COMM

(b) Elevated natural salt and boron concentrations may limit this use to irrigation of salt and boron tolerant crops. Intermittent low flow conditions may also limit this use.

(c) Wetland channels can sustain aquatic life, but due to fluctuating flow regimes and habitat limitations, may not be suitable for nesting and/or propagation.

(d) In addition to the beneficial uses noted in Table 2-1, COMM exists for Cache Creek from Clear Lake to Yolo Bypass and in the following tributaries only: North Fork Cache Creek and Bear Creek.

FIGURE 2-2: ROYAL MOUNTAIN KING MINE SITE GROUNDWATER DE-DESIGNATION AND VARIANCE AREA



3 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 2) and the water quality objectives based on those uses.

There are **seven 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 specific constituents. 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 the Regional Water Board recognizes that immediate compliance with water quality objectives adopted by the Regional Water Board or the State Water Board, or with water quality criteria adopted by the USEPA, may not be feasible in all circumstances. Where the Regional Water Board determines it is infeasible for a discharger to comply immediately with such objectives or criteria, compliance shall be achieved in the shortest practicable period of time (determined by the Regional Water Board), not to exceed ten years after the adoption of applicable objectives or criteria. This policy shall apply to water quality objectives and water quality criteria adopted after the effective date of this amendment to the Basin Plan [25 September 1995]. The Regional Water Board will establish compliance schedules in NPDES permits consistent with the provisions of the State Water Board’s Compliance Schedule Policy (Resolution 2008-0025). Time schedules in waste discharge requirements are established consistent with Water Code Section 13263.

The **fifth 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 **sixth 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 State Water Board's plans and policies that the Basin Plan must conform to are addressed in Chapter 4, Implementation.

The **seventh 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 4.

3.1 WATER QUALITY OBJECTIVES FOR INLAND SURFACE WATERS

The objectives below are presented by categories which, like the Beneficial Uses of Chapter 2, 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 2-1.)* The numbers in parentheses following specific water bodies are keyed to Figure 2-1.

3.1.1 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.

3.1.2 Biostimulatory Substances

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

3.1.3 Chemical Constituents

Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.*

The chemical constituent objectives in Tables 3-1 and 3-2 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 the San Francisco Bay/Sacramento-San Joaquin Delta, adopted by the State Water Board in May 1995 and revised in 2006.

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.

**This includes drinking water chemical constituents of concern, such as organic carbon.*

TABLE 3-1
TRACE ELEMENT WATER QUALITY OBJECTIVES

CONSTITUENT	MAXIMUM CONCENTRATION[a] (mg/l)	APPLICABLE WATER BODIES
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) 0.8 (monthly mean, 15 March through 15 September)	San Joaquin River, mouth of the Merced River to Vernalis
	2.6 (16 September through 14 March) 1.0 (monthly mean, 16 September through 14 March)	
	1.3 (monthly mean, critical year[b])	
	5.8 2.0 (monthly mean, 15 March through 15 September)	Salt Slough, Mud Slough (north), San Joaquin River from Sack Dam to the mouth of Merced River
Cadmium	0.00022 [c]	Sacramento River and its tributaries above State Hwy 32 bridge at Hamilton City
Copper	0.0056 [c]	As noted above for Cadmium.
	0.01 [d]	As noted above for Arsenic. [d]
Cyanide	0.01	As noted above for Arsenic.

TABLE 3-1
TRACE ELEMENT WATER QUALITY OBJECTIVES

CONSTITUENT	MAXIMUM CONCENTRATION[a] (mg/l)	APPLICABLE WATER BODIES
Iron	0.3	As noted above for Arsenic.
Manganese	0.05	As noted above for Arsenic.
Molybdenum	0.015 0.010 (monthly mean)	San Joaquin River, mouth of the Merced River to Vernalis
	0.050 0.019 (monthly mean)	Salt Slough, Mud Slough (north), San Joaquin River from Sack Dam to the mouth of Merced River
Selenium	0.012 0.005 (4-day average)	San Joaquin River, mouth of the Merced River to Vernalis
	0.020 0.005 (4-day average)	Mud Slough (north), and the San Joaquin River from Sack Dam to the mouth of Merced River
	0.020 0.002 (monthly mean)	Salt Slough and constructed and re-constructed water supply channels in the Grassland watershed listed in Appendix 40.
Silver	0.01	As noted above for Arsenic
Zinc	0.1 [d]	As noted above for Arsenic. [d]
	0.016 [c]	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 4-4.

c 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:

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

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

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

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

TABLE 3-2
ORGANIC CHEMICAL WATER QUALITY OBJECTIVES

CONSTITUENT	MAXIMUM CONCENTRATION (µg/l)	APPLICABLE WATER BODIES
Chlorodibromomethane (DBCM)	4.9	New Alamo Creek, from Old Alamo Creek to Ulatis Creek; Ulatis Creek, from New Alamo Creek to Cache Slough
Dichlorobromomethane (DCBM)	16	New Alamo Creek, from Old Alamo Creek to Ulatis Creek; Ulatis Creek, from New Alamo Creek to Cache Slough
Chloroform	46	New Alamo Creek, from Old Alamo Creek to Ulatis Creek; Ulatis Creek, from New Alamo Creek to Cache Slough

3.1.4 *Cryptosporidium* and *Giardia*

Waters shall not contain *Cryptosporidium* and *Giardia* in concentrations that adversely affect the public water system component[1] of the MUN beneficial use. This narrative water quality objective for *Cryptosporidium* and *Giardia* shall be applied within the Sacramento-San Joaquin Delta and its tributaries below the first major dams (shown in Figure A44-1) and should be implemented as specified in Chapter 4 of the Basin Plan. Compliance with this objective will be assessed at existing and new public water system intakes.

[1] Public water system as defined in Health and Safety Code, section 116275, subdivision (h)

3.1.5 Color

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

3.1.6 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 3-3 apply to specific water bodies in the Sacramento and San Joaquin River Basins:

TABLE 3-3
SPECIFIC DISSOLVED OXYGEN WATER QUALITY OBJECTIVES

AMOUNT	TIME	PLACE
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.

3.1.7 Floating Material

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

3.1.8 Mercury

For Sulphur Creek (Colusa County), waters shall be maintained free of mercury from anthropogenic sources such that beneficial uses are not adversely affected. During low flow conditions, defined as flows less than 3 cfs, the instantaneous maximum total mercury concentration shall not exceed 1,800 ng/l. During high flow conditions, defined as flows greater than 3 cfs, the instantaneous maximum ratio of mercury to total suspended solids shall not exceed 35 mg/kg. Both objectives apply at the mouth of Sulphur Creek.

3.1.9 Methylmercury

For Clear Lake (53), the methylmercury concentration in fish tissue shall not exceed 0.09 and 0.19 mg methylmercury/kg wet weight of tissue in trophic level 3 and 4 fish, respectively.

For Cache Creek (Clear Lake to Yolo Bypass) (54), North Fork Cache Creek, and Bear Creek (tributary to Cache Creek), the average methylmercury concentration shall not exceed 0.12 and 0.23 mg methylmercury/ kg wet weight of muscle tissue in trophic level 3 and 4 fish, respectively. For Harley Gulch (tributary to Cache Creek), the average methylmercury concentration shall not exceed 0.05 mg methylmercury/ kg wet weight in whole, trophic level 2 and 3 fish.

For the Sacramento-San Joaquin Delta and Yolo Bypass waterways listed in Appendix 43, the average methylmercury concentrations shall not exceed 0.08 and 0.24 mg methylmercury/kg, wet weight, in muscle tissue of trophic level 3 and 4 fish, respectively (150-500 mm total length). The average methylmercury concentrations shall not exceed 0.03 mg methylmercury/kg, wet weight, in whole fish less than 50 mm in length.

Compliance with the methylmercury fish tissue objectives shall be determined by analysis of fish tissue as described in Chapter 5, Surveillance and Monitoring.

3.1.10 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.

3.1.11 pH

The pH shall not be depressed below 6.5 nor raised above 8.5.

The following site-specific objectives replace the general pH objective, above, in its entirety for the listed water bodies.

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

3.1.12 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 µg/l.

Pesticide concentrations shall not exceed the levels identified in Table 3-4. 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.

TABLE 3-4
SPECIFIC PESTICIDE OBJECTIVES

PESTICIDE	MAXIMUM CONCENTRATION AND AVERAGING PERIOD	APPLICABLE WATER BODIES
Chlorpyrifos	0.025 µ g/L ; 1-hour average (acute) 0.015 µ g/L ; 4-day average (chronic) Not to be exceeded more than once in a three year period.	San Joaquin River from Mendota Dam to Vernalis (Reaches include Mendota Dam to Sack Dam (70), Sack Dam to Mouth of Merced River (71), Mouth of Merced River to Vernalis (83)), Delta Waterways listed in Appendix 42. Sacramento River from Shasta Dam to Colusa Basin Drain (13) and the Sacramento River from the Colusa Basin Drain to I Street Bridge (30). Feather River from Fish Barrier Dam to Sacramento River (40). Bear Creek (San Joaquin and Calaveras Counties), Bear River (43), Lower (below Camp Far West Reservoir), Berenda Creek (Madera County), Berenda Slough (Madera County), Colusa Basin Drain (29), Coon Creek, Lower (Sutter County), Deadman Creek (Merced County), Del Puerto Creek, Dry Creek (tributary to Tuolumne River at Modesto, E Stanislaus County), Duck Creek (San Joaquin County), French Camp Slough, Gilsizer Slough , Ingram Creek, Jack Slough, Live Oak Slough, Lone Tree Creek, Main Drainage Canal (Butte County), Merced River, Lower (McSwain Reservoir to San Joaquin River) (81), Mormon Slough (from Stockton Diverting Canal to Bellota Weir), Morrison Slough (Sutter County), Orestimba Creek, Pixley Slough (San Joaquin County), Salt Slough, Spring Creek (Colusa County), Stanislaus River, Lower (Goodwin Dam to San Joaquin River) (90), Tuolumne River, Lower (Don Pedro Dam to San Joaquin River) (86), Ulatis Creek (Solano County), Wadsworth Canal, Westley Wasteway (Stanislaus County), Winters Canal (Yolo County), Yankee Slough (Placer and Sutter Counties) Waters with designated or existing[2] WARM and/or COLD beneficial uses that are not upstream of the major dams in Table 3-5.
Diazinon	0.16 µ g/L; 1-hour average (acute) 0.10 µ g/L; 4-day average (chronic) Not to be exceeded more than once in a three year period.	As noted above for chlorpyrifos

[2] Existing as defined in Title 40 of the Code of Federal Regulations, section 131.3(e)

TABLE 3-5 MAJOR DAMS DEMARKING THE UPSTREAM EXTENT OF THE WATER BODIES WITH DIAZINON AND CHLORPYRIFOS WATER QUALITY OBJECTIVES		
Dam	**Associated Reservoir**	**River System**
Monticello Dam	Lake Berryessa (55)	Putah Creek
Black Butte Dam	Black Butte Reservoir (26)	Stony Creek
Camanche Dam	Camanche Reservoir (62)	Mokelumne River
Camp Far West Dam	Camp Far West Reservoir	Bear River
Cache Creek Dam	Clear Lake (53)	Cache Creek
New Don Pedro Dam	Don Pedro Reservoir (85)	Tuolumne River
Buchanan Dam	Eastman Lake (Buchanan Reservoir) (76)	Chowchilla River
Folsom Dam	Folsom Lake (50)	American River
Englebright Dam	Harry L. Englebright Reservoir	Yuba River
Hidden Dam	Hensley Lake (Hidden Reservoir) (73)	Fresno River
Keswick Dam	Keswick Reservoir	Sacramento River
New Exchequer Dam	McClure Lake (Exchequer Reservoir) (79)	Merced River
Friant Dam	Millerton Lake (68)	San Joaquin River
New Hogan Dam	New Hogan Reservoir (65)	Calaveras River
Oroville Dam	Lake Oroville (39)	Feather River
San Luis Dam	San Luis Reservoir (91)	-
Scotts Flat Dam	Scotts Flat Reservoir	Deer Creek
Goodwin Dam	Tulloch Reservoir (89)	Stanislaus River
Whiskeytown Dam	Whiskeytown Reservoir (14)	Clear Creek

3.1.13 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 64442 of Section 64442 and Table 64443 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.

3.1.14 Salinity

3.1.14.1 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 3-6 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, with the exception of the electrical conductivity water quality objectives for Reach 83 of the San Joaquin River, which the Board has determined to be protective of all beneficial uses within Reach 83.

TABLE 3-6
ELECTRICAL CONDUCTIVITY AND TOTAL DISSOLVED SOLIDS

PARAMETER	WATER QUALITY OBJECTIVES	APPLICABLE WATER BODIES
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)
	Shall not exceed 1550 micromhos/cm (as a 30-day running average), except during Extended Dry Periods[3], when concentrations shall not exceed 2470 micromhos/cm (as a 30-day running average) and 2200 micromhos/cm (as an annual average using at a minimum the previous four quarterly samples)	San Joaquin River between the Mouth of Merced River and the Airport Way Bridge near Vernalis (83)

[3] See Page 4-70 for definition of an Extended Dry Period

TABLE 3-6
ELECTRICAL CONDUCTIVITY AND TOTAL DISSOLVED SOLIDS

PARAMETER	WATER QUALITY OBJECTIVES	APPLICABLE WATER BODIES
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)

3.1.14.2 Electrical Conductivity, Total Dissolved Solids, and Chloride--Delta Waters

See the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, 2006, for salinity objectives applicable in the Delta.

3.1.15 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.

3.1.16 Settleable Material

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

3.1.17 Suspended Material

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

3.1.18 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.

3.1.19 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 *2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*.

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 3-7. 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 3-7
SPECIFIC TEMPERATURE OBJECTIVES

DATES	APPLICABLE WATER BODY
From 1 December to 15 March, the maximum temperature shall be 55°F. 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.	Sacramento River from its source to Box Canyon Reservoir (9); Sacramento River from Box Canyon Dam to Shasta Lake (11)
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)

The following site-specific objective replaces the general temperature objective, above, in its entirety for the listed water body:

For Deer Creek, source to Cosumnes River, temperature changes due to controllable factors shall not cause creek temperatures to exceed the objectives specified in Table 3-8.

TABLE 3-8
DEER CREEK TEMPERATURE OBJECTIVES

Date	Daily Maximum (ºF)[a]	Monthly Average (ºF)[b]
January and February	63	58
March	65	60
April	71	64
May	77	69
June	81	74
July through Sept.	81	77
October	77	72
November	73	65
December	65	58

a Maximum not to be exceeded.
b Defined as a calendar month average

3.1.20 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 State Water Board Division of Drinking Water Programs, 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.

3.1.21 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 less than 1 Nephelometric Turbidity Unit (NTU), controllable factors shall not cause downstream turbidity to exceed 2

- Where natural turbidity is between 1 and 5 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.

For Deer Creek, source to Cosumnes River:

- When the dilution ratio for discharges is less than 20:1 and where natural turbidity is less than 1 Nephelometric Turbidity Unit (NTU), discharges shall not cause the receiving water daily average turbidity to exceed 2 NTUs or daily maximum turbidity to exceed 5 NTUs. Where natural turbidity is between 1 and 5 NTUs, dischargers shall not cause receiving water daily average turbidity to increase more than 1 NTU or daily maximum turbidity to exceed 5 NTUs

- Where discharge dilution ratio is 20:1 or greater, or where natural turbidity is greater than 5 NTUs, the general turbidity objectives shall apply.

3.2 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.

3.2.1 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.

3.2.2 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.

3.2.3 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.

3.2.4 Tastes and Odors

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

3.2.5 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.

4 IMPLEMENTATION

The Porter-Cologne Water Quality Control Act states that basin plans consist of beneficial uses, water quality objectives and a program of implementation for achieving their water quality objectives [Water Code Section 13050(j)]. The implementation program shall include, but not be limited to:

(1) A description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate action by any entity, public or private;

(2) A time schedule for the actions to be taken; and,

(3) A description of surveillance to be undertaken to determine compliance with the objectives (Water Code Section 13242).

In addition, State law requires that basin plans indicate estimates of the total cost and identify potential sources of funding of any agricultural water quality control program prior to its implementation. (Water Code Section 13141). This chapter of the Basin Plan responds to all but the surveillance requirement. That is described in Chapter 5.

This chapter is organized as follows: The first section contains a general description of water quality concerns. These are organized by discharger type (e.g., agriculture, silviculture, mines, etc.). The second section lists programs, plans and policies which should result in the achievement of most of the water quality objectives in this plan. This section includes descriptions of State Water Board policies, statewide plans, statewide programs dealing with specific waste discharge problems (e.g., underground tanks, storm water, solid waste disposal sites, etc.), memoranda of understanding, management agency agreements, memoranda of agreement, Regional Water Board policies, a listing of Regional Water Board prohibition areas, and Regional Water Board guidelines addressing specific water quality problems. The third section contains recommendations for appropriate action by entities other than the Regional Water Board. The fourth section describes how; within the framework of the programs, plans and policies discussed in the second section; the Regional Water Board integrates water quality control activities into a continuing planning process. The fifth section identifies the current actions and the time schedule for future actions of the Regional Water Board to achieve compliance with water quality objectives where the programs, plans and policies in the second section are not adequate. The last section lists the estimated costs and funding sources for agricultural water quality control programs that are implemented by the Regional Water Board.

4.1 WATER QUALITY CONCERNS

Water quality concerns are existing or potential water quality problems, i.e., impairments of beneficial uses or degradations of water quality. At any given time, water quality problems generally reflect the intensity of activities of key discharge sources and the volume, quality, and uses of the receiving waters affected by the discharges.

Historic and ongoing point and nonpoint source discharges impact surface waters. Significant portions of major rivers and the Delta are impaired, to some degree, by discharges from agriculture, mines, urban areas and industries. Upstream, small streams and tributaries to the Rivers are impaired or threatened because of discharges from mines, silviculture activities, and urban development activities. Control approaches may differ depending on the source of the problem.

A variety of historic and ongoing point and non-point industrial, urban, and agricultural activities degrade the quality of ground water. Discharges to ground water associated with these activities include industrial and agricultural chemical use and spills; underground and above ground tank and sump leaks; landfill leachate and gas releases; septic tank failures; improper animal waste management; and chemical seepage via shallow drainage wells and abandoned wells. The resulting impacts on ground water quality from these discharges are often long-term and costly to treat or remediate. Consequently, as discharges are identified, containment and cleanup of source areas and plumes must be undertaken as quickly as possible. Furthermore, activities that may potentially impact ground water must be managed to ensure that ground water quality is protected.

Improper management of waste materials and spillage of industrial fluids have degraded or polluted ground water resources beneath military bases, rail yards, wood treating facilities, aerospace manufacturing and testing operations, municipal gas plants, fuel tank farms, pesticide formulators, dry cleaners, and other industrial facilities. Many of the sites contain high concentrations of contaminants in soils, which continue to be sources of ground water degradation and pollution, until remediated.

Our knowledge of amounts and types of problems associated with discharge activities change over time. Early federal and state control efforts tended to focus on the most understood or visible problems such as the discharge of raw sewage to rivers and streams. As these problems were controlled and as pollutant detection and measurement methods improved, regulatory emphasis shifted. For example, control of toxic discharges is now a major concern. Toxicity can be associated with many discharge activities. Its effects may be first expressed as acute or chronic reductions in the number of organisms in receiving waters. Minute amounts of toxic materials may also impair beneficial uses from accumulation in tissues or sediments.

Discharges are sometimes sorted into point source and nonpoint source categories. A point source discharge usually refers to waste emanating from a single, identifiable place. A nonpoint source discharge usually refers to waste emanating from diffused locations. The Regional Water Board may control either type of discharge, but the control approaches may differ.

Salt management is becoming increasingly important in the San Joaquin Valley for urban and agricultural interests. If current practices for discharging waters containing elevated levels of salt continue unabated, the San Joaquin Valley can have a large portion of its ground water severely degraded within a few decades. Therefore, the Regional Water Board will pursue strategies that will achieve the availability of a valley-wide drain for the discharge of agricultural wastewaters and drain waters degraded by elevated levels of salt and in which nutrient and toxic material concentrations meet applicable standards.

Following is a brief description of the water quality impacts associated with basin discharge activities along with some general control considerations.

4.1.1 Agriculture

Agricultural activities affect water quality in a number of ways. There are unique problems associated with irrigated agriculture, agricultural support activities, and animal confinement operations because of the volume of water used and the diffused nature of many of the discharges.

4.1.1.1 Irrigated Agriculture

Irrigated agriculture accounts for most water use in the two sub-basins. Both the San Joaquin and the Sacramento Rivers carry substantial amounts of agricultural return water or drainage. Agricultural drainage contributes salts, nutrients, pesticides, trace elements, sediments, and other by-products that affect the water quality of the rivers and the Delta.

There is a Memorandum of Understanding between the State Water Board and Department of Pesticide Regulation describing the role of each agency with regard to pesticide regulation.

Salt management is critical to agriculture in the Central Valley. Evaporation and crop transpiration remove water from soils which can result in an accumulation of salts in the root zone of the soils at levels that retard or inhibit plant growth. Additional amounts of water often are applied to leach the salts below the root zones. The leached salts can reach ground or surface water. The movement of the salts to surface waters may be a natural occurrence of subsurface flows or it can result from the surface water discharge of subsurface collection systems (often called tile drains) which are routinely employed in areas of the Central Valley where farm lands have poor drainage capabilities. The tile drainage practice consists of installing collection systems below the root zone of the crops to drain soils that would otherwise stay saturated because of subsurface conditions that restrict drainage. Tile drain installation may result in TDS concentrations in drainage water many times greater than in the irrigation water that was applied to the crops. Tile drain water can also contain pesticides, trace elements, and nutrients.

Pesticides and nutrients are also major ingredients of surface agricultural drainage. They have found their way to ground and surface waters in many areas of the basins. Fish and aquatic wildlife deaths attributable to pesticide contamination of surface water occur periodically.

Nitrate and DBCP (1,2-Dibromo-3-chloropropane) levels exceeding the State drinking water standards occur extensively in ground water in the basins and public and domestic supply wells have been closed because of DBCP, EDB, nitrates, and other contaminants in several locations.

Discharge of sediment is another problem encountered with agriculture. Sedimentation impairs fisheries and, by virtue of the characteristics of many organic and inorganic compounds to bind to soil particles, it serves to distribute and circulate toxic substances through the riparian, estuarine, and marine systems. Sedimentation also increases the costs of pumping and treating water for municipal and industrial use. An additional significant impact of sediment in runoff is the sediment's direct smothering effect on bottom dwelling communities.

The Regional Water Board approaches problems related to irrigated agriculture as it does other categories of problems. Staff are assigned to identify and evaluate beneficial use impairments associated with agricultural discharges. Control actions are developed and implemented as appropriate per the schedules identified through the continuous planning process (see section titled, "ACTIONS AND SCHEDULE TO ACHIEVE WATER QUALITY OBJECTIVES").

4.1.1.2 Agricultural Support Activities

These are the activities associated with the application of pesticides, disposal of pesticide rinse waters, and formulation of pesticides and fertilizers. Major water quality problems connected with all of these operations stem from the discharge of waters used to clean equipment or work areas. The Region has confirmed cases of ground water contamination as a result of improper containment and disposal of rinse water.

Many of the application facilities fall under Regional Water Board regulatory programs. When appropriate, best management practices are recommended. Regional Water Board staff also inspects high risk sites to evaluate compliance. Enforcement strategies are implemented as warranted.

4.1.1.3 Animal Confinement Operations

Runoff from animal confinement facilities (e.g., stockyards, dairies, poultry ranches) can impair both surface and ground water beneficial uses. The animal wastes may produce significant amounts of coliform, ammonia, nitrate, and TDS contamination. The greatest potential for water quality problems has historically stemmed from the overloading of the facilities' waste containment and treatment ponds during the rainy season and inappropriate application of wastewater and manure. Most of these facilities are not operating under waste discharge requirements (WDRs). However, waste management at all confined animal facilities must comply with specific regulations and large facilities must obtain an NPDES storm water permit.

4.1.2 Silviculture

Forest management activities, principally timber harvesting and application of herbicides, have the potential to impact beneficial uses. Timber harvest activities annually take place on tens of thousands of acres of private and federal land in the Central Valley Region and they may affect water quality throughout the area being harvested. Erosion can result from road construction, logging, and post-logging operations. Logging debris may be deposited in streams. Landslides and other mass soil movements can also occur as a result of timber operations.

Herbicides may be used in silviculture to reduce commercial timber competition from weeds, grasses, and other plants or to prepare a site for planting of commercial species by eliminating existing vegetation. Use of herbicides has caused concern among regulatory agencies and the public because of the possibility of transport from target sites to streams by wind and water runoff.

The State and Regional Water Boards entered into agreements with both the U.S. Forest Service and the California Department of Forestry and Fire Protection which require these agencies to control nonpoint source discharges by implementing control actions certified by the State Water Board as best management practices (BMPs). The Regional Water Board enforces compliance with BMP implementation and may impose control actions above and beyond what is specified in the agreements if the practices are not applied correctly or do not protect water quality. Point source discharges on federal and state and private forest lands are regulated through waste discharge limits.

4.1.3 Municipalities and Industries

Municipal and industrial point source discharges to surface waters are generally controlled through National Pollutant Discharge Elimination System (NPDES) permits. Although the NPDES program was established by the Clean Water Act, the permits are prepared and enforced by the Regional Water Boards per California's authority for the Act. The number of cases of ground water pollution attributable to industrial or municipal sources has increased steadily. For example, the Region's inventory of underground storage tanks indicates the number of leaking tanks is high. Ground water contamination from other industrial sources generally occurs from practices of disposing of fluids or other materials used in production processes. Waste compounds have been discharged directly to unlined sumps, pits, or depressions and spread on soils. In some cases, these disposal practices went on many years before they were discovered or discontinued. Leaking municipal or industrial sewer lines also contribute to ground water pollution.

The promulgation of EPA sludge regulations under section 503 of the Clean Water Act and the adoption of water quality objectives for toxic pollutants pursuant to section 303(c)(2)(B) will require that NPDES permits, upon renewal, be updated to reflect these new regulations. Once effluent limitations sufficient to comply with sludge requirements and water quality objectives for toxic pollutants have been placed into NPDES permits, POTWs subject to pretreatment program requirements will be required to update their local limits consistent with EPA pretreatment program regulations and guidance.

4.1.4 Storm Water

Runoff from residential and industrial areas also contributes to water quality degradation. Urban storm water runoff contains pesticides, oil, grease, heavy metals, polynuclear aromatic hydrocarbons, other organics, and nutrients. Because these pollutants accumulate during the dry summer months, the first major autumn storm can flush a highly concentrated load to receiving waters and catch basins. Combined storm and sanitary systems may result in some runoff to sewage treatment plants. In other cases, storm water collection wells can produce direct discharges to ground water. Impacts of storm water contaminants on surface and ground waters are an important concern.

The "Control Action Considerations of the State Water Board" section in Chapter 4 provides more detail on how the Regional Water Board regulates storm water.

4.1.5 Mineral Exploration and Extraction

Mineral exploration and extraction discharges are associated with several ore, geothermal, and petroleum/natural gas activities. The discharge of greatest concern in the Sacramento and San Joaquin River Basins is the result of ore exploration and extraction.

Drainage and runoff from mines and various operations associated with mining can result in serious impacts to ground and surface water beneficial uses, if not properly managed. Along much of the east side of the Coast Range, runoff, drainage, and erosion from old mercury mines is a problem that has resulted in high levels of mercury in aquatic environments and fish tissue. There are also major metal and acid discharges associated with abandoned copper mines in the Sierra/ Cascades drainages. Sedimentation can be a problem in the construction and operation of many mines.

Within the past decade there has been a significant increase in the amount of gold extraction and processing in the Sierra foothills and in the Coast Ranges. Most of these operations have been made possible by advances in technology, permitting the economical extraction of minute quantities of gold from large volumes of ore with the use of cyanide and other reagents by heap and vat leach methods, and by the current high price of gold on world markets. Advances in ore and waste rock handling techniques have made open pit mining more profitable and common. These mining operations involve the handling and management of large quantities of ore, potentially-toxic chemical reagents, tailings, waste rock, and spent leaching solutions in piles, tailings ponds, and impoundments. If not carefully managed, these operations have the potential to leach toxic reagents, heavy metals, salts, and acidic drainage waters into surface and ground water resources. Mining waste management facilities and associated mining operations are regulated through the issuance of waste discharger requirements under the State and Regional Water Boards' hazardous and solid waste regulatory program (Title 23, California Code of Regulations (CCR), Division 3, Chapter 15 and Title 27, CCR, Division 2, Subdivision 1).

Efforts to control drainage have gradually expanded over the years. Staff assessments of mine water quality problems done in 1979 and 1992 helped direct the Regional Water Board's approach to the problems. When other options were exhausted, the Regional Water Board has used public funds to abate pollution from these mines.

Geothermal operations in the basins are centered in the Geysers Area of Lake County. Potential impacts to water quality are caused by soil erosion from road construction and site preparation, high pressure steam blowouts, and accidental spills of materials from drilling operations, power plants, steam condensate lines, and waste transport accidents. Bentonite clay, boron, ammonia, sodium hydroxide, sulfur compounds, heavy metals, and petroleum products are found in various concentrations in mud sumps, steam condensate lines, and sulfide abatement sludge. Operational failures can release these substances into waterways.

4.1.6 Hazardous and Non-Hazardous Waste Disposal

Discharges of solid, semi-solid, and liquid wastes to landfills, waste piles, surface impoundments, pits, trenches, tailings ponds, natural depressions and land treatment facilities (collectively called "waste management units") have the potential to create sources of pollution affecting the quality of waters of the State. Unlike surface waters which often have the capacity to assimilate discharged waste constituents, ground waters have little or no assimilative capacity, due to their slow migration rate, lack of aeration, lower biological activity, and laminar flow patterns. If the concentrations of constituents in the land-discharged waste are sufficiently high to prevent the waste from being classified as "inert waste" under 27 CCR, Section 20230, discharges of such wastes to waste management units require long term containment or active treatment following the discharge in order to prevent waste or waste constituents from migrating to and impairing the beneficial uses of waters of the State. Pollutants from such discharges may continue to affect water quality long after the discharge of new waste to the unit has ceased, either because of continued leachate or gas discharges from the unit, or because pollutants have accumulated in underlying soils from which they are gradually released to ground water.

Landfills for disposal of municipal or industrial solid waste (solid waste disposal sites) are the major categories of waste management units in the region, but there are also surface impoundments used for storage or evaporative treatment of liquid wastes, waste piles for the storage of solid wastes, and land treatment units for the biological treatment of semi-solid sludges from wastewater treatment facilities and liquid wastes from cannery and other industrial operations. Sumps, trenches, and soil depressions have been used in the past for liquid waste disposal. Mining waste management units (tailings ponds, surface impoundments, and waste piles) also represent a significant portion of the waste management units in the Region. The Regional Water Board issues waste discharge requirements to ensure that these discharges are properly contained to protect the Region's water resources from degradation, and to ensure that dischargers undertake effective monitoring to verify continued compliance with requirements.

These discharges, and the waste management units at which the wastes are discharged, are subject to concurrent regulation by other State and local agencies responsible for land use planning, solid waste management, and hazardous waste management. "Local Enforcement Agencies" (mainly cities and counties) implement the State's solid waste management laws and local ordinances governing the siting, design, and operation of solid waste disposal facilities (usually landfills) with the concurrence of the California Integrated Waste Management Board (CIWMB). The CIWMB also has direct responsibility for review and approval of plans for closure and post-closure maintenance of solid waste landfills. The Department of Toxic Substance Control (DTSC) issues permits for all hazardous waste treatment, storage, and disposal facilities (which include hazardous waste incinerators, tanks, and warehouses where hazardous wastes are stored in drums as well as landfills, waste piles, surface impoundments, and land treatment units). The State Water Board, Regional Water Boards, CIWMB, and DTSC have entered into a Memoranda of Understanding to coordinate their respective roles in the concurrent regulation of these discharges. In addition, the Toxic Pits Cleanup Act of 1984 precludes the storage or disposal of liquid hazardous wastes or hazardous wastes containing free liquids. The Regional Water Board is responsible for enforcing this Act under the authority of the Health and Safety Code, Section 25208 et seq. (See section 4.2.1.2.3 for further description).

The statutes and regulations governing the discharges of both hazardous and non-hazardous wastes have been revised and strengthened in the last few years. The discharge of municipal solid wastes to land are closely regulated and monitored; however, some water quality problems have been detected and are being addressed. Recent monitoring efforts under the State and Regional Water Boards' Title 23, CCR Division 3, Chapter 15; Title 27 CCR, Division 2, Subdivision 1; and SWAT programs have revealed that discharges of municipal solid wastes to unlined and single clay lined landfills have resulted in ground water degradation and pollution by volatile organic constituents (VOCs) and other waste constituents. VOCs are components of many household hazardous wastes and certain industrial wastes that are present within municipal solid waste streams. VOCs can easily migrate from landfills either in leachate or by vapor-phase transport. Clay liners and natural clay formations between discharged wastes and ground waters are largely ineffective in preventing water quality impacts from municipal solid waste constituents. In a recently adopted policy for water quality control, the State Water Board found that "[r]esearch on liner systems for landfills indicates that (a) single clay liners will only delay, rather than preclude, the onset of leachate leakage, and (b) the use of composite liners represents the most effective approach for reliably containing leachate and landfill gas" (State Water Board Resolution No. 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*).

As a result of similar information on a national scale, the U.S. Environmental Protection Agency (USEPA) has adopted new regulations under Subtitle D of the Resource Conservation and Recovery Act (RCRA) which require the containment of municipal solid wastes by composite liners and leachate collection systems. Composite liners consist of a flexible synthetic membrane component placed above and in intimate contact with a compacted low-permeability soil component. This liner system enhances the effectiveness of the leachate collection and removal system and provides a barrier to vapor-phase transport of VOCs from the unit. Regional Water Boards and the CIWMB are implementing these new regulations in California under a policy for water quality control from the State Water Board (Resolution No. 93-62, discussed above) and new regulations from CIWMB. While a single composite liner of the type that can be approved under Subtitle D regulations is a significant improvement over past municipal solid waste containment systems, it should be noted, however, that single composite liners will not necessarily provide complete protection for ground water resources.

4.1.7 Contaminated Sites Threatening Ground Water Quality

The Regional Water Board has identified over 7000 sites with confirmed releases of constituents of concern which have adversely impacted or threaten to impact the quality of ground water resources. Sources of pollution at these sites include: leaking underground storage tanks and sumps; leaking above ground tanks; leaking pipelines; leaking waste management units, such as landfills, disposal pits, trenches and ponds; surface spills from chemical handling, transfer or storage; poor housekeeping; and illegal disposal. A policy for investigation and cleanup of such sites is contained in the section of this chapter titled “Policy for Investigation and Cleanup of Contaminated Sites.”

4.1.8 Drinking Water Policy

The Regional Water Board supports protection of the MUN beneficial use in surface waters of the Sacramento-San Joaquin Delta and its tributaries. The Delta provides drinking water to over 25 million people in the Southern California, Central Valley, Central Coast, and San Francisco Bay regions, and several million people obtain their water supply from the tributaries of the Delta. The tributaries of the Sacramento and San Joaquin Rivers that originate in the Cascades and Sierra Nevada Mountains generally have high water quality. However, as the tributaries flow into lower elevations, they are affected by natural processes, urban, industrial, and agricultural land uses, and a highly managed water supply system. This Policy pertains to the

following drinking water constituents of concern: organic carbon, *Cryptosporidium*, *Giardia*, salt and nutrients. Work on the Policy was initiated in 2000 in response to concerns that these constituents might pose significant drinking water risks and result in significant additional treatment costs for water agencies due to the potential increased loading as a result of population growth in the watershed. Source control evaluations conducted in 2011 show that the load of organic carbon and nutrients will not likely increase in the future as a result of current regulatory actions. Monitoring of *Cryptosporidium* at public water system intakes from 2006 to 2011, as required by USEPA regulations, has not resulted in additional treatment requirements for public water systems treating water from the Delta and its tributaries. The *Cryptosporidium* and *Giardia* narrative objective and associated implementation program are to maintain existing conditions for public water systems, to comply with the Policy with Respect to Maintaining High Quality of Water in California and the Antidegradation Implementation Policy.

Other elements of the Drinking Water Policy include the following:

- The Basin Plan contains the following elements that address the protection of the MUN beneficial use:

    - All water quality objectives are developed to protect the MUN beneficial use unless otherwise stated. The Basin Plan also includes specific narrative and numeric objectives to protect the MUN beneficial use.
    - The existing narrative water quality objective for chemical constituents includes drinking water chemical constituents of concern, such as organic carbon.
    - The Implementation Chapter of the Basin Plan contains the following Policies relevant to the protection of the MUN beneficial use:

        - Resolution No. 68-16, Policy with Respect to Maintaining High Quality of Water in California (Section 4.2.1.1.2).
        - Resolution No. 88-63, Sources of Drinking Water Policy (Section 4.2.1.1.8).
        - Antidegradation Implementation Policy (Section 4.2.2.1.7).
        - Policy for Application of Water Quality Objectives (Section 4.2.2.1.9).
        - Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California; a.k.a. State Implementation Plan or SIP (Section 4.2.1.1.15)

    - Continued coordinated monitoring and modeling of the identified drinking water constituents of concern is necessary to confirm that concentrations will not likely increase to levels that adversely affect beneficial uses. Monitoring completed to support the implementation of the Drinking Water Policy shall be coordinated with other monitoring programs already in place as well as the Delta Regional Monitoring Program. The Delta Regional Monitoring Program is a Regional Water Board initiated stakeholder effort to address the need for a comprehensive monitoring, assessment and reporting program.

- To further protect the public health, drinking water utilities employ a multibarrier approach to control contaminants that includes source water protection, water treatment, and protection of distribution system water quality.

- Source evaluations based on 2011 permit conditions for publically owned treatment works, urban runoff, and irrigated agriculture, indicate that concentrations of organic carbon at public water system intakes are not expected to increase over time.

- Drinking water constituents of concern shall continue to be considered when NPDES facilities conduct their Antidegradation analysis.

- If there are significant changes to the characteristics of the project area, drinking water treatment standards based on source water quality, or knowledge regarding drinking water constituents of concern, the Central Valley Water Board may consider the need to reevaluate the Drinking Water Policy. The Drinking Water Policy will be reviewed by the Regional Water Board in 2023 to determine if the provisions should be revised.

- The Regional Water Board supports and recognizes the importance of USEPA's efforts to refine analytical methods to measure *Cryptosporidium* and *Giardia* in water.

- The Regional Water Board supports refinement of analytical modeling efforts to improve understanding of the fate and transport of drinking water constituents of concern.

- It is appropriate to use *Cryptosporidium* concentrations as an indicator of compliance with the *Cryptosporidium* and *Giardia* objective since *Cryptosporidium* is not as readily treated as *Giardia* when conventional drinking water treatment processes are employed, and USEPA promulgated new drinking water requirements specifically to address *Cryptosporidium*.

4.1.9 Other Discharge Activities

Some remaining discharges of major concern include sedimentation from land development activities in the foothills and mountains, leachate from septic tank/individual wastewater disposal systems, and dredging and dredging spoils runoff.

Many of the foothill/mountain counties in the sub-basins face high growth rates. Sedimentation from the land disturbances associated with residential and commercial development is an increasing problem that, when added to the sedimentation resulting from farming and silvicultural operation, may require establishment of a region-wide erosion control program. The Regional Water Board's current practice is to emphasize local government control of erosion caused by residential development. Erosion control guidelines are included in the erosion/sedimentation action plan which is in the Appendix.

Improperly located, designed, constructed and/or maintained on-site wastewater treatment and disposal systems can result in ground and surface water degradation and public health hazards. The Regional Water Board's approach is that the control of individual wastewater treatment and disposal systems is best accomplished by local environmental health departments enforcing county ordinances designed to provide protection to ground and surface waters. Consistent with this approach, the Regional Water Board implements the State Water Board's *Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems* (OWTS Policy).

The energy crisis of the 1970s resulted in a surge of small hydroelectric facility development in the mountains and foothills. Impairments to beneficial uses may occur because of erosion from construction and changes in water temperature. The Regional Water Board has published guidelines for small hydro-electric facilities (see Guidelines section of this chapter and Appendix) to help address some of the problems associated with small hydroelectric plants.

Dredging is a problem because the process can result in turbidity and the reintroduction and resuspension of harmful metal or organic materials. This latter effect occurs directly as a result of the displacement of sediment at the dredging site and indirectly as a result of erosion of dredge spoil to surface waters at the deposition site. Another major concern is water quality problems associated with the dredge spoils disposal site. There is much dredging of the Sacramento and San Joaquin Rivers and the Delta because of the need to maintain the ship channels to the Ports of Sacramento and Stockton. The Regional Water Board regulates

dredging operations on a case-by-case basis. Operational criteria may result from permits or the water quality certification requirements stemming from Section 401(a) of the Clean Water Act.

In addition to the problems described above, the Regional Water Board responds to spontaneous discharges such as spills, leaks and overflows. These can have cumulatively or individually significant effects on beneficial uses of ground and surface waters.

4.1.10 Water Bodies with Special Water Quality Problems

Water quality management may require the identification and ranking of water bodies with regard to certain quality parameters. Water Quality Limited Segments (WQLSs) are one example of expressing water quality problems by water bodies. WQLSs are those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate effluent limitations for point sources (40 CFR 130, et seq.).

Additional treatment beyond minimum federal requirements will be imposed on dischargers to WQLSs. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.

The Regional Water Board's list of WQLSs is updated biennially as required by Clean Water Act Section 303(d). The current list may be obtained by contacting the Regional Water Board office.

4.2 THE NATURE OF CONTROL ACTIONS IMPLEMENTED BY THE REGIONAL WATER BOARD

The nature of actions to achieve water quality objectives consists of Regional Water Board efforts:

(1) to identify potential water quality problems;

(2) to confirm and characterize water quality problems through assessments for source, frequency, duration, extent, fate, and severity;

(3) to remedy water quality problems through imposing or enforcing appropriate measures; and

(4) to monitor problem areas to assess effectiveness of the remedial measures.

Generally, the actions associated with the first step consist of surveys or reviews of survey information and other data sources to isolate possible impairments of beneficial uses or water quality.

The characterization step usually involves studies that attempt to answer questions about a water quality problem's source, extent, duration, frequency, and severity. Information on these parameters is essential to confirm a problem and prepare for remedy. The Regional Water Board may gain this information through its own work or through data submittals requested of actual or potential dischargers under Section 13267 of the California Water Code.

Problem remedy calls for the Regional Water Board to prevent or clean up problems. A common means of prevention is through the issuance of National Pollutant Discharge Elimination System (NPDES) permits, waste discharge requirements (WDRs), discharge prohibitions, and other discharge restrictions. Cleanup is implemented through enforcement measures such as Cease and Desist (C&D) and Cleanup and Abatement (C&A) orders. The NPDES is a requirement of

the Federal Clean Water Act (Section 402) and California has implementing responsibility. The national permit system only applies to certain surface water discharges. WDRs, which encompass permits, are called for by State law, Water Code Section 13260, et seq. The WDRs system is not as restricted as the Federal NPDES. As practical, WDRs may be used to control any type of discharge to ground or surface waters. C&D and C&A orders are two of the enforcement tools available to the Regional Water Board to correct actual or potential violations of WDRs, NPDES permits, prohibitions, and other water quality control obligations.

The details of the monitoring step are explained in Chapter 5. In general, the Regional Water Board has wide latitude to require actual and potential dischargers to submit monitoring and surveillance information, in addition to using State Water Board data or collecting its own.

Whatever actions the Regional Water Board implements must be consistent with the Basin Plan's beneficial uses and water quality objectives, as well as certain State and Regional Water Boards' policies, plans, agreements, prohibitions, guidance, and other restrictions or requirements. These considerations are described below and included in the Appendix when noted.

4.2.1 Control Action Considerations of the State Water Board

4.2.1.1 Policies and Plans

The State Water Board adopts water quality control policies and water quality control plans to which Regional Water Board actions must conform. Sections 13146 and 13247 of the California Water Code generally require that, in carrying out activities which affect water quality, all state agencies, departments, boards and offices must comply with all policies for water quality control and with applicable water quality control plans approved or adopted by the State Water Board. Two of the plans, the Ocean Plan and the Tahoe Plan, do not affect the Sacramento and San Joaquin River Basins. The policies and plans that are applicable are described below.

4.2.1.1.1 The State Policy for Water Quality Control

This policy declares the State Water Board's intent to protect water quality through the implementation of water resources management programs and serves as the general basis for subsequent water quality control policies. The policy was adopted by the State Water Board in 1972. See Appendix Item 1.

4.2.1.1.2 State Water Board Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Water in California

The State Water Board adopted this policy on 28 October 1968. The policy generally restricts the Regional Water Board and dischargers from reducing the water quality of surface or ground waters even though such a reduction in water quality might still allow the protection of the beneficial uses associated with the water prior to the quality reduction. The goal of the policy is to maintain high quality waters.

Changes in water quality are allowed only if the change is consistent with maximum benefit to the people of the State; does not unreasonably affect present and anticipated beneficial uses; and, does not result in water quality less than that prescribed in water quality control plans or policies.

USEPA water quality standards regulations require each state to adopt an “antidegradation” policy and specify the minimum requirements for the policy (40 CFR 131.12). The State Water Board has interpreted State Water Board Resolution No. 68-16 to incorporate the federal

antidegradation policy. The Regional Water Board implements Resolution No. 68-16 consistent with the federal antidegradation policy where the federal regulations apply. Resolution No. 68-16 applies to both ground and surface waters of the state. Resolution No. 68-16 is Appendix Item 2; the federal policy is Appendix Item 39.

4.2.1.1.3 State Water Board Resolution No. 74-43, The Water Quality Control Policy for the Enclosed Bays and Estuaries of California

This policy was adopted by the State Water Board on 16 May 1974 and provides water quality principles and guidelines for the prevention of water quality degradation in enclosed bays and estuaries to protect the beneficial uses of such waters. The Regional Water Board must enforce the policy and take actions consistent with its provisions. (This policy does not apply to wastes from boats or land runoff except as specifically indicated for siltation and combined sewer flows.) See Appendix Item 3.

4.2.1.1.4 State Water Board Resolution No. 75-58, Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling

This policy was adopted by the State Water Board in June 1975. Its purpose is to provide consistent principles and guidance for supplementary waste discharge requirements or other water quality control actions for thermal powerplants using inland waters for cooling. The Regional Water Board is responsible for its enforcement. See Appendix Item 4.

4.2.1.1.5 State Water Board Resolution No. 77-1, Policy and Action Plan for Water Reclamation in California

The policy was adopted 6 January 1977. Among other things, the policy requires the Regional Water Boards to conduct reclamation surveys and specifies reclamation actions to be implemented by the State and Regional Water Boards and other agencies. The policy and action plan are contained in the State Water Board report titled, *Policy and Action Plan for Water Reclamation in California*. See Appendix Item 5.

4.2.1.1.6 State Water Board Resolution No. 87-22, Policy on the Disposal of Shredder Waste

This State Water Board Resolution, adopted 19 March 1987, permits the disposal into certain landfills of wastes, produced by the mechanical destruction of car bodies, old appliances and similar castoffs, under specific conditions designated and enforced by the Regional Water Boards. See Appendix Item 6.

4.2.1.1.7 State Water Board Resolution No. 88-23, Policy Regarding the Underground Storage Tanks Pilot Program

The State Water Board adopted this policy on 18 February 1988. The policy implements a pilot program to fund oversight of remedial action at leaking underground storage tank sites, in cooperation with the California Department of Public Health (formerly the California Department of Health Services). Oversight may be deferred to the Regional Water Boards. See Appendix Item 7.

4.2.1.1.8 State Water Board Resolution No. 88-63, Sources of Drinking Water Policy

This policy for water quality control, adopted on 19 May 1988, is essential to the designation of beneficial uses. The policy specifies that, except under specifically defined exceptions, all surface and ground waters of the state are to be protected as existing or potential sources of

municipal and domestic supply. The specific exceptions include waters with existing high total dissolved solids concentrations (greater than 3000 mg/l), low sustainable yield (less than 200 gallons per day for a single well), waters with contamination that cannot be treated for domestic use using best management practices or best economically achievable treatment practices, waters within particular municipal, industrial and agricultural wastewater conveyance and holding facilities, and regulated geothermal ground waters. Where the Regional Water Board finds that one of the exceptions applies, it may remove the municipal and domestic supply beneficial use designation for the particular body of water through a formal Basin Plan amendment and a public hearing, followed by approval of such an amendment by the State Water Board and the Office of Administrative Law. See Appendix Item 8 for Resolution 88-63 exceptions and Appendix 44 for water bodies that meet one or more of the exceptions.

4.2.1.1.9 State Water Board Resolution No. 90-67, Pollutant Policy Document (PPD)

The PPD was adopted by the State Water Board in 1990, as part of their overall Delta water rights proceedings. The PPD establishes state policy for water quality control to be used by the San Francisco Bay Regional Water Board and the Central Valley Regional Water Board in updating basin plans. The PPD requires the Central Valley Regional Water Board to develop a mass emission strategy for limiting loads of heavy metals, PAHs and selenium entering the Delta. It also requires that specific actions be taken to eliminate the discharge of chlorinated dibenzodioxins and dibenzofurans to the Delta. The PPD describes other actions for controlling antifouling compounds used on boats and for regulating dredging.

4.2.1.1.10 State Water Board Resolution No. 92-49, Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304

This resolution contains policies and procedures for Regional Water Boards to follow for the oversight and regulation of investigations and cleanup and abatement activities from all types of discharge or threat of discharge subject to Section 13304 of the Water Code. It directs Regional Water Boards to ensure that dischargers are required to cleanup and to abate the effect of discharges. This cleanup and abatement shall be done in a manner that promotes attainment of background water quality, or the highest water quality which is reasonable if background levels of water quality cannot be restored. Any cleanup less stringent than background water quality shall be consistent with maximum benefit to the people of the state and not unreasonably affect present and anticipated beneficial uses of such water. See Appendix Item 9.

4.2.1.1.11 State Water Board Resolution No. 93-62, Policy for Regulation of Discharges of Municipal Solid Waste

The policy for water quality control, adopted by State Water Board on 17 June 1993, directs Regional Water Boards to amend waste discharge requirements for municipal solid waste landfills to incorporate pertinent provisions of the federal "Subtitle D" regulations under the Resource Conservation and Recovery Act (40 CFR Parts 257 & 258). The majority of the provisions of the Subtitle D regulations become effective on 9 October 1993. Landfills which are subject to the Subtitle D regulations and the Policy are those which have accepted municipal solid waste on or after 9 October 1991. See Appendix Item 10.

4.2.1.1.12 The Thermal Plan

The Water Quality Control Plan for the Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California was adopted by the State Water Board on 18 May 1972 and amended 18 September 1975. The plan specifies water quality objectives, effluent quality limits, and discharge prohibitions related to thermal characteristics of interstate

waters and waste discharges. See Appendix Item 11. (Note: the State Water Board adopted Resolution No. 92-82 on 22 October 1992, approving an exception to the Thermal Plan for Sacramento Regional County Sanitation District. See Appendix Item 12.)

4.2.1.1.13 The Delta Plan, Water Right Decision 1485, and the Water Quality Control Plan for Salinity

In August 1978, the State Water Board adopted the Delta Plan and Water Right Decision 1485 (D-1485). The Delta Plan contained water quality standards, Delta outflow requirements and export constraints for the Delta. These standards, requirements, and constraints were then implemented in D-1485 by making them conditions of the water right permits for the Central Valley Project and the State Water Project.

When the Delta Plan and accompanying D-1485 were originally issued, the State Water Board committed itself to review the Delta Plan in about ten years. In 1986, the State Court of Appeal issued a decision addressing legal challenges to the Delta Plan and D-1485. The Court directed the State Water Board to take a global view toward its dual responsibilities (water quality and water rights) to the State's water resources.

In response to the Court's decision, the State Water Board adopted the Water Quality Control Plan for Salinity in May 1991. The May 1991 Plan was superceded in May 1995 when the State Water Board adopted the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. This Plan was revised in 2006. The State Water Board's Plan includes water quality objectives for salinity, temperature and dissolved oxygen that are applicable in the Delta.

In December 1999 the State Water Board adopted, and in March 2000 per Order WR 2000-02 revised, Water Right Decisions 1641. This decision amended certain water rights by assigning responsibilities to water right holders to help meet flow objectives intended to implement certain water quality objectives contained in the 1995 Bay-Delta Plan.

Rather than taking any water right action to meet the dissolved oxygen objectives in the 1995 Bay-Delta Plan, the State Water Board directed the Regional Water Board to first prepare a TMDL to achieve the dissolved oxygen objectives and implement it.

4.2.1.1.14 Nonpoint Source Management Plan and the Nonpoint Source Implementation and Enforcement Policy

In December 1999, the State Water Board, in its continuing efforts to control nonpoint source (NPS) pollution in California, adopted the Plan for California's Nonpoint Source Pollution Control Program (NPS Program Plan). The NPS Program Plan upgraded the State's first Nonpoint Source Management Plan adopted by the State Water Board in 1988 (1988 Plan). Upgrading the 1988 Plan with the NPS Program Plan brought the State into compliance with the requirements of Section 319 of the Clean Water Act and Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990.

The NPS Implementation and Enforcement Policy, adopted by the State Water Board on 20 May 2004 (State Water Board Resolution No. 2004-0030), explains how the Porter-Cologne Act mandates and authorities, delegated to the State Water Board and Regional Water Boards by the California Legislature, will be used to implement and enforce the NPS Program Plan. The policy also provides a bridge between the NPS Program Plan and the SWRCB Water Quality Enforcement Policy.

4.2.1.1.15 Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California" (a.k.a. State Implementation Policy or SIP)

The State Water Board adopted a policy that establishes:

(1) Implementation provisions for priority pollutant criteria promulgated by the U.S. Environmental Protection Agency (U.S. EPA) through the National Toxics Rule (40 CFR 131.36) (promulgated on 22 December 1992 and amended on 4 May 1995) and through the California Toxics Rule (40 CFR 131.38) (promulgated on 18 May 2000 and amended on 13 February 2001), and for priority pollutant objectives established by Regional Water Boards in their basin plans; and
(2) Monitoring requirements for 2,3,7,8-TCDD equivalents; and
(3) Chronic toxicity control provisions.

In addition, the SIP includes special provisions for certain types of discharges and factors that could affect the application of other provisions in the SIP. The SIP, including future revisions, is incorporated into this Basin Plan and shall be implemented according to the policy's provisions.

4.2.1.1.16 Water Quality Enforcement Policy (Enforcement Policy) and Policy on Supplemental Environmental Projects (SEP Policy)

The State Water Board adopted the Enforcement Policy to create a framework for identifying and investigating instances of noncompliance, for taking enforcement actions that are appropriate in relation to the nature and severity of the violation, and for prioritizing enforcement resources to achieve maximum environmental benefits. The State Water Board adopted the SEP Policy as an adjunct to the Water Boards' enforcement program and allows for the inclusion of a supplemental environmental project in administrative civil liability actions as long as certain criteria are met to ensure that such a project has environmental value, furthers the goals of the State Water Board and Regional Water Boards, and are subject to appropriate input and oversight by the Water Boards. Both the Enforcement Policy and the SEP Policy, including future revisions, are incorporated into this Basin Plan and shall be implemented according to the policies' provisions.

4.2.1.1.17 Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List

Pursuant to California Water Code section 13191.3(a), this State policy for water quality control describes the process by which the State Water Board and the regional water boards will comply with the listing requirements of section 303(d) of the federal Clean Water Act. The objective of this policy is to establish a standardized approach for developing California's section 303(d) list in order to achieve the overall goal of achieving water quality standards and maintaining beneficial uses in all of California's surface waters.

4.2.1.1.18 Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options

Section 303(d) of the Clean Water Act requires states to identify waters within their borders that are not attaining water quality standards. This State policy for water quality control describes the existing tools and mechanisms that the regional water boards will use to address the water bodies listed as impaired under section 303(d) of the federal Clean Water Act.

4.2.1.1.19 Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits

The Policy authorizes the Regional Water Board to include a compliance schedule in a permit for an existing discharger to implement a new, revised, or newly interpreted water quality objective or criterion in a water quality standard that results in a permit limitation more stringent than the limitation previously imposed.

4.2.1.1.20 Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems (OWTS Policy)

This Policy implements Water Code, Chapter 4.5, Division 7, sections 13290 through 13291.7 by establishing statewide regulations and standards for permitting onsite wastewater systems. The OWTS Policy specifies criteria for existing, replacement, and new onsite systems and establishes a conditional waiver of waste discharge requirements for onsite systems that comply with the policy. The OWTS Policy, including future revisions, is incorporated into this Basin Plan and shall be implemented according to the policy's provisions.

4.2.1.1.21 Policy for Water Quality Control for Recycled Water (Recycled Water Policy)

The Recycled Water Policy establishes requirements to increase the use of recycled water in California. These requirements include the development and adoption of salt/nutrient management plans, regulation of incidental runoff from landscape irrigation with recycled water, criteria and procedures for streamlined permitting of recycled water landscape irrigation projects, procedures for permitting groundwater recharge projects including procedures for demonstrating compliance with the Resolution No, 68-16 (the State Antidegradation Policy), and provisions for addressing constituents of emerging concern. The Recycled Water Policy, including future revisions, is incorporated into this Basin Plan and shall be implemented according to the policy's provisions.

4.2.1.2 Programs

4.2.1.2.1 Discharges of Hazardous Waste to Land, California Code of Regulations Title 23, Division 3, Chapter 15 and Consolidated Regulations for Treatment, Storage, Processing or Disposal of Solid Waste, California Code of Regulations Title 27, Division 2, Subdivision

Title 23, CCR, Division 3 Chapter 15 and Title 27 CCR, Division 2, Subdivision 1 includes regulations governing discharges of hazardous and solid waste to land for treatment, storage, or disposal. The regulations cover landfills, surface impoundments, waste piles, land treatment units, mining waste management units and confined animal facilities. In addition, actions to clean up and abate conditions of pollution or nuisance at contaminated sites are covered by relevant portions of the regulations where contaminated materials are taken off-site for treatment, storage, or disposal and, as feasible, where wastes are contained or remain on-site at the completion of cleanup actions. The regulations classify wastes according to their threat to water quality, classify waste management units according to the degree of protection that they provide for water quality, and provide siting, construction, monitoring, corrective action, closure and post closure maintenance criteria. Chapter 15 requirements are minimum standards for proper management of each waste category. These regulations require the complete containment of wastes which, if discharged to land for treatment, storage or disposal, have the potential to degrade the quality of water resources. Regional Water Boards may impose more stringent requirements to accommodate regional and site-specific conditions.

4.2.1.2.2 Solid Waste Assessment Test (SWAT)

Section 13273, added to the Water Code in 1985 (Assembly Bill 3525), required all owners of both active and inactive nonhazardous landfills to complete a Solid Waste Assessment (SWAT) to determine if hazardous waste constituents have migrated from the landfill into ground water. Pursuant to a list adopted by the State Water Board, 150 site owners statewide per year would complete this evaluation by 2001.

The Regional Water Board must review the SWAT report to determine whether any hazardous waste has migrated into ground water. If so, the Regional Water Board must notify the Department of Toxic Substances Control and the Integrated Waste Management Board, and take appropriate remedial action [CA Water Code Section 13273(e)].

4.2.1.2.3 Toxic Pits Cleanup Act (TPCA)

The Toxic Pits Cleanup Act of 1984 (Section 25208 et seq. of the Health and Safety Code) established a program to ensure that existing surface impoundments are either made safe or closed so that they do not pollute the waters of the state. The Act requires that all impoundments containing liquid hazardous wastes or hazardous wastes containing free liquids be retrofitted with a liner/leachate collection system, or closed by 1 July 1988. Surface impoundments containing hazardous wastes are prohibited within one-half mile upgradient from a potential source of drinking water. The law provided for certain exemptions.

4.2.1.2.4 Underground Storage Tank (UST) Program

The Central Valley UST Program is implemented under Division 20, Chapters 6.7 and 6.75 of the California Health and Safety Code and Title 23, Division 3, Chapter 16 of the California Code of Regulations. The program has two elements: leak prevention, which is implemented statewide by Local Implementing Agencies in 58 counties and 49 cities; and leak investigation and cleanup which is implemented by the Regional Water Board with assistance from the Local Implementing Agencies. Some Counties in the Central Valley Region are under contract with the State Water Board to provide investigation and cleanup oversight on some sites. These Counties are required to implement the requirements of the Basin Plan.

4.2.1.2.5 Aboveground Petroleum Storage Act

The Aboveground Petroleum Storage Act (Chapter 6.67, Division 20, Health and Safety Code) requires owners or operators of aboveground petroleum storage tanks to file a storage statement and pay a fee every two years (beginning 1 July 1990), to take specific actions to prevent spills, and, in certain instances, to implement a ground water monitoring program. Fees are used by staff to inspect facilities and review spill prevention plans. If a site is contaminated, staff oversee cleanup and the tank owner or operator is required to reimburse the Regional Water Board for reasonable costs for that oversight. There are approximately 8000 tank facilities in the region which have filed storage statements.

4.2.1.2.6 Storm Water Regulations

The 1987 Clean Water Act amendments required the USEPA to establish regulations to control storm water discharges associated with industrial activity; discharges from large (serving a population of 250,000 or more) and medium (serving a population of greater than 100,000 but less than 250,000) municipal separate storm sewer systems; and discharges from construction sites.

Federal regulations for storm water discharges were promulgated by the USEPA on 16 November 1990 (40 CFR Parts 122, 123, and 124). The regulations require large and medium size municipalities and specific categories of facilities, which discharge storm water associated with industrial activity, to obtain NPDES permits and to implement Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce or eliminate industrial storm water pollution. Municipal permits establish controls to reduce/eliminate pollutants to the maximum extent possible (MEP) and to effectively prohibit illicit discharges to storm sewer systems.

In 1991 (amended in 1992), the State Water Board adopted a statewide general NPDES permit (Order No. 91-13-DWQ, General Permit No. CAS000001) for storm water discharges associated with industrial activities. The Order applies to facilities which discharge storm water to surface waters, either directly or through a storm drain system, excluding construction activities.

The State Water Board also adopted a statewide general NPDES permit (Order No. 92-08-DWQ, General Permit No. CAS000002) in 1992, which applies to construction projects resulting in land disturbance of five acres or greater.

4.2.1.2.7 U.S. Department of Defense (DOD) Program

The State and Regional Water Board's DOD Program provides regulatory oversight for the restoration and protection of surface and ground water quality during environmental cleanup of military facilities listed in the DOD/State Memorandum of Agreement (DSMOA). The State Water Board will enter into an interagency agreement with the Department of Toxic Substances Control (DTSC) which, in turn, will enter into the DSMOA with DOD for cleanup oversight reimbursement. The State and Regional Water Boards provide regulatory oversight by their authority pursuant to Division 7 of the Water Code and Section 120(f) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Title 42, U.S.C., Section 9620 (f). The DOD enters into a two-year cooperative agreement with DTSC to support DTSC's mandated mission to protect public health and the environment. The DOD Program should continue until DSMOA facility cleanups are completed (20 to 30 years) or Congress decides to terminate State oversight funding.

The cleanup of military facilities is required to be consistent with the applicable provisions of CERCLA (Section 120 relating to Federal Facilities), the Superfund Amendments and Reauthorization Act of 1986 (SARA), the National Contingency Plan, and State laws.

4.2.1.3 State Water Board Management Agency Agreements (MAAs), Memorandum of Agreement (MOA), and Memoranda of Understanding (MOUs)

The Regional Water Board abides by State Water Board agreements with federal and State agencies which have been formalized with either an MAA, MOA, or an MOU signed by the State Water Board.

4.2.1.3.1 U.S. Forest Service Agreement

On 26 February 1981 the State Water Board Executive Director signed an MAA with the U.S. Forest Service (USFS) which waives discharge requirements for certain USFS nonpoint source discharges provided that the Forest Service implements State Water Board approved best management practices (BMPs) and procedures and the provisions of the MAA. The MAA covers all USFS lands in California. Implementation of the BMPs, in conjunction with monitoring and performance review requirements approved by the State and Regional Water Boards, is the

primary method of meeting the Basin Plan's water quality objectives for the activities to which the BMPs apply. The MAA does not include USFS point source discharges and in no way limits the authority of the Regional Water Board to carry out its legal responsibilities for management or regulation of water quality. See Appendix Item 13.

4.2.1.3.2 Department of Toxic Substances Control

On 27 January 1986, the State Water Board Chairperson signed an MOA with the Department of Health Services (later renamed to the Department of Toxic Substances Control) regarding the implementation of the hazardous waste program. The agreement covers surveillance and enforcement related to water quality at landfills, surface impoundments, waste piles, and land treatment facilities that treat, store, or dispose of hazardous waste. It also covers the issuance, modification, or denial of permits to facilities, including the revision of the water quality aspects of hazardous waste management facility siting, design, closure, post-closure, and surface and ground water monitoring and protection. See Appendix Item 14.

4.2.1.3.3 State Water Board Division of Drinking Water Programs

In 1988, the Chairman of the State Water Board signed an MOA with the Department of Health Services (later named the State Water Board Division of Drinking Water Programs) regarding the use of reclaimed water.

The MOA outlines the basic activities of the agencies, allocates primary areas of responsibility and authority between these agencies, and provides for methods and mechanisms to assure coordination for activities related to the use of reclaimed water. See Appendix Item 15.

4.2.1.3.4 California Department of Forestry Agreement

In February 1988, the State Water Board signed an MAA with the California Department of Forestry and Fire Protection (CDFFP) and the California Board of Forestry (BOF), for the purpose of carrying out, pursuant to Section 208 of the Federal Clean Water Act, those portions of the State's Water Quality Management Plan (WQMP) related to controlling water quality impacts caused by silvicultural activities on nonfederal forest lands. As with the USFS MAA, the CDFFP agreement requires the Department to implement certain BMPs to protect water quality from timber harvest and associated activities. Approval of the MAA as a WQMP component by the USEPA results in the Regional Water Boards relinquishing some authority to issue WDRs for State timber operations (Public Resources Code Section 4514.3). However, CDF and the Regional and State Water Boards must still ensure that the operations incorporate BMPs and comply with applicable water quality standards. Appendix F of the MAA also calls for the preparation of a Memorandum of Understanding (MOU) for the Regional Water Boards, the State Water Board, and the CDFFP to prescribe interagency procedures for implementing BMPs. See Appendix Item 16.

4.2.1.3.5 Department of Conservation Agreement

In March 1988, the State Water Board amended a February 1982 MOA with the State Department of Conservation, Division of Oil and Gas (CDOG), to regulate oil, gas, and geothermal fields' discharges. The agreement requires CDOG to notify the Regional Water Boards of all new operators, all pollution problems associated with operators, and proposed discharges. CDOG and Regional Water Boards must also work together, within certain time-lines, to review and prepare discharge permits. See Appendix Item 17.

4.2.1.3.6 Department of Toxic Substances Control

In July 1990, the State Water Board and the Department of Health Services, Toxic Substances Control Program (later reorganized into the Department of Toxic Substances Control) signed an MOU which explains the roles of the agencies (and of the Regional Water Boards) in the cleanup of hazardous waste sites. The MOU describes the protocol the agencies will follow to determine which agency will act as lead and which will act as support, the responsibilities of the agencies in their respective roles, the procedures the agencies will follow to ensure coordinated action, the technical and procedural requirements which each agency must satisfy, the procedures for enforcement and settlement, and the mechanism for dispute resolution. This MOU does not alter the Board's responsibilities with respect to water quality protection. See Appendix Item 18.

4.2.1.3.7 Soil Conservation Service, U.S. Department of Agriculture

On 31 July 1990, the State Water Board Executive Director signed an MOU with Soil Conservation Service (SCS), a technical agency for the U.S. Department of Agriculture. Through this MOU, State Water Board seeks to utilize the personnel and expertise of SCS in the development and implementation of water quality programs and projects. The goal is to accelerate implementation of best management practices and other nonpoint source pollution prevention measures. See Appendix Item 19.

4.2.1.3.8 Environmental Affairs Agency, Air Resources Board, and California Integrated Waste Management Board

On 27 August 1990, the State Water Board Executive Director signed an MOU with the Environmental Affairs Agency, Air Resources Board, and California Integrated Waste Management Board to enhance program coordination and reduce duplication of effort. This MOU consists of provisions describing the scope of the agreement (including definitions of the parties and issues to which the MOU applies), the principles which will govern the conduct of the parties, and the existing statutory framework. See Appendix Item 20.

4.2.1.3.9 California Department of Pesticide Regulation

On 23 December 1991, the State Water Board Chairman signed a MOU with the California Department of Pesticide Regulation (DPR) to ensure that pesticides registered in California are used in a manner that protects water quality and the beneficial uses of water while recognizing the need for pest control.

The State Water Board and nine Regional Water Boards are responsible for protecting the beneficial use of water in California and for controlling all discharges of waste into waters of the state while DPR is the lead agency for pesticide regulation in California.

This will be accomplished by implementing Best Management Practices (BMPs) initially upon voluntary compliance to be followed by regulatory-based encouragement of BMPs as circumstances dictate. Mandatory compliance will be based, whenever possible, on DPR's implementation of regulations and/or pesticide use permit requirements. However, the State Water Board and Regional Water Boards retain ultimate responsibility for compliance with water quality objectives. The agreement was revised on 19 January 1993 to facilitate implementation of the original agreement. See Appendix Item 21.

4.2.1.3.10 Implementation of the San Joaquin Valley Drainage Program's Recommended Plan

In January 1992, the State Water Board Chairman signed a MOU with the U.S. Bureau of Reclamation, the U.S. Fish and Wildlife Service, the U.S. Soil Conservation Service, the U.S. Geological Survey, the California Department of Fish and Game (later renamed the California Department of Fish and Wildlife), and the Department of Food and Agriculture. The MOU is an agreement by the agencies to use the management plan described in the September 1990 final report of the San Joaquin Valley Drainage Program as a guide for remedying subsurface drainage and related problems. See Appendix Item 22.

4.2.1.3.11 California Integrated Waste Management Board

On 16 December 1992, the State Water Board Executive Director signed a MOU to address the Regional Water Board's review of Solid Waste Assessment Test reports. See Appendix Item 23.

4.2.1.3.12 Bureau of Land Management

On 27 January 1993, the State Water Board Vice Chairman signed a MOU to address nonpoint source water quality issues on public lands managed by the Bureau. See Appendix Item 24.

4.2.2 Control Action Considerations of the Central Valley Regional Water Board

4.2.2.1 Policies and Plans

The following are the Regional Water Board's policies to protect water quality in the Central Valley:

4.2.2.1.1 Urban Runoff Policy

(1) Subregional municipal and industrial plans are required to assess the impact of urban runoff on receiving water quality and consider abatement measures if a problem exists.

(2) Effluent limitations for storm water runoff are to be included in NPDES permits where it results in water quality problems.

4.2.2.1.2 Wastewater Reuse Policy

The Regional Water Board encourages the reclamation and reuse of wastewater, including treated ground water resulting from a cleanup action, where practicable and requires as part of a Report of Waste Discharge an evaluation of reuse and land disposal options as alternative disposal methods. Reuse options should include consideration of the following, where appropriate, based on the quality of the wastewater and the required quality for the specific reuses: industrial and municipal supply, crop irrigation, landscape irrigation, ground water recharge, and wetland restoration. Where studies show that Year-round or continuous reuse or land disposal of all of the wastewater is not practicable, the Regional Water Board will require dischargers to evaluate how reuse or land disposal can be optimized, such as consideration of reuse/disposal for part of the flow and seasonal reuse/disposal options (e.g., dry season land disposal).

4.2.2.1.3 Controllable Factors Policy

Controllable water quality factors are not allowed to cause further degradation of water quality in instances where other factors have already resulted in water quality objectives being exceeded. 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 Regional Water Board, and that may be reasonably controlled.

4.2.2.1.4 The Water Quality Limited Segment Policy

Additional treatment beyond minimum federal requirements will be imposed on dischargers to Water Quality Limited Segments. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.

To determine an allowable load for dischargers, the “Loading Capacity” must be determined. The “Loading Capacity” is the maximum amount of pollution that can be present in a water body without violating water quality objectives. The Loading Capacity can be established to address multiple pollutants or a single pollutant. The Loading Capacity can be allocated to NPDES permitted sources (point sources) as waste load allocations and to non-NPDES permitted sources (nonpoint sources) and background as load allocations. Part of the Loading Capacity may also be set aside or not assigned to account for any uncertainty in the Loading Capacity calculation.

The Loading Capacity and allocations are established to meet Clean Water Act Section 303(d) requirements. In addition, the Loading Capacity and allocations can provide a framework for actions to be taken by the Regional Water Board for achieving pollutant reductions and attaining water quality objectives.

4.2.2.1.5 Regional Water Board Resolution No. 70-118, Delegation of Duties and Powers to the Regional Water Board's Executive Officer

In January 1970, the Regional Water Board adopted Resolution No. 70-118 which delegates certain duties and powers of the Board to its Executive Officer pursuant to Section 13223 of the California Water Code. See Appendix Item 25.

4.2.2.1.6 Regional Water Board Resolution No. 96-147, San Joaquin River Agricultural Subsurface Drainage Policy

(1) The control of toxic trace elements in agriculture subsurface drainage, especially selenium, is the first priority.

(2) The control of agricultural subsurface drainage will be pursued on a regional basis.

(3) The reuse of agricultural subsurface drainage will be encouraged, and actions that would limit or prohibit reuse discouraged.

(4) Of the two major options for disposal of salts produced by agricultural irrigation, export out of the basin has less potential for environmental impacts and, therefore, is the favored option. The San Joaquin River may continue to be used to remove salts from the basin so long as water quality objectives are met.

(5) The valley-wide drain to carry the salts generated by agricultural irrigation out of the valley remains the best technical solution to the water quality problems of the San Joaquin River and Tulare Lake Basin. The Regional Water Board, at this time, feels that a valley-wide drain will be the only feasible, long-range solution for achieving a salt balance in the Central Valley. The Regional Water Board favors the construction of a valley-wide drain under the following conditions:

- All toxicants would be reduced to a level which would not harm beneficial uses of receiving waters.
- The discharge would be governed by specific discharge and receiving water limits in an NPDES permit.
- Long-term, continuous biological monitoring would be required.

(6) Optimizing protection of beneficial uses on a watershed basis will guide the development of actions to regulate agricultural subsurface drainage discharges.

(7) For regulation of selenium discharges, actions need to be focused on selenium load reductions.

4.2.2.1.7 Antidegradation Implementation Policy

The antidegradation directives of Section 13000 of the Water Code and State Water Board Resolution No. 68-16 ("Statement of Policy With Respect to Maintaining High Quality Waters in California") require that high quality waters of the State shall be maintained "consistent with the maximum benefit to the people of the State." The Regional Water Board applies these directives when issuing a permit, or in an equivalent process, regarding any discharge of waste which may affect the quality of surface or ground waters in the region.

Implementation of this policy to prevent or minimize surface and ground water degradation is a high priority for the Board. In nearly all cases, preventing pollution before it happens is much more cost-effective than cleaning up pollution after it has occurred. Once degraded, surface water is often difficult to clean up when it has passed downstream. Likewise, cleanup of ground water is costly and lengthy due, in part, to its relatively low assimilative capacity and inaccessibility. The prevention of degradation is, therefore, an important strategy to meet the policy's objectives.

The Regional Water Board will apply 68-16 in considering whether to allow a certain degree of degradation to occur or remain. In conducting this type of analysis, the Regional Water Board will evaluate the nature of any proposed discharge, existing discharge, or material change therein, that could affect the quality of waters within the region. Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

Pursuant to this policy, a Report of Waste Discharge, or any other similar technical report required by the Board pursuant to Water Code Section 13267, must include information regarding the nature and extent of the discharge and the potential for the discharge to affect surface or ground water quality in the region. This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives. The extent of information necessary will depend on the specific conditions of the discharge. For example, use of best

professional judgment and limited available information may be sufficient to determine that ground or surface water will not be degraded. In addition, the discharger must identify treatment or control measures to be taken to minimize or prevent water quality degradation.

4.2.2.1.8 Drinking Water Policy Implementation

As a part of the Drinking Water Policy, a narrative objective has been established for *Cryptosporidium* and *Giardia* to protect the public water system component of the MUN beneficial use. Although it is unclear what levels of *Cryptosporidium* and *Giardia* will impair this use, the goal of implementation is to maintain existing levels of pathogens at public water system intakes. This will be achieved by addressing controllable sources that are shown to cause or substantially contribute to *Cryptosporidium* levels increasing to the trigger level of the next highest bin classification. In accordance with the USEPA Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), public water systems are required to monitor for *Cryptosporidium* at their intakes; the monitoring results are used to establish the bin classification for the water system. To assure that *Cryptosporidium* levels at public water systems stay within the range of their existing bin classifications, triggers at public water system intakes are included below based on USEPA LT2ESWTR bin classifications. The triggers and the changes to LT2ESWTR bin levels do not indicate a violation of the narrative water quality objective for *Cryptosporidium* and *Giardia* nor are the triggers and the LT2ESWTR bin levels to be used for numeric effluent limits. Instead, the proposed numeric triggers may prompt action by the Regional Water Board.

4.2.2.1.8.1 *Cryptosporidium* Ambient Trigger Exceedance

If *Cryptosporidium* monitoring data from an existing public water system intake indicate that the maximum running annual average[1] has reached 80 percent of the next highest bin, as existed in 2013, the affected public water system may request that the Regional Water Board initiate the investigation described below and shown in Figure 4-1. Table 4-1 shows the 2013 LT2ESWTR bin classifications and the 80 percent trigger levels.

TABLE 4-1. BIN LEVELS AND 80 PERCENT TRIGGERS

Bin Classification	Maximum Running Annual Average (oocysts/L)	80 Percent Trigger (oocysts/L)
1	< 0.075	0.06
2	0.075 to < 1.0	0.8
3	1.0 to < 3.0	2.4

If the affected public water system requests assistance, the Regional Water Board should coordinate with CDPH, the affected public water system and potential sources (e.g., storm water management entities, wastewater treatment or wetland managers, etc.) to assess the data and evaluate the need to conduct source evaluations and implement control options. The affected public water system may decline assistance from the Regional Water Board in addressing their compliance with the LT2ESWTR. The coordination and investigation effort should include the steps represented by the schematic overview in Figure 4-1.

[1] *Maximum Running Annual Average as defined in USEPA Long Term 2 Enhanced Surface Water Treatment Rule*

4.2.2.1.8.2 Antidegradation Analysis

In addressing *Cryptosporidium* and *Giardia* in an antidegradation analysis for evaluating the public water system component of the MUN beneficial use, the monitoring results of the nearest impacted public water system intake shall be considered. In cases where a trigger (Section4.2.2.1.8.1) at the nearest public water system intake has not been exceeded, the analysis should be simplified and may be curtailed, depending on the magnitude of the discharge in question and the likelihood of potential impact at public water system intakes. If a trigger has been exceeded, information from the resulting investigation should be considered in the antidegradation analysis.

4.2.2.1.8.3 Reasonable Potential

The Regional Water Board evaluated data representing 2013 conditions. An evaluation of this data indicates that the narrative water quality objective for *Cryptosporidium* and *Giardia* is being attained in surface waters at all public water system intakes in the Delta and its tributaries. The triggers and the changes between LT2ESWTR bin levels do not indicate a violation of the narrative water quality objective for *Cryptosporidium* and *Giardia* nor are the triggers and the LT2ESWTR bin levels to be used for numeric effluent limits.

The Regional Water Board will determine reasonable potential in accordance with the applicable state and federal regulatory requirements. For NPDES permittees, the numeric triggers as applied at the public water system intakes are part of the Regional Water Board's procedures under 40 CFR § 122.44(d)(1)(ii) for determining whether a discharge has reasonable potential. At the request of an affected public water system, implementation of the trigger provisions described in (Figure 4-1, flowchart) will help to ensure that management measures prevent violations of the narrative objective. As a result, NPDES dischargers are not expected to have a reasonable potential to cause or contribute to an excursion above the narrative objective, and NPDES permits are not expected to include effluent limitations to implement the narrative objective.

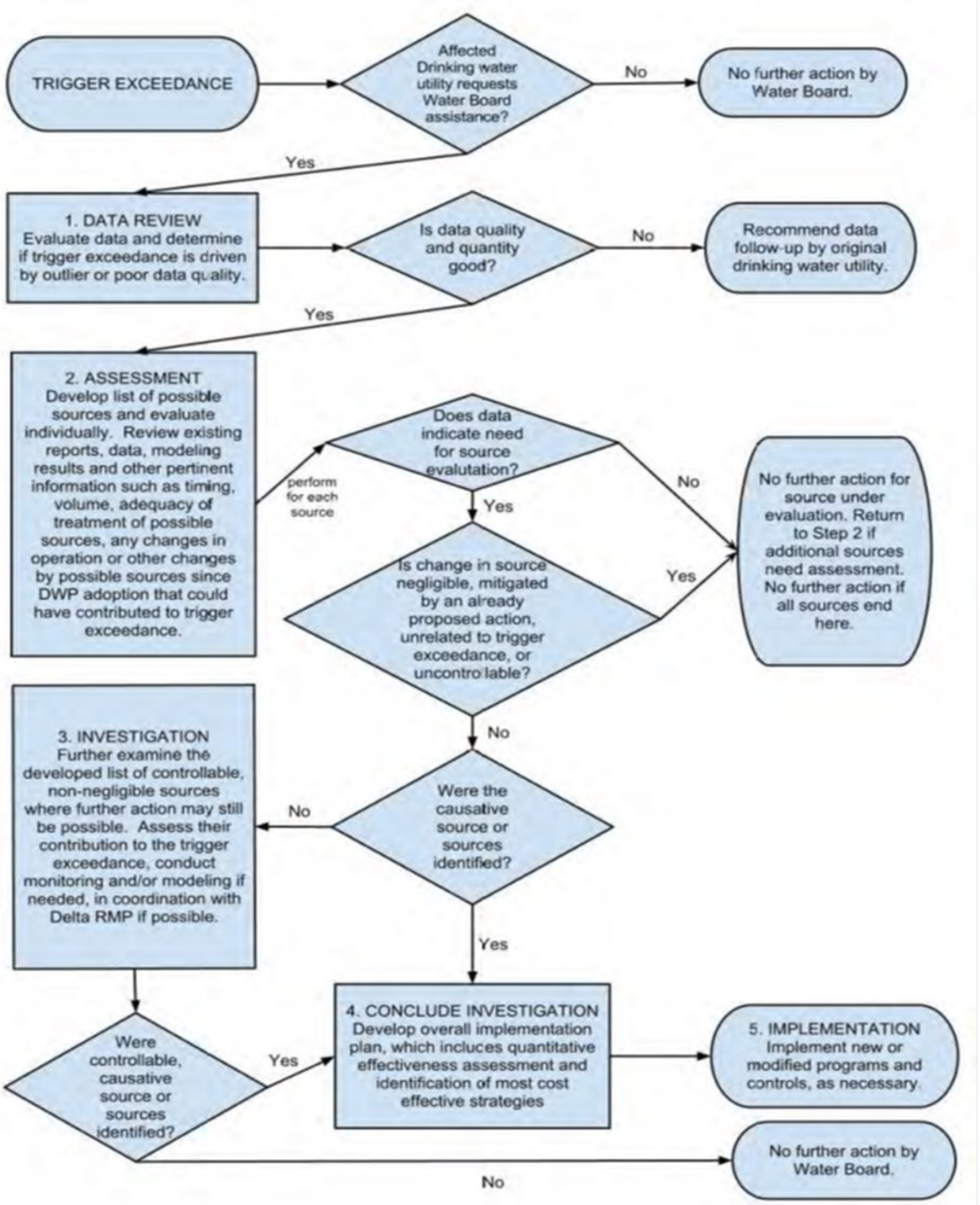


FIGURE 4-1: SCHEMATIC OVERVIEW OF ACTIONS PROMPTED BY CRYPTOSPORIDIUM TRIGGER EXCEEDANCE

4.2.2.1.9 Policy for Application of Water Quality Objectives

Water quality objectives are defined in the Water Code 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". (see Chapter 3). Water quality objectives may be stated in either numerical or narrative form. Water quality objectives apply to all waters within a surface water or ground water resource for which beneficial uses have been designated, rather than at an intake, wellhead or other point of consumption.

In conjunction with the issuance of NPDES and storm water permits, the Regional Water Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Water Board that the mixing zone will not adversely impact beneficial uses. If allowed, different mixing zones may be designated for different types of objectives, including, but not limited to, acute aquatic life objectives, chronic aquatic life objectives, human health objectives, and acute and chronic whole effluent toxicity objectives, depending in part on the averaging period over which the objectives apply. In determining the size of such mixing zones, the Regional Water Board will consider the applicable procedures and guidelines in EPA's Water Quality Standards Handbook and the Technical Support Document for Water Quality-based Toxics Control. Pursuant to EPA guidelines, mixing zones designated for acute aquatic life objectives will generally be limited to a small zone of initial dilution in the immediate vicinity of the discharge.

Where the Regional Water Board determines it is infeasible to achieve immediate compliance with water quality objectives adopted by the Regional Water Board or the State Water Board, or with water quality criteria adopted by the USEPA, or with an effluent limitation based on these objectives or criteria, the Regional Water Board may establish in NPDES permits a schedule of compliance. The schedule of compliance shall include a time schedule for completing specific actions that demonstrate reasonable progress toward the attainment of the objectives or criteria and shall contain a final compliance date, based on the shortest practicable time (determined by the Regional Water Board) required to achieve compliance. In no event shall an NPDES permit include a schedule of compliance that allows more than ten years (from the date of adoption of the objective or criteria) for compliance with water quality objectives, criteria or effluent limitations based on the objectives or criteria. Schedules of compliance are authorized by this provision only for those water quality objectives or criteria adopted after the effective date of this provision [25 September 1995]. The Regional Water Board will establish compliance schedules in NPDES permits consistent with the provisions of the State Water Board’s Compliance Schedule Policy (Resolution 2008-0025). Time schedules in waste discharge requirements are established consistent with Water Code Section 13263.

State Water Board Resolution No. 68-16 requires the maintenance of the existing high quality of water (i.e., "background") unless a change in water quality "will be consistent with maximum benefit to the people of the State....". This policy explains how the Regional Water Board applies numerical and narrative water quality objectives to ensure the reasonable protection of beneficial uses of water and how the Regional Water Board applies Resolution No. 68-16 to promote the maintenance of existing high quality waters.

The numerical and narrative water quality objectives define the least stringent standards that the Regional Water board will apply to regional waters in order to protect beneficial uses. Numerical receiving water limitations will be established in Board orders for constituents and parameters which will, at a minimum, meet all applicable water quality objectives. However, the water quality objectives do not require improvement over naturally occurring background concentrations. In cases where the natural background concentration of a particular constituent exceeds an applicable water quality objective, the natural background concentration will be

considered to comply with the objective. Consistent with Resolution No. 68-16, the Regional Water Board will impose more stringent numerical limitations (or prohibitions) which will maintain the existing quality of the receiving water, unless, pursuant to Resolution No. 68-16, some adverse change in water quality is allowed. Maintenance of the existing high quality of water means maintenance of "background" water quality conditions, i.e., the water quality found upstream or upgradient of the discharge, unaffected by other discharges. Therefore, the water quality objectives will define the least stringent limits which will be imposed and background defines the most stringent limits which will be imposed on ambient water quality.

This Basin Plan contains numerical water quality objectives for various constituents and parameters in Chapter 3. Where numerical water quality objectives are listed, these are the limits necessary for the reasonable protection of beneficial uses of the water. In many instances, the Regional Water Board has not been able to adopt numerical water quality objectives for constituents or parameters, and instead has adopted narrative water quality objectives (e.g., for bacteria, chemical constituents, taste and odor, and toxicity). Where compliance with these narrative objectives is required (i.e., where the objectives are applicable to protect specified beneficial uses), the Regional Water Board will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives.

To evaluate compliance with the narrative water quality objectives, the Regional Water Board considers, on a case-by-case basis, direct evidence of beneficial use impacts, all material and relevant information submitted by the discharger and other interested parties, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations (e.g., State Water Board, State Water Board Division of Drinking Water Programs, California Office of Environmental Health Hazard Assessment, California Department of Toxic Substances Control, University of California Cooperative Extension, California Department of Fish and Wildlife, USEPA, U.S. Food and Drug Administration, National Academy of Sciences, U.S. Fish and Wildlife Service, Food and Agricultural Organization of the United Nations). In considering such criteria, the Board evaluates whether the specific numerical criteria, which are available through these sources and through other information supplied to the Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective. For example, compliance with the narrative objective for taste and odor may be evaluated by comparing concentrations of pollutants in water with numerical taste and odor thresholds that have been published by other agencies. This technique provides relevant numerical limits for constituents and parameters which lack numerical water quality objectives. To assist dischargers and other interested parties, the Regional Water Board staff has compiled many of these numerical water quality criteria from other appropriate agencies and organizations in the Central Valley Regional Water Board's staff report, *A Compilation of Water Quality Goals*. This staff report is updated regularly to reflect changes in these numerical criteria.

Where multiple toxic pollutants exist together in water, the potential for toxicologic interactions exists. On a case by case basis, the Regional Water Board will evaluate available receiving water and effluent data to determine whether there is a reasonable potential for interactive toxicity. Pollutants which are carcinogens or which manifest their toxic effects on the same organ systems or through similar mechanisms will generally be considered to have potentially additive toxicity. The following formula will be used to assist the Regional Water Board in making determinations:

$$\sum_{i=1}^{n} \frac{[\text{Concentration of Toxic Substances}]_i}{[\text{Toxicological Limit for Substances in Water}]_i} < 1.0$$

The concentration of each toxic substance is divided by its toxicologic limit. The resulting ratios are added for substances having similar toxicologic effects and, separately, for carcinogens. If such a sum of ratios is less than one, an additive toxicity problem is assumed not to exist. If the summation is equal to or greater than one, the combination of chemicals is assumed to present an unacceptable level of toxicologic risk. For example, monitoring shows that ground water beneath a site has been degraded by three volatile organic chemicals, A, B, and C, in concentrations of 0.3, 0.4, and 0.04 µg/l, respectively. Toxicologic limits for these chemicals are 0.7, 3, and 0.06 µg/l, respectively. Individually, no chemical exceeds its toxicologic limit. However, an additive toxicity calculation shows:

$$\frac{0.3}{0.7} + \frac{0.4}{3} + \frac{0.04}{0.06} = 1.2$$

The sum of the ratios is greater than unity (>1.0); therefore, the additive toxicity criterion has been violated. The concentrations of chemicals A, B, and C together present a potentially unacceptable level of toxicity.

For permitting purposes, it is important to clearly define how compliance with the narrative toxicity objectives will be measured. Staff is currently working with the State Water Board to develop guidance on this issue.

4.2.2.1.10 Policy for Investigation and Cleanup of Contaminated Sites

The Regional Water Board's strategy for managing contaminated sites is guided by several important principles, which are based on Water Code Sections 13000 and 13304, the Title 23, CCR, Division 3, Chapter 15 and Title 27, CCR, Division 2, Subdivision 1 regulations and State Water Board Resolution Nos. 68-16 and 92-49:

(1) State Water Board Policy & Regulation

The Regional Water Board will require conformance with the provisions of State Water Board Resolution No. 68-16 in all cases and will require conformance with applicable or relevant provisions of 23 CCR, Division 3, Chapter 15 and 27 CCR, Division 2, Subdivision 1 to the extent feasible. These provisions direct the Regional Water Board to ensure that dischargers are required to clean up and abate the effect of discharges in a manner that promotes attainment of background water quality, or the highest water quality which is reasonable and protective of beneficial uses if background levels of water quality cannot be restored.

(2) Site Investigation

An investigation of soil and ground water to determine full horizontal and vertical extent of pollution is necessary to ensure that cleanup plans are protective of water quality. The goal of the investigation shall be to determine where concentrations of constituents of concern exceed beneficial use protective levels (water quality objectives) and, additionally, where constituents of concern exceed background levels (the zero-impact line). Investigations shall extend off-site as necessary to determine the full extent of the impact.

(3) Source Removal/Containment

Immediate removal or containment of the source, to the extent practicable, should be implemented where necessary to prevent further spread of pollution as well as being among the most cost-effective remediation actions. The effectiveness of ground water cleanup techniques often depends largely on the completeness of source removal or containment efforts (e.g., removal of significantly contaminated soil or pockets of dense non-aqueous phase liquids).

(4) Cleanup Level Approval

Ground water and soil cleanup levels are approved by the Regional Water Board. The Executive Officer may approve cleanup levels as appropriately delegated by the Board.

(5) Site Specificity

Given the extreme variability of hydrogeologic conditions in the Region, cleanup levels must reflect site-specific factors.

(6) Discharger Submittals

The discharger must submit the following information for consideration by the Regional Water Board in establishing cleanup levels which meet the criteria contained in 23 CCR Section 2550.4(c) through (g):

(a) water quality assessment to determine impacts and threats to the quality of water resources;

(b) risk assessment to determine impacts and threats to human health and the environment; and

(c) feasibility study of cleanup alternatives which compare effectiveness, cost, and time to achieve cleanup levels. Cleanup levels covered by this study shall include, at a minimum, background levels, levels which meet all applicable water quality objectives and which do not pose significant risks to health or the environment, and an alternate cleanup level which is above background levels and which also meets the requirements as specified in paragraphs (7)(e) and (f) below.

(7) Ground Water Cleanup Levels

Ground water cleanup levels shall be established based on:

(a) background concentrations of individual pollutants;

(b) applicable water quality objectives to protect designated beneficial uses of the water body, as listed in Chapters 2 and 3;

(c) concentrations which do not pose a significant risk to human health or the environment, considering risks from toxic constituents to be additive across all media of exposure and, in the absence of scientifically valid data to the contrary, additive for all constituents having similar toxicologic effects or having carcinogenic effects; and

(d) technologic and economic feasibility of attaining background concentrations and of attaining concentrations lower than defined by (b) and (c) above.

Factors in (a) through (d) above are used to establish ground water cleanup levels according to the following principles:

(e) Pursuant to 23 CCR Section 2550.4, the Regional Water Board establishes cleanup levels that are protective of human health, the environment and beneficial uses of waters of the state, as measured by compliance with (b) and (c) above, and are equal to background concentrations if background levels are technologically and economically feasible to achieve. If background levels are infeasible to achieve, cleanup levels are set between background concentrations and concentrations that meet all criteria in (b) and (c) above. Within this concentration range, cleanup levels must be set at the lowest concentrations that are technologically and economically achievable. In no case are cleanup levels established below natural background concentrations.

(f) Technologic feasibility is determined by assessing the availability of technologies which have been shown to be effective in reducing the concentrations of the constituents of concern to the established cleanup levels. Bench-scale and/or pilot-scale studies may be necessary to make this feasibility assessment in the context of constituent, hydrogeologic, and other site-specific factors. Economic feasibility does not refer to the subjective measurement of the ability of the discharger to pay the costs of cleanup, but rather to the objective balancing of the incremental benefit of attaining more stringent levels of constituents of concern as compared with the incremental cost of achieving those levels. Factors to be considered in the establishment of cleanup levels greater than background are listed in 23 CCR, Section 2550.4(d). The discharger's ability to pay is one factor to be considered in determining whether the cleanup level is reasonable. However, availability of economic resources to the discharger is primarily considered in establishing reasonable schedules for compliance with cleanup levels.

(g) Compliance with (c) above shall be determined through risk assessments performed by the discharger, using the most current procedures authorized by the Department of Toxic Substances Control, the Office of Environmental Health Hazard Assessment, or the USEPA. The Regional Water Board is not the lead agency for specifying risk assessment procedures or for reviewing risk assessments. The Board will assist the discharger, as necessary, in obtaining the appropriate, most current procedures from the above listed agencies. To prevent duplication of effort, the Board will rely on the Department of Toxic Substances Control, the Office of Environmental Health Hazard Assessment, or appropriately designated local health agencies to review and evaluate the adequacy of health and environmental risk assessments. The Board will assist the discharger, as necessary, in determining which of these agencies will review the risk assessments for a particular site. Priority will be given to those agencies that are already involved with the assessment and cleanup of the site.

(8) Compliance with Ground Water Cleanup Levels

To protect potential beneficial uses of the water resource as required by Water Code Sections 13000 and 13241, compliance with ground water cleanup levels must occur throughout the pollutant plume.

(9) Modifying Ground Water Cleanup Levels

The Regional Water Board may consider modifying site-specific ground water cleanup levels (that have been determined pursuant to subsection (7) above) that are more stringent than applicable water quality objectives, only when a final remedial action plan has been pursued in good faith, and all of the following conditions are met:

(a) Modified cleanup levels meet the conditions listed in (7)(b) and (c) above

(b) An approved cleanup program has been fully implemented and operated for a period of time which is adequate to understand the hydrogeology of the site, pollutant dynamics, and the effectiveness of available cleanup technologies;

(c) Adequate source removal and/or isolation is undertaken to eliminate or significantly reduce future migration of constituents of concern to ground water;

(d) The discharger has demonstrated that no significant pollutant migration will occur to other underlying or adjacent aquifers;

(e) Ground water pollutant concentrations have reached asymptotic levels using appropriate technology;

(f) Optimization of the existing technology has occurred and new technologies have been evaluated and applied where economically and technologically feasible; and

(g) Alternative technologies for achieving lower constituent levels have been evaluated and are inappropriate or not economically feasible.

(10) Soil Cleanup Levels

For soils which threaten the quality of water resources, soil cleanup levels should be equal to background concentrations of the individual leachable/mobile constituents, unless background levels are technologically or economically infeasible to achieve. Where background levels are infeasible to achieve, soil cleanup levels are established to ensure that remaining leachable/mobile constituents of concern will not threaten to cause ground water to exceed applicable ground water cleanup levels, and that remaining constituents do not pose significant risks to health or the environment. The Regional Water Board will consider water quality, health, and environmental risk assessment methods, as long as such methods are based on site-specific field data, are technically sound, and promote attainment of all of the above principles.

(11) Verification of Soil Cleanup

Verification of soil cleanup generally requires verification sampling and follow-up ground water monitoring. The degree of required monitoring will reflect the amount of uncertainty associated with the soil cleanup level selection process. Follow-up ground water monitoring may be limited where residual concentrations of leachable/mobile constituents in soils are not expected to impact ground water quality.

(12) Remaining Constituents

Where leachable/mobile concentrations of constituents of concern remain on-site in concentrations which threaten water quality, the Regional Water Board will require implementation of applicable provisions of Title 23, CCR, Division 3 Chapter 15 and Title 27, CCR, Division 2, Subdivision 1. Relevant provisions of Title 23, CCR, Division 3 Chapter 15 and Title 27, CCR, Division 2, Subdivision 1 which may not be directly applicable, but which address situations similar to those addressed at the cleanup site will be implemented to the extent feasible, in conformance with Title 23, CCR, Section 2511(d)/27 CCR, Section 20090(d). This may include, but is not limited to, surface or subsurface barriers or other containment systems, waste immobilization, toxicity reduction, and financial assurances.

4.2.2.1.11 Policy for Obtaining Salt Balance in the San Joaquin Valley

It is the policy of the Regional Water Board to encourage construction of facilities to convey agricultural drain water from the San Joaquin and Tulare Basins. A valley-wide conveyance facility for agricultural drain waters impaired by high levels of salt is the only feasible, long-range solution for achieving a salt balance in the Central Valley.

4.2.2.1.12 Watershed Policy

The Regional Water Board supports implementing a watershed based approach to addressing water quality problems. The State and Regional Water Boards are in the process of developing a proposal for integrating a watershed approach into the Board's programs. The benefits to implementing a watershed based program would include gaining participation of stakeholders and focusing efforts on the most important problems and those sources contributing most significantly to those problems.

4.2.2.1.13 Policy for the Royal Mountain King Mine Site in Calaveras County

(1) Groundwater Management Strategy at the Royal Mountain King Mine Site, in Calaveras County

The owner of the Royal Mountain King Mine Site shall continue to implement a groundwater management strategy to manage poor-quality groundwater at the Site and to protect good-quality groundwater. The strategy is to maintain the lowest practicable level of water in Skyrocket Pit Lake and prevent any measurably significant degradation of current water quality in groundwater downgradient of the MUN and AGR de-designation area shown in Figure 2-2. In addition, saline leachate that emerges as springs at the base of the Gold Knoll Overburden Disposal Site and the West Overburden Disposal Site, as well as the Flotation Tailings Reservoir leachate collection and recovery system, shall be collected in sumps and transferred by pumping to Skyrocket Pit Lake or regulated with an NPDES permit or WDRs.

(2) Variance for IND and PRO Uses in Groundwaters at the Royal Mountain King Mine site, in Calaveras County

Groundwaters within the area shown in Figure 2-2 at the Royal Mountain King Mine Site are subject to a variance for the IND and PRO uses based on high background levels of total dissolved solids. The variance exempts the constituents listed in the table, below, from regulatory limits that would otherwise be determined from the IND and PRO beneficial uses.

Constituents in groundwater subject to the variance for IND and PRO include:
Total Dissolved Solids
Arsenic
Chloride
Nitrate
Selenium
Sulfate

4.2.2.1.14 Variance Policy for Surface Waters

As part of its state water quality standards program, states have the discretion to include variance policies. (40 C.F.R., §131.13.) This policy provides the Regional Water Board with the authority to grant a variance from application of water quality standards under certain circumstances.

4.2.2.1.14.1 Variances from Surface Water Quality Standards for Point Source Dischargers

(1) A permit applicant or permittee subject to an NPDES permit may apply to the Regional Water Board for a variance from a surface water quality standard for a specific constituent(s), as long as the constituent is not a priority toxic pollutant identified in 40 C.F.R., §131.38(b)(1). A permit applicant or permittee may not apply to the Regional Water Board for a variance from a surface water quality standard for temperature. The application for such a variance shall be submitted in accordance with the requirements specified in section 4.2.2.1.14.2. The Central Valley Water Board may adopt variance programs that provide streamlined approval procedures for multiple dischargers that share the same challenges in achieving their water quality based effluent limitation(s) (WQBELs) for the same pollutant(s). The *Variance Program for Salinity Water Quality Standards* in section 4.2.2.1.14.3, below, is a multiple discharger variance program. Permittees that qualify for the *Variance Program for Salinity Water Quality Standards* by meeting the criteria in section 4.2.2.1.14.3(1). may submit a salinity variance application in accordance with the requirements specified in section 4.2.2.1.14.3 of this Policy.

(2) The Regional Water Board may not grant a variance if:

(a) Water quality standards addressed by the variance will be achieved by implementing technology-based effluent limitations required under sections 301(b) and 306 of the Clean Water Act, or

(b) The variance would likely jeopardize the continued existence of any endangered species under section 4 of the Endangered Species Act or result in the destruction or adverse modification of such species' critical habitat.

(3) The Regional Water Board may approve all or part of a requested variance, or modify and approve a requested variance, if the permit applicant demonstrates a variance is appropriate based on at least one of the six following factors:

(a) Naturally occurring pollutant concentrations prevent the attainment of the surface water quality standard; or
(b) Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the surface water quality standard, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating state water conservation requirements to enable surface water quality standards to be met; or
(c) Human caused conditions or sources of pollution prevent the attainment of the surface water quality standard and cannot be remedied or would cause more environmental damage to correct than to leave in place; or
(d) Dams, diversions, or other types of hydrologic modifications preclude the attainment of the surface water quality standard, and it is not feasible to restore the waterbody to its original condition or to operate such modification in a way that would result in the attainment of the surface water quality standard; or
(e) Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality preclude attainment of aquatic life protection of surface water quality standards; or
(f) Controls more stringent than those required by sections 301(b) and 306 of the Clean Water Act would result in substantial and widespread economic and social impact.

(4) In making a determination on a variance application that is based on factor (c) in paragraph (3), above, the Regional Water Board may consider the following:

(a) Information on the type and magnitude of adverse or beneficial environmental impacts, including the net impact on the receiving water, resulting from the proposed methodologies capable of attaining the adopted or proposed WQBEL.
(b) Other relevant information requested by the Regional Water Board or supplied by the applicant or the public.

(5) In making a determination on a variance application that is based on factor (f) in paragraph (3), above, the Regional Water Board may consider the following:

(a) The cost and cost-effectiveness of pollutant removal by implementing the methodology capable of attaining the adopted or proposed WQBEL for the specific constituent(s) for which a variance is being requested.
(b) The reduction in concentrations and loadings of the pollutant(s) in question that is attainable by source control and pollution prevention efforts as compared to the reduction attainable by use of the methodology capable of attaining the adopted or proposed WQBEL.
(c) The overall impact of attaining the adopted or proposed WQBEL and implementing the methodologies capable of attaining the adopted or proposed WQBEL.
(d) The technical feasibility of installing or operating any of the available methodologies capable of attaining the WQBEL for which a variance is sought.
(e) Other relevant information requested by the Regional Water Board or supplied by the applicant or the public.

(6) A determination to grant or deny a requested variance shall be made in accordance with the procedures specified in section 4.2.2.1.14.2, below. Procedures specified in section 4.2.2.1.14.3, below, will be used for applicants that qualify for the *Variance Program for Salinity Water Quality Standards*.

(7) A variance applies only to the permit applicant requesting the variance and only to the constituent(s) specified in the variance application.

(8) A variance or any renewal thereof shall be for a time as short as feasible and shall not be granted for a term greater than ten years.

(9) Neither the filing of a variance application nor the granting of a variance shall be grounds for the staying or dismissing of, or a defense in, a pending enforcement action. A variance shall be prospective only from the date the variance becomes effective.

(10) A variance shall conform to the requirements of the State Water Board's Antidegradation Policy (State Water Board Resolution 68-16).

4.2.2.1.14.2 Variance Application Requirements and Processes

(1) An application for a variance from a surface water quality standard for a specific constituent(s) subject to this Policy may be submitted at any time after the permittee determines that it is unable to meet a WQBEL or proposed WQBEL based on a surface water quality standard, and/or an adopted wasteload allocation. The variance application may be submitted with the renewal application (i.e., report of waste discharge) for a NPDES permit. If the permittee is seeking to obtain a variance after a WQBEL has been adopted into a NPDES permit, the WQBEL shall remain in effect until such time that the Regional Water Board makes a determination on the variance application.

(2) The granting of a variance by the Regional Water Board is a discretionary action subject to the requirements of the California Environmental Quality Act. As such, the Regional Water Board may require the variance applicant to prepare such documents as are necessary so that the Regional Water Board can ensure that its action complies with the requirements set forth in the California Environmental Quality Act, or the Regional Water Board may use any such documents that have been prepared and certified by another state or local agency that address the potential environmental impacts associated with the project and the granting of a variance.

(3) A complete variance application must contain the following:

(a) Identification of the specific constituent(s) and water quality standard(s) for which a variance is sought;
(b) Identification of the receiving surface water, and any available information with respect to receiving water quality and downstream beneficial uses for the specific constituent;
(c) Identification of the WQBEL(s) that is being considered for adoption, or has been adopted in the NPDES permit;
(d) List of methods for removing or reducing the concentrations and loadings of the pollutants with an assessment of technical effectiveness and the costs and cost effectiveness of these methods. At a minimum, and to the extent feasible, the methods must include source control measures, pollution prevention measures, facility upgrades and end-of-pipe treatment technology. From this list, the

applicant must identify the method(s) that will consistently attain the WQBELs and provide a detailed discussion of such methodologies;

(e) Documentation of at least one of the following over the next ten years. Documentation that covers less than ten years will limit the maximum term that the Regional Water Board can consider for the variance:

(i) That naturally occurring pollutant concentrations prevent the attainment of the surface water quality standard or

(ii) That natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the surface water quality standard, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges to enable surface water quality standards to be met; or

(iii) That human caused conditions or sources of pollution prevent the attainment of the surface water quality standard from which the WQBEL is based, and it is not feasible to remedy the conditions or sources of pollution; or

(iv) That dams, diversions, or other types of hydrologic modifications preclude the attainment of the surface water quality standard from which the WQBEL is based, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in attainment of the surface water quality standard; or

(v) Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection of surface water quality standards from which the WQBEL is based; or

(vi) That installation and operation of each of the available methodologies capable of attaining the WQBEL would result in substantial and widespread economic and social impact.

(f) Documentation that the permittee has reduced, or is in the process of reducing, to the maximum extent practicable, the discharge of the pollutant(s) for which a variance is sought through implementation of local pretreatment, source control, and pollution prevention efforts; and,

(g) A detailed discussion of a proposed interim discharge limitation(s) that represents the highest level of treatment that the permittee can consistently achieve during the term of the variance. Such discussion shall also identify and discuss any drought, water conservation, and/or water recycling efforts that may cause certain constituents in the effluent to increase, or efforts that will cause certain constituents in the effluent to decrease with a sufficient amount of certainty. When the permittee proposes an interim discharge limitation(s) that is higher than the current level of the constituent(s) in the effluent due to the need to account for drought, water conservation or water recycling efforts, the permittee must provide appropriate information to show that the increase in the level for the proposed interim discharge limitation(s) will not adversely affect beneficial uses, is consistent with state and federal antidegradation policies (State Water Board Resolution No. 68-16 and 40 C.F.R., § 131.12.), and is consistent with anti-backsliding provisions specified in section 402(o) of the Clean Water Act. If the permittee indicates that certain constituents in the effluent are likely to decrease during the term of the variance due to recycling efforts or management measures, then the proposed interim discharge limitation(s) shall account for such decreases.

(h) Copies of any documents prepared and certified by another state or local agency pursuant to Public Resources Code section 21080 et seq.; or, such documents as are necessary for the Regional Water Board to make its decision in compliance with Public Resources Code section 21080 et seq.

(4) Within 60 days of the receipt of a variance application, the Regional Water Board shall determine that the variance application is complete, or specify in writing any additional relevant information, which is deemed necessary to make a determination on the variance request. Such additional information shall be submitted by the applicant within a time period agreed upon by the applicant and the Regional Water Board Executive Officer. Failure of an applicant to submit any additional relevant information requested by the Regional Water Board Executive Officer within the agreed upon time period may result in the denial of the variance application.

(5) The Regional Water Board shall provide a copy of the variance application to USEPA Region 9 within 30 days of finding that the variance application is complete.

(6) Within a reasonable time period after finding that the variance application is complete, the Regional Water Board shall provide public notice, request comment, and schedule and hold a public hearing on the variance application. When the variance application is submitted with the NPDES permit renewal application (i.e., report of waste discharge), the notice, request for comment and public hearing requirement on the variance application may be conducted in conjunction with the Regional Water Board's process for the renewal of the NPDES permit.

(7) The Regional Water Board may approve the variance, either as requested, or as modified by the Regional Water Board. The Regional Water Board may take action to approve a variance and renew and/or modify an existing NPDES permit as part of the same Board meeting. The permit shall contain all conditions needed to implement the variance, including, at a minimum, all of the following:

(a) An interim effluent limitation for the constituent(s) for which the variance is sought. The interim effluent limitation(s) must be consistent with the current level of the constituent(s) in the effluent and may be lower based on anticipated improvement in effluent quality. The Regional Water Board may consider granting an interim effluent limitation(s) that is higher than the current level if the permittee has demonstrated that drought, water conservation, and/or water recycling efforts will cause the quality of the effluent to be higher than the current level and that the higher interim effluent limitation will not adversely affect beneficial uses. When the duration of the variance is shorter than the duration of the permit, compliance with effluent limitations sufficient to meet the water quality criterion upon the expiration of the variance shall be required;

(b) A requirement to prepare and implement a pollution prevention plan pursuant to Water Code section 13263.3 to address the constituent(s) for which the variance is sought;

(c) Any additional monitoring that is determined to be necessary by the Regional Water Board to evaluate the effects on the receiving water body of the variance from water quality standards;

(d) A provision allowing the Regional Water Board to reopen and modify the permit based on any revision to the variance made by the Regional Water Board during the next revision of the water quality standards or by EPA upon review of the variance; and

(e) Other conditions that the Regional Water Board determines to be necessary to implement the terms of the variance.

(8) The variance, as adopted by the Regional Water Board in section (7), is not in effect until it is approved by U.S. EPA.

(9) Permit limitations for a constituent(s) contained in the applicant's permit that are in effect at the time of the variance application shall remain in effect during the consideration of a variance application for that particular constituent(s).

(10) The permittee may request a renewal of a variance in accordance with the provisions contained in paragraphs (1), (2) and (3) and this section. For variances with terms greater than the term of the permit, an application for renewal of the variance may be submitted with the renewal application for the NPDES permit in order to have the term of the variance begin concurrent with the term of the permit. The renewal application shall also contain information concerning its compliance with the conditions incorporated into its permit as part of the original variance and shall include information to explain why a renewal of the variance is necessary. As part of its renewal application, a permittee shall also identify all efforts the permittee has made, and/or intends to make, towards meeting the standard(s). Renewal of a variance may be denied if the permittee did not comply with any of the conditions of the original variance.

(11) All variances and supporting information shall be submitted by the Regional Water Board to the U.S. EPA Regional Administrator within 30 days of the date of the Regional Water Board's final variance decision for approval and shall include the following:

(a) The variance application and any additional information submitted to the Regional Water Board;
(b) Any public notices, public comments, and records of any public hearings held in conjunction with the request for the variance;
(c) The Regional Water Board's final decision; and
(d) Any changes to NPDES permits to include the variance.

(12) All variances shall be reviewed during the Regional Water Board's triennial review process of this Basin Plan. For variances with terms that are greater than the term of the permit, the Regional Water Board may also review the variance upon consideration of the permit renewal.

4.2.2.1.14.3 Variance Program for Salinity Water Quality Standards

The State Water Board and the Regional Water Board recognize that salt is impacting beneficial uses in the Central Valley and management of salinity in surface and ground waters is a major challenge for dischargers. In response, the Water Boards initiated the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) in 2006. The State Water Board *Recycled Water Policy* requires the development of salt and nutrient management plans protective of ground water and submittal of these plans to the Regional Water Board by May 2016. These plans are to become the basis of basin plan amendments to be considered by the Regional Water Board by May 2017. CV-SALTS is the stakeholder effort working to develop comprehensive salt and nitrate management plans (SNMPs) that will satisfy the *Recycled Water Policy*'s salt and nutrient management plans. CV-SALTS is undertaking technical work to analyze salt and nitrate conditions in surface and ground water in the Central Valley, identify implementation measures, and develop monitoring strategies to ensure environmental and economic sustainability. The technical work under development includes developing the models

for loading and transport of salt, development and evaluation of effective management practices, and implementing activities to ensure beneficial uses are protected. Participation by all stakeholders is necessary to assure that the work is scientifically justified, supported by broad stakeholder representation, and completed in a timely fashion. The Regional Water Board has indicated its support for the comprehensive effort through CV-SALTS in Resolutions R5-2006-0024, R5-2010-0024, and R5-2013-0149 and the March 2010 Memorandum of Agreement between the Regional Water Board, the Central Valley Salinity Coalition and the State Water Board.

(1) During the development and initial implementation of the SNMPs by CV-SALTS, permittees who qualify may apply for a variance from salinity water quality standards if they have or will have WQBELs for salinity that they are unable to meet by submitting a salinity variance application. The *Salinity Variance Program* as described specifically herein is for municipal and domestic wastewater dischargers that have or will implement local pretreatment, source control, and pollution prevention efforts to reduce the effluent concentrations of salinity constituents and are now faced with replacing the municipal water supply with a better quality water or installing costly improvements, such as membrane filtration treatment technology, such that widespread social and economic impacts are expected consistent with the justification provided for the case study cities in the *Staff Report for the Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins and the Water Quality Control Plan for the Tulare Lake Basin to add Policies for Variances from Surface Water Quality Standards for Point Source Dischargers, Variance Program for Salinity, and Exception from Implementation of Water Quality Objectives for Salinity, June 2014*. Consistent with the planned development and implementation of the SNMPs, no salinity variance under this section shall be approved after 30 June 2019. For the purposes of the Salinity Variance Program, salinity water quality standards are defined to only include water quality standards for the following constituents: electrical conductivity, total dissolved solids, chloride, sulfate and sodium.

(2) An application for a variance for a specific salinity water quality standard may be submitted at any time after the permittee determines that it is unable to meet a WQBEL or proposed WQBEL based on a salinity water quality standard. Preferably, the salinity variance application should be submitted with the renewal application (i.e., report of waste discharge) for a NPDES permit. If the permittee is seeking to obtain a variance after a WQBEL has been adopted into a NPDES permit, the WQBEL shall remain in effect until such time that the Regional Water Board makes a determination on the variance application.

(3) An application for variance from WQBELs based on a salinity water quality standard must contain the following:

   (a) Identification of the salinity constituents for which the variance is sought;
   (b) Identification of the receiving surface water, and any available information with respect to receiving water quality and downstream beneficial uses for the specific constituent;
   (c) Identification of the WQBEL that is being considered for adoption, or has been adopted in the NPDES permit;
   (d) A description of salinity reduction/elimination measures that have been undertaken as of the application date, if any;
   (e) A Salinity Reduction Study Work Plan, which at a minimum must include the following:

(i) Data on current influent and effluent salinity concentrations,
(ii) Identification of known salinity sources,
(iii) Description of current plans to reduce/eliminate known salinity sources,
(iv) Preliminary identification of other potential sources,
(v) A proposed schedule for evaluating sources,
(vi) A proposed schedule for identifying and evaluating potential reduction, elimination, and prevention methods.

(f) An explanation of the basis for concluding that there are no readily available or cost-effective methodologies available to consistently attain the WQBELs for salinity.

(g) A detailed discussion explaining why the permittee's situation is similar to or comparable with the case studies supporting the Salinity Variance Program identified in the *Staff Report for the Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins and the Water Quality Control Plan for the Tulare Lake Basin to add Policies for Variances from Surface Water Quality Standards for Point Source Dischargers, Variance Program for Salinity, and Exception from Implementation of Water Quality Objectives for Salinity, June 2014*.

(h) A detailed discussion of proposed interim discharge limitation(s) that represents the highest level of treatment that the permittee can consistently achieve during the term of the variance. If the permittee indicates that certain constituents in the effluent are likely to decrease during the term of the variance due to efforts, then the proposed interim discharge limitation(s) shall account for such decreases.

(i) Documentation of the applicant's active participation in CV-SALTS as indicated by a letter of support from CV-SALTS.

(j) A detailed plan of how the applicant will continue to participate in CV-SALTS and how the applicant will contribute to the development and implementation of the SNMPs.

(4) After the receipt of a variance application for salinity, the Regional Water Board shall determine whether the variance application is complete and whether the permittee qualifies for consideration of the variance, or specify in writing any additional relevant information that is deemed necessary to make a determination on the salinity variance request. Such additional information shall be submitted by the applicant within a time period agreed upon by the applicant and the Regional Water Board Executive Officer. Failure of an applicant to submit any additional relevant information requested by the Regional Water Board Executive Officer within the time period specified by the Executive Officer may result in the denial of the variance application for salinity.

(5) After determining that the variance application for salinity is complete, the Regional Water Board shall provide notice, request comment, and schedule and hold a public hearing on the variance application for salinity. When the variance application is submitted with the NPDES permit renewal application (i.e., report of waste discharge), the notice, request for comment and public hearing requirement on the variance application may be conducted in conjunction with the Regional Water Board's process for the renewal of the NPDES permit.

(6) The Regional Water Board may approve a salinity variance, either as requested, or as modified by the Regional Water Board, after finding that the permittee qualifies for the salinity variance, the attainment of the WQBEL is not feasible, the permittee has implemented or will implement feasible salinity reduction/elimination measures and the permittee continues to participate in CV-SALTS consistent with the demonstrations based on the case studies identified in the Staff Report for the Amendments to the Water

Quality Control Plan for the Sacramento River and San Joaquin River Basins and the Water Quality Control Plan for the Tulare Lake Basin to add Policies for Variances from Surface Water Quality Standards for Point Source Dischargers, Variance Program for Salinity, and Exception from Implementation of Water Quality Objectives for Salinity, June 2014. The Regional Water Board may take action to approve a variance and issue a new, or reissue or modify an existing NPDES permit as part of the same Board meeting. The permit shall contain all conditions needed to implement the variance, including, at a minimum, all of the following:

(a) The interim effluent limitation(s) that are determined to be attainable during the term of the variance. When the duration of the variance is shorter than the duration of the permit, compliance with effluent limitations sufficient to meet the water quality criterion upon the expiration of the variance shall be required;
(b) A requirement to implement the Salinity Reduction Study Work Plan submitted with the variance application as required by paragraph (3)(e), above;
(c) A requirement to participate in CV-SALTS and contribute to the development and implementation of the SNMPs in accordance with the plan required by paragraph (3)(j), above.
(d) Any additional monitoring that is determined to be necessary to evaluate the effects on the receiving water body of the variance from water quality standards;
(e) A provision allowing the Regional Water Board to reopen and modify the permit based on any revision to the variance made by the Regional Water Board during the next revision of the water quality standards;
(f) Other conditions that the Regional Water Board determines to be necessary to implement the terms of the variance.

(7) Permit limitations for a substance contained in the applicant's permit that are in effect at the time of the variance application shall remain in effect during the consideration of the variance application for that particular substance.

(8) The permittee may request a renewal of a salinity variance in accordance with the provisions contained in paragraphs (2) and (3) of this section. For variances with terms greater than the term of the permit, an application for renewal of the salinity variance may be submitted with the renewal application for the NPDES permit in order to have the term of the variance begin concurrent with the term of the permit. The renewal application shall also contain information concerning its compliance with the conditions incorporated into its permit as part of the original variance, and shall include information to explain why a renewal of the variance is necessary. As part of its renewal application, a permittee shall also identify all efforts the permittee has made, and/or intends to make, towards meeting the standard. Renewal of a variance may be denied if the permittee did not comply with the conditions of the original variance.

(9) All variances shall be reviewed during the Regional Water Board's triennial review process of this Basin Plan. For variances with terms that are greater than the term of the permit, the Regional Water Board may also review the variance upon consideration of the permit renewal.

4.2.2.1.15 Limited-Term Exceptions from Basin Plan Provisions and Water Quality Objectives for Groundwater and for non-NPDES Dischargers to Surface Waters

Pursuant to Water Code sections 13050 and 13240 et seq., the Regional Water Board has adopted beneficial use designations and water quality objectives that apply to surface and ground waters in the basins covered by this Basin Plan as well as programs of implementation.

The Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) is a stakeholder effort to develop comprehensive salt and nitrate management plans (SNMPs) by May 2016 that is expected to result in basin plan amendments that will be considered by the Regional Water Board by May 2017. CV-SALTS is undertaking technical work to analyze salt and nitrate conditions in surface and ground water in the Central Valley, identify implementation measures, and develop monitoring strategies to ensure environmental and economic sustainability. The technical work under development includes developing the models for loading and transport of salt, development and evaluation of effective management practices, and implementing activities to ensure beneficial uses are protected. Participation by all stakeholders is necessary to ensure that the work is scientifically justified, supported by broad stakeholder representation, and completed in a timely fashion. The Regional Water Board has indicated its support for the comprehensive effort through CV-SALTS in Resolutions R5-2006-0024, R5-2010-0024, and R5-2013-0149 and the March 2010 Memorandum of Agreement between the Regional Water Board, the Central Valley Salinity Coalition and the State Water Board. The Regional Water Board finds that it is reasonable to grant exceptions to the discharge requirements related to the implementation of water quality objectives for salinity for non-NPDES dischargers to surface water, and for discharges to groundwater in order to allow for development and implementation of the SNMPs.

4.2.2.1.15.1 Exception to Discharge Requirements Related to the Implementation of Water Quality Objectives for Salinity

(1) Any person[2] subject to waste discharge requirements and/or conditional waivers issued pursuant to Water Code 13269 that are not also NPDES permits may apply to the Regional Water Board for an exception to discharge requirements from the implementation of water quality objectives for salinity. The exception may apply to the issuance of effluent limitations and/or groundwater limitations that implement water quality objectives for salinity in groundwater, or to effluent limitations and/or surface water limitations that implement water quality objectives for salinity in surface water. For the purposes of this Program, salinity and its constituents include, and are limited to, the following: electrical conductivity, total dissolved solids, chloride, sulfate and sodium. The application for such an exception(s) shall be submitted in accordance with the requirements specified in paragraph (8), below.

(2) An exception to discharge requirements from the implementation of water quality objectives for salinity imposed as limitations in either waste discharge requirements and/or conditional waivers that are not also NPDES permits shall be set for a term not to exceed ten years. For exception terms greater than five years, the Regional Water Board will review the exception five years after approval to confirm that the exception should proceed for the full term. The Regional Water Board review will be conducted during a public hearing. An exception may be renewed beyond the initial term if the SNMPs are still under development, and if a renewal application is submitted in accordance with the requirements specified in paragraph (8), below. A renewal must be considered during a public hearing held in accordance with paragraph 10, below.

(3) The Regional Water Board will consider granting an exception to the implementation of water quality objectives for salinity under this Program if the applicant is actively participating in CV-SALTS as indicated by the letter required under paragraph (8)(e)., below.

[2] The term “person” includes, but is not limited to, “any city, county, district, the state, and the United States, to the extent authorized by federal law.” (Wat. Code, § 13050, subd. (c).)

(4) When granting an exception to the implementation of water quality objectives for salinity under this Program, the Regional Water Board shall consider including an interim performance-based effluent limitation and/or groundwater limitation that provides reasonable protection of the groundwater or the receiving water, where appropriate. When establishing such a limitation, the Regional Water Board shall take into consideration increases in salinity concentrations due to drought, water conservation, and/or water recycling efforts that may occur during the term of the exception granted.

(5) When granting an exception to the implementation of water quality objectives for salinity under this Program, the Regional Water Board shall require the discharger to prepare and implement a Salinity Reduction Study Work Plan, or a salinity-based watershed management plan. A Salinity Reduction Study Work Plan shall at a minimum include the following:

(a) Data on current influent and effluent salinity concentrations;
(b) Identification of known salinity sources;
(c) Description of current plans to reduce/eliminate known salinity sources;
(d) Preliminary identification of other potential sources;
(e) A proposed schedule for evaluating sources; and
(f) A proposed schedule for identifying and evaluating potential reduction, elimination, and prevention methods.

A salinity-based watershed management plan shall at a minimum include the following[3]:

(a) A discussion of the physical conditions that affect surface water or groundwater in the management plan area, including land use maps, identification of potential sources of salinity, baseline inventory of identified existing management practices in use, and a summary of available surface and/or groundwater quality data;
(b) A management plan strategy that includes a description of current management practices being used to reduce or control known salinity sources;
(c) Monitoring methods;
(d) Data evaluation; and,
(e) A schedule for reporting management plan progress.

(6) When granting an exception to the implementation of water quality objectives under this Program, the Regional Water Board will include a requirement to participate in CV-SALTS and contribute to the development and implementation of the SNMPs in accordance with the plan submitted under paragraph (8)(f), below.

(7) The granting of an exception to the implementation of water quality objectives for salinity under this Program by the Regional Water Board is a discretionary action subject to the requirements of the California Environmental Quality Act. As such, the Regional Water Board may require the applicant for the exception to prepare such documents as are necessary so that the Regional Water Board can ensure that its action complies with the requirements set forth in the California Environmental Quality Act or the Regional Water Board may use any such documents that have been prepared and certified by another state or local agency that address the potential environmental impacts associated with

[3] A salinity-based watershed management plan prepared to meet requirements contained within adopted waste discharge requirements, such as those contained in MRP Order R5-2012-0116, Appendix MRP-1, and that is approved by the Executive Officer of the Regional Water Board may be used in lieu of new requirements identified here.

the project and the granting of an exception from implementation of water quality objectives for salinity in groundwater and/or surface water.

(8) A person seeking an exception to the implementation of water quality objectives for salinity under this Program must submit an application to the Regional Water Board. The person's request shall include the following:

(a) An explanation/justification as to why the exception is necessary, and why the discharger is unable to ensure consistent compliance with existing effluent and/or groundwater/surface water limitations associated with salinity constituents at this time;
(b) A description of salinity reduction/elimination measures that the discharger has undertaken as of the date of application, or a description of a salinity-based watershed management plan and progress of its implementation;
(c) A description of any drought impacts, irrigation, water conservation and/or water recycling efforts that may be causing or cause the concentration of salinity to increase in the effluent, discharges to receiving waters, or in receiving waters;
(d) Copies of any documents prepared and certified by another state or local agency pursuant to Public Resources Code section 21080 et seq.; or, such documents as are necessary for the Regional Water Board to make its decision in compliance with Public Resources Code section 21080 et seq.
(e) Documentation of the applicant's active participation in CV-SALTS as indicated by a letter of support from CV-SALTS.
(f) A detailed plan of how the applicant will continue to participate in CV-SALTS and how the applicant will contribute to the development and implementation of the SNMPs.

(9) Upon receipt of an application for an exception to the implementation of water quality objectives for salinity under this Program, the Regional Water Board shall determine that the exception application is complete, or specify in writing any additional relevant information, which is deemed necessary to make a determination on the exception request. Failure of an applicant to submit any additional relevant information requested by the Regional Water Board Executive Officer within the applicable time period may result in the denial of the exception application.

(10) Within a reasonable time period after determining that the exception application is complete, the Regional Water Board shall provide notice, request comment, and schedule and hold a public hearing on the application within a timely manner. The notice and hearing requirements shall comply with those set forth in Water Code section 13167.5. The exception shall be issued through a resolution or special order that amends applicable waste discharge requirements and/or conditional waiver requirements.

(11) There will be no new salinity exceptions and salinity exceptions will not be renewed after 30 June 2019.

4.2.2.2 Regional Water Board Memoranda of Understanding (MOU) and Memoranda of Agreement (MOA)

4.2.2.2.1 U.S. Bureau of Land Management

In September 1985, the Regional Water Board Executive Officer signed MOUs with the three U.S. Bureau of Land Management Districts in the Central Valley (i.e., the Ukiah District, the

Susanville District, and the Bakersfield District). The MOUs, which are identical for each District, aim at improving coordination between the two agencies for the control of water quality problems resulting from mineral extraction activities on BLM administered lands. See Appendix Items 26 through 28.

4.2.2.2.2 U.S. Bureau of Reclamation Agreement

On 2 July 1969, the Regional Water Board signed an MOA with the Bureau of Reclamation to schedule water releases from the New Melones Unit of the Central Valley Project to maintain an oxygen level at or above 5 mg/l in the Stanislaus River downstream of the unit and to not exceed a mean monthly TDS concentration of 500 mg/l in the San Joaquin River immediately below the mouth of the Stanislaus River. The MOA's water quality requirements are subject to some conditions. See Appendix Item 29.

4.2.2.2.3 California Department of Fish and Wildlife and Mosquito Abatement and Vector Control Districts of the South San Joaquin Valley

On 25 February 1993, the Regional Water Board Executive Officer signed an MOU with the California Department of Fish and Game (later renamed to the California Department of Fish and Wildlife) and 11 mosquito abatement and vector control districts of the south San Joaquin valley regarding vegetation management in wastewater treatment facilities. The MOU designates the Districts as lead agencies in determining the adequacy of vegetation management operations in abating mosquito breeding sources. Included in the MOU are the definition of vegetative management operations and conditions to protect nesting birds, eggs, and nests. See Appendix Item 30.

4.2.2.3 Regional Water Board Waivers

State law allows Regional Water Boards to conditionally waive WDRs for a specific discharge or types of discharges where the waiver is consistent with any applicable state or regional water quality control plan and it is in the public interest. A waiver may not exceed five years in duration, but may be renewed by a Regional Water Board. Waiver conditions must include monitoring requirements unless the Regional Water Board determines that the discharge does not pose a significant threat to water quality. Prior to renewing any waiver for a specific type of discharge, the Regional Water Board shall review the terms of the waiver policy at a public hearing. At the hearing, the Regional Water Board shall determine whether the discharge for which the waiver policy was established should be subject to general or individual waste discharge requirements. (Water Code Section 13269)

The Regional Water Board may, after compliance with the California Environmental Quality Act (CEQA), allow short-term variances from Basin Plan provisions, if determined to be necessary to implement control measures for vector and weed control, pest eradication, or fishery management which are being conducted to fulfill statutory requirements under California's Fish and Game, Food and Agriculture, or Health and Safety Codes. In order for the Regional Water Board to determine if a variance is appropriate, agencies proposing such activities must submit to the Regional Water Board project-specific information, including measures to mitigate adverse impacts.

4.2.2.4 Regional Water Board Prohibitions

The Porter-Cologne Water Quality Control Act allows the Regional Water Board to prohibit certain discharges (Water Code Section 13243). Prohibitions may be revised, rescinded, or

adopted as necessary. The prohibitions applicable to the Sacramento and San Joaquin River Basins are identified and described below.

[NOTE: Costs incurred by any unit of local government for a new program or increased level of service for compliance with discharge prohibitions in the Basin Plan do not require reimbursement by the State per Section 2231 of the Revenue and Taxation Code, because the Basin Plan implements a mandate previously enacted by statute, Chapter 482, Statutes of 1969.]

4.2.2.4.1 Water Bodies

Water bodies for which the Regional Water Board has held that the direct discharge of wastes is inappropriate as a permanent disposal method include sloughs and streams with intermittent flow or limited dilution capacity.
The direct discharge of municipal and industrial wastes (excluding storm water discharges) into the following specific water bodies has been prohibited, as noted:

- American River, including Lake Natoma (from Folsom Dam to mouth)
- Clear Lake
- Folsom Lake
- Fourteen Mile Slough at Stockton N.W. and Lincoln Village
- Lake Berryessa
- Middle Fork, Feather River (from Dellecker to Lake Oroville)
- Lake Oroville
- Sacramento River (from confluence with the Feather River to the Freeport Bridge). [Note: There are two exceptions, (1) discharges of combined municipal waste and storm runoff flow from the City of Sacramento, and (2) discharges of treated/disinfected municipal waste from the City of West Sacramento when the City's Clarksburg outfall line is at its maximum hydraulic capacity and when Sacramento River flow is greater than 80,000 cfs, are not subject to the prohibition. The discharges are to be controlled through waste discharge requirements.]
- Sacramento Ship Channel and Turning Basin
- Shasta Lake
- Sugar Cut at Tracy
- Thermalito Forebay and Afterbay
- Tulloch Reservoir
- Whiskeytown Reservoir
- Willow Creek-Bass Lake in Madera County (the prohibition is for sewage effluent only)

4.2.2.4.2 Leaching Systems

Discharge of wastes from new and existing leaching and percolation systems has been prohibited by the Regional Water Board in the following areas:

- Amador City, Amador County (Adopted by Regional Water Board Order No. 73-129; effective as of 12/15/72)
- Martell Area, Amador County (73-129; 12/15/72)
- Shasta Dam Area Public Utilities District, Shasta County (73-129; 12/15/72)
- Vallecito Area, Calaveras County (73-129; 12/15/72)
- West Point Area, Calaveras County (73-129; 12/15/72)
- Celeste Subdivision Area, Merced County (73-129; 12/15/72)
- Snelling Area, Merced County (73-129; 12/15/72, and amended 74-126; 12/14/73)
- North San Juan, Nevada County (74-123; 12/14/73)

- Arnold Area, Calaveras County (74-124, 75-180; 12/14/73, 6/25/75)
- Contra Costa County Sanitation District No. 15, Contra Costa County (74-125; 12/14/73)
- Madera County Service Area No. 2, Bass Lake (74-127; 12/14/73)
- Madera County Service Area No. 3, Parksdale (74-128; 12/14/73)
- Coulterville County Service Area No. 1, Mariposa County (75-070; 3/21/75)
- Midway Community Services District, Merced County (75-072; 3/21/75)
- Adin Community Services District, Modoc County (75-272 11/21/75)
- Fall River Mills, Community Services District, Shasta County (75-273; 11/21/75)
- Bell Road Community, including Panorama and Pearl, Placer County (75-274; 11/21/75)
- Nice and Lucerne, Lake County (76-58; 2/27/76)
- Courtland Sanitation District, Sacramento County (76-59; 2/27/76)
- Six-Mile Village, Calaveras County (76-60; 2/27/76)
- Communities of Clearlake Highlands and Clearlake Park, Lake County (76-89; 3/26/76)
- Taylorsville County Service Area, Plumas County (76-129; 5/28/76)
- Community of South Lakeshore Assessment District, Lake County (76-215; 9/24/76)
- Anderson-Cottonwood Irrigation District, Community of Cottonwood, Shasta County (76-230; 10/22/76)
- Daphnedale Area, Modoc County (76-231; 10/22/76)
- Chico Urban Area, Butte County (90-126; 4/27/90)

4.2.2.4.3 Petroleum

The Regional Water Board has prohibited the discharge of oil or any residuary product of petroleum to the waters of the State, except in accordance with waste discharge requirements or other provisions of Division 7, California Water Code.

4.2.2.4.4 Vessel Wastes

The Regional Water Board has prohibited the discharge of toilet wastes from the vessels of all houseboat rental businesses on Shasta Lake, Clear Lake, and the Delta.

4.2.2.4.5 Pesticides

Effective immediately for molinate and thiobencarb and on 1 January 1991 for carbofuran, malathion and methyl parathion, the discharge of irrigation return flows containing these pesticides is prohibited unless the discharger is following a management practice approved by the Board. Proposed management practices for these pesticides will not be approved unless they are expected to meet the performance goals contained in the following table. Also, the management practices must ensure that discharges of thiobencarb to waters designated as municipal or domestic water supplies will comply with the 1.0 µg/l water quality objective for this pesticide. It is important to note that the performance goals in this timetable are interim in nature and while they are based on the best available information, they are not to be equated with concentrations that meet the water quality objectives. The intent of the performance goals is to bring concentrations being found in surface waters down to levels that approach compliance with the objectives. Future performance goals and numerical objectives will be set using the results of ongoing evaluations of the risks posed by these pesticides. Future performance goals may also be site-specific to take into consideration the additive impacts of more than one pesticide being present in a water body at the same time. The Board will reexamine the progress of the control effort for these pesticides in 1993 and will set performance goals intended to bring concentrations of these five pesticides into full compliance with all objectives by 1995.

Performance Goals[1] for Management Practices in µg/l				
	YEAR			
Pesticide	1990	1991	1992	1993
Carbofuran	D	0.4	0.4	R
Malathion	I	0.1	R	R
Molinate	30.0	20.0	10.0	R
Methyl parathion	D	0.26	0.13	R
Thiobencarb	3.0	1.5	R	R

[1] Performance goals are daily maxima and apply to all waters designated as freshwater habitat.

D = No numerical goal - control practices under development

I = No numerical goal - sources of discharge to be identified by special study

R = The Regional Board will review the latest technical and economic information determine if the performance goal should be adjusted

4.2.2.4.6 San Joaquin River Subsurface Agricultural Drainage

(1) The discharge of agricultural subsurface drainage from the Grassland watershed to the San Joaquin River or its tributaries from any on-farm subsurface drain, open drain, or similar drain system is prohibited, unless such discharge began prior to the effective date of this amendment (10 January 1997) or unless such discharge is governed by waste discharge requirements.

(2) The discharge of agricultural subsurface drainage water to Salt Slough and wetland water supply channels identified in Appendix 40 is prohibited after 10 January 1997, unless water quality objectives for selenium are being met.

(3) The discharge of agricultural subsurface drainage water to the San Joaquin River from Sack Dam to Mud Slough (north) is prohibited after 1 October 2010, unless water quality objectives for selenium are being met. The discharge of agricultural subsurface drainage water to Mud Slough (north) and the San Joaquin River from the Mud Slough confluence to the Merced River is prohibited after 31 December 2019 unless water quality objectives for selenium are being met. The prohibition becomes effective immediately upon Board determination that timely and adequate mitigation, as outlined in the 2010-2019 *Agreement for Continued Use of the San Luis Drain*[4] has not been provided.

(4) The discharge of selenium from agricultural subsurface drainage systems in the Grassland watershed to the San Joaquin River is prohibited in amounts exceeding 8,000 lbs/year for all water year types beginning 10 January 1997.

[4] United States Department of the Interior, Bureau of Reclamation, Central Valley Project, California and San Luis & Delta-Mendota Water Authority, Los Banos, CA, *Agreement for Continued Use of the San Luis Drain for the period January 1 2010, through December 31, 2019.*

(5) Activities that increase the discharge of poor quality agricultural subsurface drainage are prohibited.

4.2.2.4.7 Diazinon and Chlorpyrifos Discharges into the Sacramento and Feather Rivers

Beginning August 11, 2008, the direct or indirect discharge of diazinon or chlorpyrifos into the Sacramento and Feather Rivers is prohibited if, in the previous year (July-June), any exceedance of the diazinon or chlorpyrifos water quality objectives, or diazinon and chlorpyrifos loading capacity occurred.

These prohibitions do not apply if the discharge of diazinon or chlorpyrifos is subject to a waiver of waste discharge requirements implementing the diazinon and chlorpyrifos water quality objectives and load allocations for diazinon and chlorpyrifos for the Sacramento and Feather Rivers, or governed by individual or general waste discharge requirements.

These prohibitions apply only to dischargers causing or contributing to the exceedance of the water quality objective or loading capacity.

4.2.2.4.8 Dissolved Oxygen in the Stockton Deep Water Ship Channel (DWSC)

The discharge of oxygen demanding substances or their precursors into waters tributary to the DWSC portion of the San Joaquin River is prohibited after 31 December 2011 when net daily flow in the DWSC portion of the San Joaquin River in the vicinity of Stockton is less than 3,000 cubic feet per second, unless dissolved oxygen objectives in the DWSC are being met.

Any increase in the discharge of oxygen demanding substances or their precursors into waters tributary to the DWSC portion of the San Joaquin River is prohibited after 23 August 2006.

These prohibitions do not apply if the discharge is regulated by a waiver of waste discharge requirements, or individual or general waste discharge requirements or NPDES permits, which implement the *Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel* or which include a finding that the discharge will have no reasonable potential to cause or contribute to a negative impact on the dissolved oxygen impairment in the DWSC. These prohibitions will be reconsidered by the Regional Water Board by December 2009 based on:

(1) the results of the oxygen demand and precursor studies required in the *Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel*

(2) the prevailing dissolved oxygen conditions in the DWSC

4.2.2.4.9 Control of Diazinon and Chlorpyrifos Runoff into the San Joaquin River

Beginning 1 December 2010, the direct or indirect discharge of diazinon or chlorpyrifos into the San Joaquin River is prohibited during the dormant season (1 December through 1 March) if any exceedance of the chlorpyrifos or diazinon water quality objectives, or diazinon and chlorpyrifos loading capacity occurred during the previous dormant season.

Beginning 2 March 2011, the direct or indirect discharge of diazinon or chlorpyrifos into the San Joaquin River is prohibited during the irrigation season (2 March through 30 November) if any exceedance of the chlorpyrifos or diazinon water quality objectives, or diazinon and chlorpyrifos loading capacity occurred during the previous irrigation season.

These prohibitions apply only to i) dischargers who discharge the pollutant causing or contributing to the exceedance of the water quality objective or loading capacity; and ii) dischargers located in those subareas not meeting their load allocations.

These prohibitions do not apply if the discharge of diazinon or chlorpyrifos is subject to a waiver of waste discharge requirements implementing the diazinon and chlorpyrifos water quality objectives and load allocations for diazinon and chlorpyrifos for the San Joaquin River, or governed by individual or general waste discharge requirements.

4.2.2.4.10 Control of Diazinon and Chlorpyrifos Runoff into Delta Waterways (as identified in Appendix 42)

Beginning December 1, 2011, the direct or indirect discharge of diazinon or chlorpyrifos into Delta Waterways is prohibited during the dormant season (1 December through 1 March) if any exceedance of the chlorpyrifos or diazinon water quality objectives, or diazinon and chlorpyrifos loading capacity occurred during the previous dormant season.

Beginning March 2, 2012, the direct or indirect discharge of diazinon or chlorpyrifos into Delta Waterways is prohibited during the irrigation season (2 March through 30 November) if any exceedance of the chlorpyrifos or diazinon water quality objectives, or diazinon and chlorpyrifos loading capacity occurred during the previous irrigation season.

These prohibitions do not apply if the discharge of diazinon or chlorpyrifos is subject to a waiver of waste discharge requirements implementing the diazinon and chlorpyrifos water quality objectives and load allocations for diazinon and chlorpyrifos for the Delta Waterways, or governed by individual or general waste discharge requirements.

These prohibitions apply only to dischargers causing or contributing to the exceedance of the water quality objective or loading capacity.

These prohibitions do not apply to direct or indirect discharges to the Sacramento or San Joaquin Rivers upstream of the legal boundary of the Delta (as defined in Section 12220 of the California Water Code).

4.2.2.4.11 Diazinon and Chlorpyrifos Discharges

Dischargers are prohibited from discharging chlorpyrifos and/or diazinon at concentrations that exceed water quality objectives to waters with designated or existing[5] WARM and/or COLD beneficial uses unless:

- The discharge is regulated under a waiver of waste discharge requirements or individual or general waste discharge requirements, or
- The discharge is upstream of one of the dams listed in Table 3-5.

4.2.2.4.12 Pyrethroid Pesticides Discharges

Beginning 19 February 2022, discharges of pyrethroid pesticides at concentrations that exceed pyrethroid triggers (Table 4-2) to water bodies with designated or existing[5] WARM and/or COLD beneficial uses are prohibited unless a discharger is implementing a pyrethroid management plan to reduce pyrethroid levels in their discharges. Pyrethroid management plans must identify

[5] Existing as defined in Title 40 of the Code of Federal Regulations, section 131.3(e)

specific management practices for controlling pyrethroid pesticides that will be implemented and are subject to approval processes within the Boards' applicable regulatory programs. In reviewing the pyrethroid management plans, the Executive Officer or designee shall consider the potential impact of the pyrethroid discharge and whether the actions proposed are commensurate with the potential impact. Draft pyrethroid management plans must be submitted at least 6 months prior to 19 February 2022. Dischargers shall begin implementing their pyrethroid management plans within 30 days after receipt of written approval of their management plan. For municipal storm water and municipal and domestic wastewater dischargers, management plans are deemed approved and ready to implement if no written approval is provided after 9 months, unless the Executive Officer provides written notification to extend the approval process. Multiple dischargers that are subject to the above requirements may elect to develop and submit a joint pyrethroid management plan. Such a joint pyrethroid management plan must clearly identify the management practices or actions for which each individual discharger is responsible. If concentrations in a discharge not covered under a pyrethroid management plan are found to exceed the pyrethroid triggers after 19 February 2022, the discharger must submit a draft pyrethroid management plan for approval within 1 year of identifying the exceedance, during which time they are not considered out of compliance, and begin implementing the pyrethroid management plan within 30 days after receipt of written approval of the pyrethroid management plan. Further implementation provisions relating to the conditional prohibition of pyrethroid pesticide discharges are given in the Implementation chapter under the header Pyrethroid Pesticides Control Program (p. 4-121) and monitoring requirements are described in the Surveillance and Monitoring chapter under the header Pyrethroid Pesticides Discharges (p. 5-12).

The pyrethroid triggers are intended to be used to indicate when pyrethroid management plans need to be developed and management practices are to be implemented by the discharger. When the triggers are exceeded in monitoring or as part of a toxicity evaluation, the discharger may be required to initiate trend monitoring. These actions will provide information on achievability and costs to the Board to inform future evaluation of potential water quality objectives. The pyrethroid triggers are not for use as numeric water quality-based effluent limitations or for reasonable potential analysis.

Discharges of pyrethroids that are subject to pyrethroid TMDL requirements are not subject to the conditional prohibition.

TABLE 4-2: NUMERIC TRIGGERS FOR PYRETHROID PESTICIDES
(including all stereoisomers)

Pyrethroid Concentration Calculation

Concentrations of pyrethroid pesticides must be above reporting limits (limits of quantitation) to be included; concentrations reported as not-detected or as below the limit of quantitation will be considered as zero (0) in the below formulas. Guidance on acceptable analytical methods is given in the Surveillance and Monitoring chapter under the header Pyrethroid Pesticides Discharges (p. 5-12).

Freely dissolved pyrethroid concentrations may be used in the below formulas to determine the sum of acute and chronic additive concentration goal units (CGUs). The freely dissolved concentration of each quantified pyrethroid pesticide in a sample may be directly measured or estimated using partition coefficients. Methods for direct measurement must be approved by the Executive Officer before they are used to determine the freely dissolved pyrethroid concentrations that are used for determining exceedances of the pyrethroid pesticides numeric triggers. To estimate the freely dissolved concentration of a pyrethroid pesticide with partition coefficients, the following equation shall be used:

TABLE 4-2: NUMERIC TRIGGERS FOR PYRETHROID PESTICIDES (continued)

$$C_{dissolved} = \frac{C_{total}}{1 + (K_{OC} \times [POC]) + (K_{DOC} \times [DOC])}$$

Where:

$C_{dissolved}$ = concentration of a an individual pyrethroid pesticide that is in the freely dissolved phase (ng/L),
C_{total} = total concentration of an individual pyrethroid pesticide in water (ng/L),
K_{OC} = organic carbon-water partition coefficient for the individual pyrethroid pesticide (L/kg),
[*POC*] = concentration of particulate organic carbon in the water sample (kg/L),which can be calculated as [POC]=[TOC]-[DOC],
K_{DOC} = dissolved organic carbon-water partition coefficient (L/kg),
[*DOC*] = concentration of dissolved organic carbon in the sample (kg/L).

Site-specific or alternative study-based partition coefficients approved by the Executive Officer may be used in the above equation. If site-specific or alternative study-based partition coefficients are not available or have not been approved, the following partition coefficients shall be used in the above equation:

	Ambient Waters		*Wastewater Effluents*	
Pyrethroid Pesticide	K_{OC} (L/kg)	K_{DOC} (L/kg)	K_{OC} (L/kg)	K_{DOC} (L/kg)
Bifenthrin	4,228,000	1,737,127	15,848,932	800,000
Cyfluthrin	3,870,000	2,432,071	3,870,000	2,432,071
Cypermethrin	3,105,000	762,765	6,309,573	200,000
Esfenvalerate	7,220,000	1,733,158	7,220,000	1,733,158
Lambda-cyhalothrin	2,056,000	952,809	7,126,428	200,000
Permethrin	6,075,000	957,703	10,000,000	200,000

Acute Pyrethroid Trigger

The acute additive pyrethroid pesticides numeric trigger is equal to one (1) acute additive concentration goal unit (CGU) not to be exceeded more than once in a three year period. The CGUs are calculated as the sum of individual measured pyrethroid concentration-to-acute concentration goal ratios, as defined in the following formula. For calculation of CGUs, available samples collected within the applicable averaging period for the numeric trigger will be used to determine exceedances of the trigger. Freely dissolved pyrethroid concentrations may be used in the numerator of each ratio if appropriate data are available, as described in the equation to calculate freely dissolved concentrations given above.

$$CGU_{acute} = \frac{C_{bif}}{ACG_{bif}} + \frac{C_{cyf}}{ACG_{cyf}} + \frac{C_{cyp}}{ACG_{cyp}} + \frac{C_{esf}}{ACG_{esf}} + \frac{C_{lcy}}{ACG_{lcy}} + \frac{C_{per}}{ACG_{per}}$$

Where:

C_{bif} = Average concentration of bifenthrin in ng/L from a 1-hour averaging period,
C_{cyf} = Average concentration of cyfluthrin in ng/L from a 1-hour averaging period,
C_{cyp} = Average concentration of cypermethrin in ng/L from a 1-hour averaging period,
C_{esf} = Average concentration of esfenvalerate in ng/L from a 1-hour averaging period,
C_{lcy} = Average concentration of lambda-cyhalothrin in ng/L from a 1-hour averaging period,
C_{per} = Average concentration of permethrin in ng/L from a 1-hour averaging period,
ACG_{bif} = Bifenthrin acute concentration goal of 0.8 ng/L,
ACG_{cyf} = Cyfluthrin acute concentration goal of 0.8 ng/L,
ACG_{cyp} = Cypermethrin acute concentration goal of 1 ng/L,
ACG_{esf} = Esfenvalerate acute concentration goal of 2 ng/L,
ACG_{lcy} = Lambda-cyhalothrin acute concentration goal of 0.7 ng/L,
ACG_{per} = Permethrin acute concentration goal of 6 ng/L,
CGU_{acute} = The sum of measured pyrethroid concentration-to-acute concentration goal ratios, rounded to one significant figure. A sum exceeding one (1) indicates an exceedance of the acute additive pyrethroid pesticides numeric trigger.

TABLE 4-2: NUMERIC TRIGGERS FOR PYRETHROID PESTICIDES (continued)

Chronic Pyrethroid Trigger

The chronic additive pyrethroid pesticides numeric trigger is equal to one (1) chronic additive concentration goal unit not to be exceeded more than once in a three year period. The chronic CGUs are calculated as the sum of individual measured pyrethroid concentration-to-chronic concentration goal ratios, as defined in the following formula. For calculation of CGUs, available samples collected within the applicable averaging period for the numeric trigger will be used to determine exceedances of the trigger. Freely dissolved pyrethroid concentrations may be used in the numerator of each ratio if appropriate data are available, as described in the equation to calculate freely dissolved concentrations given above.

$$CGU_{chronic} = \frac{C_{bif}}{CCG_{bif}} + \frac{C_{cyf}}{CCG_{cyf}} + \frac{C_{cyp}}{CCG_{cyp}} + \frac{C_{esf}}{CCG_{esf}} + \frac{C_{lcy}}{CCG_{lcy}} + \frac{C_{per}}{CCG_{per}}$$

Where:

C_{bif} = Average concentration of bifenthrin in ng/L from a 4-day averaging period,
C_{cyf} = Average concentration of cyfluthrin in ng/L from a 4-day averaging period,
C_{cyp} = Average concentration of cypermethrin in ng/L from a 4-day averaging period,
C_{esf} = Average concentration of esfenvalerate in ng/L from a 4-day averaging period,
C_{lcy} = Average concentration of lambda-cyhalothrin in ng/L from a 4-day averaging period,
C_{per} = Average concentration of permethrin in ng/L from a 4-day averaging period,
CCG_{bif} = Bifenthrin chronic concentration goal of 0.1 ng/L,
CCG_{cyf} = Cyfluthrin chronic concentration goal of 0.2 ng/L,
CCG_{cyp} = Cypermethrin chronic concentration goal of 0.3 ng/L,
CCG_{esf} = Esfenvalerate chronic concentration goal of 0.3 ng/L,
CCG_{lcy} = Lambda-cyhalothrin chronic concentration goal of 0.3 ng/L,
CCG_{per} = Permethrin chronic concentration goal of 1 ng/L,
$CGU_{chronic}$ = The sum of measured pyrethroid concentration-to-chronic concentration goal ratios, rounded to one significant figure. A sum exceeding one (1) indicates an exceedance of the chronic additive pyrethroid pesticides numeric trigger.

4.2.2.5 Regional Water Board Guidelines

The Regional Water Board has adopted guidance for certain types of dischargers which is designed to reduce the possibility that water quality will be impaired. The Regional Water Board may still impose discharge requirements. All of the Guidelines are contained in the Appendix (Items 33 through 37). Currently, the following Guidelines apply to the Sacramento and San Joaquin River Basins:

4.2.2.5.1 Wineries

This Guideline contains criteria for protecting beneficial uses and preventing nuisance from the disposal to land of stillage wastes.

4.2.2.5.2 Erosion and Sedimentation

This Guideline identifies practices to be implemented by local government to reduce erosion and sedimentation from construction activities.

4.2.2.5.3 Small Hydroelectric Facilities

This Guideline specifies measures to protect water quality from temperature, turbidity, and dissolved oxygen effects from the construction and operation of small hydroelectric Facilities.

4.2.2.5.4 Mining

This Guideline identifies actions that the Regional Water Board takes to address the water quality problems associated with mining. It requires owners and operators of active mines to prepare plans for closure and reclamation, but it does not specify any practices or criteria for mine operators.

4.2.2.6 Nonpoint Source Action Plans

Section 208 of the 1972 Amendments to the Federal Clean Water Act resulted in monies being made available to states to address nonpoint source problems. The Regional Water Board used 208 grant funds to develop its mining and erosion/sedimentation guidelines, among other things. It also encouraged local governments to make use of the 208 program. As a result, several counties in the sub-basins developed action plans to control nonpoint source problems which affected them. The Regional Water Board action plans are described in Table 4-3.

TABLE 4-3
NONPOINT SOURCE ACTION PLANS

LOCATION	RECOMMENDED ACTION
Shasta County	Best Management Practices (BMPs) for control of erosion from land development (adopted 1980)
Nevada County	BMPs for erosion and individual wastewater disposal systems (adopted 1980)
Placer County	BMPs for erosion and installation of individual wastewater disposal systems (adopted 1980)
Lake County	BMPs for erosion and creek bed management (adopted 1979)
Communities of Paradise and Magalia (Butte County)	BMPs for wastewater management (adopted 1979)
Solano County	BMPs for surface water runoff (adopted 1979)
Upper Putah Creek Watershed (Lake, Napa Counties)	Strategies and recommendations for addressing problems from geothermal development, abandoned mines, and individual wastewater disposal systems (adopted 1981)
Fall River (Shasta County)	BMPs for livestock grazing and individual wastewater disposal systems (adopted 1982)
Plumas County	BMPs for erosion control (adopted 1980)
Mariposa County	BMPs for individual wastewater disposal systems for area north of the community of Mariposa; BMPs for erosion and sedimentation in the Stockton Creek Watershed (adopted 1979)
Merced County	Lake Yosemite Area -- BMPs for individual wastewater disposal systems (adopted 1979)

4.3 ACTIONS RECOMMENDED FOR IMPLEMENTATION BY OTHER ENTITIES

Consistent with the Porter-Cologne Water Quality Control Act, the Basin Plan may identify control actions recommended for implementation by agencies other than the Regional Water Board [Water Code Section 13242(a)].

4.3.1 Recommended for Implementation by the State Water Board

4.3.1.1 Interbasin Transfer of Water

Before granting new permits for water storage or diversion which involves interbasin transfer of water, the State Water Board should require the applicant to evaluate the alternatives listed below. Permits should not be approved unless the alternatives have been thoroughly investigated and ruled out for social, environmental, or economic reasons.

(1) In situations where wastewater is discharged to marine waters without intervening beneficial use (for example, the San Francisco Bay Area and most of Southern California), increase the efficiency of municipal, industrial, and agricultural water use.

(2) Make optimum use of existing water resource facilities.

(3) Store what would otherwise be surplus wet-weather Delta outflows in off-stream reservoirs.

(4) Conjunctively use surface and ground waters.

(5) Give careful consideration to the impact on basin water quality of inland siting of power plants.

(6) Make maximum use of reclaimed water while protecting public health and avoiding severe economic penalties to a particular user or class of users.

4.3.1.2 Trans-Delta Water Conveyance

The State Water Board should adopt the position that those proposing trans-Delta water conveyance facilities must clearly demonstrate the following, if such a facility is constructed:

(1) Protection of all beneficial uses in the Delta that may be affected by such a facility;

(2) Protection of all established water quality objectives that may be affected by such a facility; and,

(3) Adherence to the six alternatives previously identified for Interbasin Transfer of Water.

4.3.1.3 Water Quality Planning

A core planning group has been established within the staff of the State Water Board, which has the responsibility to integrate the statewide planning of water quality and water resources management.

4.3.1.4 Water Intake Studies

The State Water Board should coordinate studies to assess the costs and benefits of moving planned diversions from the eastern side of the Central Valley to points further west, probably to the Delta, to allow east side waters to flow downstream for uses of fishery enhancement, recreation, and quality control. Specific study items should include:

(1) Possible intake relocations;

(2) Conveyance and treatment required to accommodate such relocations;

(3) Direct and indirect (including consumer and environmental) costs and benefits of relocation; and,

(4) Institutional problems.

The State Water Board should request voluntary participation in the studies by agencies planning diversions, but should take appropriate action through its water rights authority if such participation cannot be obtained. At a minimum, participation would be required of the San Francisco Water Department and East Bay Municipal Utility District.

4.3.1.5 Subsurface Agricultural Drainage

(1) The Regional Board will request that the State Water Board use its water rights authority to preclude the supplying of water to specific lands, if water quality objectives are not met by the specified compliance dates and Regional Board administrative remedies fail to achieve compliance.

(2) The State Water Board should work jointly with the Regional Water Board in securing compliance with the 2 µg/l selenium objective for managed- wetlands in the Grassland area.

(3) The State Water Board should also consider grant funds to implement a cost share program to install a number of flow monitoring stations within the Grassland area to assist in better defining the movement of pollutants through the area.

(4) The State Water Board should continue to consider the Drainage Problem Area in the San Joaquin Basin and the upper Panoche watershed (in the Tulare Basin) as priority nonpoint source problems in order to make USEPA nonpoint source control funding available to the area.

(5) The State Water Board should seek funding for research and demonstration of advanced technology that will be needed to achieve final selenium loads necessary to meet selenium water quality objectives.

4.3.1.6 Salt and Boron in the Lower San Joaquin River

(1) The State Water Board should consider the continued use of its water rights authority to prohibit water transfers if the transfer contributes to low flows and related salinity water quality impairment in the Lower San Joaquin River.

(2) The State Water Board should consider the continued conditioning of water rights on the attainment of existing and new water quality objectives for salinity in the Lower San Joaquin River, when these objectives cannot be met through discharge controls alone.

4.3.1.7 Dissolved Oxygen in the Stockton Deep Water Ship Channel (DWSC)

(1) The State Water Board should consider amending water right permits for existing activities that reduce flow through the DWSC to require that the associated impacts on excess net oxygen demand conditions in the DWSC be evaluated and their impacts reduced in accordance with the *Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the DWSC*.

(2) The State Water Board should consider requiring evaluation and full mitigation of the potential impacts of future water right permits or water transfer applications on reduced flow and excess net oxygen demand conditions in the DWSC.

4.3.1.8 Delta Mercury

(1) The State Water Board should consider requiring methylmercury controls for new water management activities that have the potential to increase ambient methylmercury levels as a condition of approval of any water right action required to implement the project. The State Water Board Division of Water Rights should consider requiring the evaluation and implementation of feasible management practices to reduce or, at a minimum, prevent methylmercury ambient levels from increasing from those changes in water management activities and flood conveyance projects that have the potential to increase methylmercury levels. The State Water Board should consider funding or conducting studies to develop and evaluate management practices to reduce methylmercury production resulting from existing water management activities or flood conveyance projects.

(2) During future reviews of the salinity objectives contained in the Bay-Delta Plan, the State Water Board Division of Water Rights should consider conducting studies to determine whether proposed changes to salinity objectives could affect methylmercury production and should consider the results of these studies in evaluating changes to the salinity objectives.

4.3.2 Recommended for Implementation by Other Agencies

4.3.2.1 Water Resources Facilities

(1) Consideration should be given to the construction of a storage facility to store surplus wet-weather Delta outflows. Construction should be contingent on studies demonstrating that some portion of wet-weather Delta outflow is truly surplus to the Bay-Delta system.

(2) Consideration should be given to the use of excess capacity in west San Joaquin Valley conveyances, or of using a new east valley conveyance to:

(a) Augment flows and improve water quality in the San Joaquin River and southern Delta with the goal of achieving water quality as described in Table 4-4.

TABLE 4-4

TYPE PF YEAR[1]				
TDS MG/L	CRITICAL[2]	DRY[3]	NORMAL	WET[4]
Max. 3-day (arith. avg.)	500	500	500	500
Maximum (annual avg.)	385	385	385	285
Max. May-Sep (arith. avg.)	300	250	250	250
Max. 3-Day May-Sep (arith Avg.)	450	350	350	350

[1] Relative to unimpaired runoff to Delta Based on 1922 -1971 period. See definitions in Figure 2 of the 2006 Bay-Delta Plan

[2] Less than 57%, or less than 70% when preceding year critical

[3] Less than 70%, or less than 90% when preceding year critical

[4] Greater than 125%

(b) Prevent further ground water overdrafts and associated quality problems.

(3) Agencies responsible for existing water resources facilities that reduce flow through the Stockton Deep Water Ship Channel (DWSC) should evaluate and reduce their impacts on excess net oxygen demand conditions in the DWSC in accordance with the *Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the DWSC*.

(4) Agencies responsible for future water resources facilities projects, which potentially reduce flow through the DWSC, should evaluate and fully mitigate the potential negative impacts on excess net oxygen demand conditions in the DWSC.

4.3.2.2 Agricultural Drainage Facilities

Facilities should be constructed to convey agricultural drain water from the San Joaquin and Tulare Basins. It is the policy of the Regional Water Board to encourage construction. The discharge must comply with water quality objectives of the receiving water body.

4.3.2.3 Subsurface Agricultural Drainage

(1) The entire drainage issue is being handled as a watershed management issue. The entities in the Drainage Problem Area and entities within the remainder of the Grassland watershed need to establish a regional entity with authority and responsibility for drain water management.

(2) The regional drainage entity and agricultural water districts should consider adopting economic incentive programs as a component of their plans to reduce pollutant loads. Economic incentives can be an effective institutional means of promoting on-farm changes in drainage and water management.

(3) If fragmentation of the parties that generate, handle and discharge agricultural subsurface drainage jeopardizes the achievement of water quality objectives, the Regional Water Board will consider petitioning the Legislature for the formation of a regional drainage district.

(4) The Legislature should consider putting additional bond issues before the voters to provide low interest loans for agricultural water conservation and water quality projects

and incorporating provisions that would allow recipients to be private landowners, and that would allow irrigation efficiency improvement projects that reduce drainage discharges to be eligible for both water conservation funds and water quality facilities funds.

(5) The San Joaquin Valley Drainage Implementation Program or other appropriate agencies should continue to investigate the alternative of a San Joaquin River Basin drain to move the existing discharge point for poor quality agricultural subsurface drainage to a location where its impact on water quality is less.

(6) The selenium water quality objective for the wetland channels can not be achieved without removal of drainage water from these channels. The present use of the Grassland channels has developed over a 30-year period through agreements between the dischargers, water and irrigation districts, the U.S. Bureau of Reclamation, the California Department of Water Resources, the U.S. Fish and Wildlife Service, the California Department of Fish and Game (now the Department of Fish and Wildlife), the Grassland Water District and the Grassland Resource Conservation District. Because each entity shared in the development of the present drainage routing system, each shares the responsibility for implementation of a wetlands bypass.

4.3.2.4 Stockton Deep Water Ship Channel (DWSC)

(1) The U.S. Army Corps of Engineers should reduce the impacts of the existing DWSC geometry on excess net oxygen demand conditions in accordance with the *Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the DWSC*.

4.3.2.5 Delta Mercury

(1) USEPA and the California Air Resources Board should work with the State Water Board and develop a memorandum of understanding to evaluate local and statewide mercury air emissions and deposition patterns and to develop a load reduction program(s).

(2) The State of California should establish the means to fund a portion of the mercury control projects in the Delta and upstream watersheds.

(3) Watershed stakeholders are encouraged to identify total mercury and methylmercury reduction projects and propose and conduct projects to reduce upstream non-point sources of methylmercury and total mercury. The Regional Water Board recommends that state and federal grant programs give priority to projects that reduce upstream non-point sources of methylmercury and total mercury.

(4) Dischargers may evaluate imposed administrative civil liabilities projects for total mercury and methylmercury discharge and exposure reduction projects, consistent with Supplemental Environmental Project policies.

4.3.2.6 Pyrethroid Pesticides Control Program

4.3.2.6.1 California Department of Pesticide Regulation (DPR)

Like the Regional Water Board, DPR is part of the California Environmental Protection Agency. It regulates pesticide product sales and use within California pursuant to the California Food and Agricultural Code. When DPR evaluates whether to register a pesticide product, one consideration is the potential for environmental damage. As a part of the pesticide registration

process DPR seeks to identify pesticide products whose use or runoff may result in adverse environmental impacts and condition or deny product registration accordingly. DPR is mandated to protect water quality from environmentally harmful pesticide materials and can implement mitigation measures when monitoring data provides evidence of adverse environmental impacts.

Consistent with its authorities, DPR should continue to implement the following actions:

(1) Conduct statewide urban and agricultural monitoring program to identify pesticides applied in such a manner that runoff does or could cause or contribute to water quality concerns;

(2) Deny registration to pesticide products during registration evaluation process that present an unacceptable risk to surface water;

(3) Require registrants to provide information necessary to assess potential water quality impacts as a condition of registration, including, when necessary, development of analytical methods with adequately low limits of quantification in appropriate matrices;

(4) Continue and enhance efforts to evaluate the potential for registered pesticide products to cause or contribute to water quality concerns, including consideration of fate and transport of pesticide discharges from wastewater treatment plants, urban runoff, and agricultural sources. Continuous evaluation efforts include monitoring, assessment, and special studies to address identified data gaps;

(5) Notify USEPA of potential deficiencies in product labels for products that threaten water quality;

(6) Work directly with registrants to address product uses specific to California environmental concerns;

(7) Where necessary, develop and modify pesticide use regulations to address pesticide uses that are causing unacceptable water quality impacts;

(8) Continue and enhance education and outreach programs to encourage integrated pest management and less toxic pest control (work with County Agricultural Commissioners, urban runoff management agencies, and the University of California Statewide Integrated Pest Management Program to coordinate activities);

(9) Continue and enhance, in coordination with county agricultural commissioners, implementation and enforcement of water quality protection regulations and label requirements, including urban surface water protection regulations;

(10) Continue and enhance reporting on progress and challenges in implementing water quality protection-related efforts for pesticides with concentrations of concern.

4.3.2.6.2 U. S. Environmental Protection Agency (USEPA) Office of Pesticide Programs

USEPA is responsible for implementing the Federal Insecticide, Fungicide, and Rodenticide Act and the Clean Water Act. USEPA is therefore responsible for ensuring that both federal pesticide laws and water quality laws are implemented. USEPA should exercise its authorities to ensure that foreseeable pesticide applications do not cause or contribute to water column or

sediment toxicity in the Region's waters. Because some pesticides pose water quality risks, USEPA should implement the following actions:

(1) Continue to improve the pesticide registration and registration review processes to ensure that pesticide applications and resulting discharges are protective of water quality and do not cause water quality impairments (i.e., restrict uses or application practices to manage risks). This should include consideration of fate and transport of pesticide discharges from wastewater treatment plants, urban runoff, and agricultural runoff;

(2) Continue and enhance education and outreach programs to encourage integrated pest management and less toxic pest control;

(3) Require registrants to provide information necessary to assess potential water quality impacts as a condition of registration, including, when necessary, adequate ecotoxicity data to develop water and sediment quality criteria for pesticides of concern and development of analytical methods with adequately low limits of quantification in appropriate matrices;

(4) Complete studies to address critical data needs;

(5) Respond in a timely manner to identified deficiencies in product labels for products that threaten water quality;

(6) Continue and enhance internal coordination efforts between the Office of Pesticide Programs and the Office of Water to implement the above-stated actions to ensure pesticide registration decisions protect water quality.

4.4 CONTINUOUS PLANNING FOR IMPLEMENTATION OF WATER QUALITY CONTROL

In order to effectively protect beneficial uses, the Regional Water Board updates the Basin Plan regularly in response to changing water quality conditions. The Regional Water Board is periodically apprised of water quality problems in the Sacramento and San Joaquin River Basins, but the major review of water quality is done every three years as part of the Triennial Review of water quality standards.

During the triennial review, the Regional Water Board holds a public hearing to receive comments on actual and potential water quality problems. A workplan is prepared which identifies the control actions that will be implemented over the succeeding three years to address the problems. The actions may include or result in revision of the Basin Plan's water quality standards if that is an appropriate problem remedy. Until such time that a basin plan is revised, the triennial review also serves to reaffirm existing standards.

The control actions that are identified through the triennial review process are incorporated into the Basin Plan to meet requirements to describe actions (to achieve objectives) and a time schedule of their implementation as called for in the Water Code, Section 13242(a) and (b). The actions recommended in the most recent triennial review are described in the following section.

4.5 ACTIONS AND SCHEDULE TO ACHIEVE WATER QUALITY OBJECTIVES

4.5.1 Agricultural Drainage Discharges in the San Joaquin River Basin

Water quality in the San Joaquin River has degraded significantly since the late 1940s. During this period, salt concentrations in the River, near Vernalis, have doubled. Concentrations of boron, selenium, molybdenum and other trace elements have also increased. These increases are primarily due to reservoir development on the east side tributaries and upper basin for agricultural development, the use of poorer quality, higher salinity, Delta water in lieu of San Joaquin River water on west side agricultural lands and drainage from upslope saline soils on the west side of the San Joaquin Valley. Point source discharges to surface waters only contribute a small fraction of the total salt and boron loads in the San Joaquin River.

The water quality degradation in the River was identified in the 1975 Basin Plan and the Lower San Joaquin River was classified as a Water Quality Limited Segment. At that time, it was envisioned that a Valley-wide Drain would be developed and these subsurface drainage water flows would then be discharged outside the Basin, thus improving River water quality. However, present day development is looking more toward a regional solution to the drainage water discharge problem rather than a valley-wide drain.

Because of the need to manage salt and other pollutants in the River, the Regional Water Board began developing a Regional Drainage Water Disposal Plan for the Basin. The development began in FY 87/88 when Basin Plan amendments were considered by the Water Board in FY 88/89. The amendment development process included review of beneficial uses, establishment of water quality objectives, and preparation of a regulatory plan, including a full implementation plan. The regulatory plan emphasized achieving objectives through reductions in drainage volumes and pollutant loads through best management practices and other on-farm methods.

The 88/89 amendment emphasized toxic elements in subsurface drainage discharges. The Regional Water Board however still recognizes salt management as the most serious long-term issue on the San Joaquin River. Salinity impairment in the Lower San Joaquin River remains a persistent problem as salinity water quality objectives continue to be exceeded. The Regional Water Board adopted the following control program for salt and boron in the Lower San Joaquin River to address salt and boron impairment and to bring the river into compliance with water quality objectives. Additionally, the Regional Water Board will continue as an active participant in the San Joaquin River Management Program implementation phase, as authorized by AB 3048, to promote salinity management schemes including time discharge releases, real time monitoring and source control.

Per the amendment to the Basin Plan for San Joaquin River subsurface agricultural drainage, approved by the State Water Board in Resolution No. 96-078, as amended by Resolution No. R5-2010-0046 and incorporated herein, the following actions will be implemented.

(1) In developing control actions for selenium, the Regional Board will utilize a priority system which focuses on a combination of sensitivity of the beneficial use to selenium and the environmental benefit expected from the action.

(2) Control actions which result in selenium load reduction are most effective in meeting water quality objectives.

(3) With the uncertainty in the effectiveness of each control action, the regulatory program will be conducted as a series of short-term actions that are designed to meet long-term water quality objectives.

(4) Best management practices, such as water conservation measures, are applicable to the control of agricultural subsurface drainage.

(5) Performance goals will be used to measure progress toward achievement of water quality objectives for selenium. Prohibitions of discharge and waste discharge requirements will be used to control agricultural subsurface drainage discharges containing selenium. Compliance with performance goals and water quality objectives for nonpoint sources will occur no later than the dates specified in Table 4-5 for Mud Slough (north) and the San Joaquin River from the Mud Slough confluence to the Merced River.

TABLE 4-5. COMPLIANCE TIME SCHEDULE FOR MEETING THE 4-DAY AVERAGE WATER QUALITY OBJECTIVE FOR SELENIUM

Selenium Water Quality Objectives (in bold) and Performance Goals (in italics)

Water Body	31 December 2015	31 December 2019
Mud Slough (north) and the San Joaquin River from the Mud Slough confluence to the Merced River	*15 μg/L monthly mean*	**5 μg/L 4-day avg.**

(6) Waste discharge requirements will be used to control agricultural subsurface drainage discharges containing selenium and may be used to control discharges containing other toxic trace elements.

(7) Selenium load reduction requirements will be incorporated into waste discharge requirements as effluent limits as necessary to ensure that the selenium water quality objectives in the San Joaquin River downstream of the Merced River inflow is achieved. The Board adopted a TMDL for selenium in the San Joaquin River in 2001 after public review.

(8) Selenium effluent limits established in waste discharge requirements will be applied to the discharge of subsurface drainage water from the Grassland watershed. In the absence of a regional entity to coordinate actions on the discharge, the Regional Board will consider setting the effluent limits at each drainage water source (discharger) to ensure that beneficial uses are protected at all points downstream.

(9) Upslope irrigations and water facility operators whose actions contribute to subsurface drainage flows will participate in the program to control discharges.

(10) Public and private managed-wetlands will participate in the program to achieve water quality objectives.

(11) Achieving reductions in the load of selenium discharged is highly dependent upon the effectiveness of individual actions or technology not currently available; therefore, the Regional Board will review the waste discharge requirements and compliance schedule at least every 5 years.

(12) All those discharging or contributing to the generation of agricultural subsurface drainage will be required to submit for approval a short-term (5-year) drainage management plan designed to meet interim milestones and a long-term drainage management plan designed to meet final water quality objectives.

(13) An annual review of the effectiveness of control actions taken will be conducted by those contributing to the generation of agricultural subsurface drainage.

(14) Evaporation basins in the San Joaquin Basin will be required to meet minimum design standards, have waste discharge requirements and be part of a regional plan to control agricultural subsurface drainage.

(15) The Regional Board staff will coordinate with US EPA and the dischargers on a study plan to support the development of a site specific selenium water quality objective for the San Joaquin River and other effluent dominated waterbodies in the Grassland watershed.

(16) The Regional Board will establish water quality objectives for salinity for the San Joaquin River.

4.5.1.1 Control Program for Salt and Boron Discharges into the Lower San Joaquin River (LSJR)

The goal of the salt and boron control program is to achieve compliance with salt and boron water quality objectives without restricting the ability of dischargers to export salt out of the San Joaquin River basin.

For the purpose of this control program, nonpoint source land uses include all irrigated lands and nonpoint source discharges are discharges from irrigated lands.

Irrigated lands are lands where water is applied for producing crops and, for the purpose of this control program, includes, but is not limited to, land planted to row, field and tree crops as well as commercial nurseries, nursery stock production, managed wetlands, and rice production.

This control program is phased to allow for implementation of existing water quality objectives, while providing the framework and timeline for implementing future water quality objectives.

The salt and boron control program establishes 1) a method for determining the maximum allowable salt loading to the LSJR from discharges to achieve compliance with salinity water quality objectives (WQOs) at the Airport Way Bridge near Vernalis and 2) WQOs and an implementation program for salinity between the mouth of the Merced River and the Airport Way Bridge.

4.5.1.1.1 Salt Loading and the Vernalis Salinity Control Program

Load allocations to specific dischargers or groups of dischargers are proportionate to the area of nonpoint source land use contributing to the discharge. Control actions that result in salt load reductions will be effective in the control of boron.

Load allocations are established for nonpoint sources and waste load allocations are established for point sources.

Per the amendments to the Basin Plan for control of salt and boron discharges into the LSJR basin, approved by the Regional Water Board in Resolution No. 88-195, Resolution No. 2004-0108, and Resolution No. R5-2017-0062 and incorporated herein, the Regional Water Board will take the following actions, as necessary and appropriate, to implement this control program:

(1) The Regional Water Board shall use waivers of waste discharge requirements or waste discharge requirements to apportion load allocations to each of the following seven geographic subareas that comprise the LSJR:

(a) San Joaquin River Upstream of Salt Slough
(b) Grassland
(c) Northwest Side
(d) East Valley Floor
(e) Merced River
(f) Tuolumne River
(g) Stanislaus River

These subareas are described in Chapter 1 and in more detail in Appendix 41.

(2) Dischargers of irrigation return flows from irrigated lands are in compliance with this control program if they meet any of the following conditions:

(a) Cease discharge to surface water

(b) Discharge does not exceed 315 µS/cm electrical conductivity (based on a 30-day running average)

(c) Operate under waste discharge requirements that include effluent limits for salt

(d) Operate under a waiver of waste discharge requirements for salt and boron discharges to the LSJR

(3) The Regional Water Board will adopt waivers of waste discharge requirements or waste discharge requirements for salinity management, or incorporate into existing agricultural waivers or waste discharge requirements, the conditions required to participate in a Regional Water Board approved real-time management program. Load allocations for nonpoint source dischargers participating in a Regional Water Board approved real-time management program are described in Table 4-9. Additional waiver conditions or waste discharge requirements will include use of Regional Water Board approved methods to measure and report flow and electrical conductivity. Participation in a Regional Water Board approved real-time management program and attainment of salinity water quality objectives at the Airport Way Bridge near Vernalis will constitute compliance with this control program.

(4) The Regional Water Board will adopt waste discharge requirements with fixed monthly base load allocations specified as effluent limits for nonpoint source discharges that do not meet conditions specified in waivers of waste discharge requirements or waste discharge requirements for salinity management. Entities operating under waste discharge requirements, or that will be required to operate under waste discharge requirements in order to comply with other programs, may participate in a Regional Water Board approved real-time management program in lieu of additional waste

discharge requirements for salinity if they meet the conditions specified in the waiver of waste discharge requirements for salinity management, as described in item 3.

(5) Fixed monthly base load allocations and the method used to calculate real-time load allocations are specified in Table 4-9.

(6) Waste Load Allocations are established for point sources of salt in the basin. NPDES permitted discharges will not exceed the salinity water quality objectives established for the LSJR at the Airport Way Bridge near Vernalis unless the discharger is a member of a Regional Water board-approved real time management program or a pollutant trading program consistent with the Control Program for Salt and Boron Discharges into the LSJR. The Regional Water Board will revise NPDES permits to incorporate the requirements of the Control Program when the permits are renewed or reopened at the discretion of the Regional Water Board.

(7) Supply water credits are established for irrigators that receive supply water from the Delta Mendota Canal (DMC) or the LSJR between the confluence of the Merced River and the Airport Way Bridge near Vernalis as described in Table 4-9.

(8) Supply water Load Allocations are established for salts in irrigation water imported to the LSJR Watershed from the Sacramento/San Joaquin River Delta as described in Table 4-9.

Per Resolution No. R5-2014-0150, the Regional Water Board adopted a revised Management Agency Agreement (MAA) with the U.S. Bureau of Reclamation, replacing a 2008 MAA to address salt imports from the DMC to the LSJR watershed. The MAA includes provisions requiring the U.S. Bureau of Reclamation to:

(a) Meet DMC load allocations; or
(b) Provide mitigation and/or dilution flows to create additional assimilative capacity for salt in the LSJR equivalent to DMC salt loads in excess of their allocation

The Regional Water Board shall request a report of waste discharge from the U.S. Bureau of Reclamation to meet DMC load allocations if a MAA meeting the provisions identified above does not remain in place.

(9) The Regional Water Board will review and, if necessary, update the load allocations and/or waste load allocations by 28 July 2012 and every 6 years thereafter. Any changes to waste load allocations and/or load allocations can be made through subsequent amendment to this control program. Changes to load allocations will be implemented through revisions of the applicable waste discharge requirements or waivers of waste discharge requirements. Changes to waste load allocations will be implemented through revisions of the applicable NPDES permits.

(10) The Regional Water Board encourages real-time water quality management and pollutant trading of waste load allocations, load allocations, and supply water allocations as a means for attaining salt and boron water quality objectives while maximizing the export of salts out of the LSJR watershed. This control program shall in no way preclude basin-wide stakeholder efforts to attain salinity water quality objectives in the LSJR so long as such efforts are consistent with the control program.

(11) The established waste load allocations, load allocations, and supply water allocations represent a maximum allowable level. The Regional Water Board may take other actions or require additional reductions in salt and boron loading to protect beneficial uses

(12) Salt loads in water discharged into the LSJR or its tributaries for the express purpose of providing dilution flow are not subject to load limits described in this control program if the discharge:

(a) complies with salinity water quality objectives for the LSJR at the Airport Way Bridge near Vernalis;
(b) is not a discharge from irrigated lands; and
(c) is not provided as a water supply to be consumptively used upstream of the San Joaquin River at the Airport Way Bridge near Vernalis.

(13) Entities providing dilution flows, as described in item 12, will obtain an allocation equal to the salt load assimilative capacity provided by this flow. This dilution flow allocation can be used to: 1) offset salt loads discharged by this entity in excess of any allocation or; 2) trade, as described in item 10. The additional dilution flow allocation provided by dilution flows will be calculated as described in Table 4-9.

4.5.1.1.2 Compliance with Water Quality Objectives Upstream of the Airport Way Bridge near Vernalis

(1) Per the amendments to the Basin Plan for control of salt and boron discharges into the LSJR basin between the Airport Way Bridge near Vernalis and the mouth of the Merced River, approved by the Regional Water Board in Resolution No. 88-195 and Resolution No. R5-2017-0062, and incorporated herein, the following actions will be implemented:

(a) The Regional Water Board will determine nonpoint source discharge compliance with electrical conductivity and boron WQOs using data collected at Crows Landing and Maze Road. Daily average electrical conductivity data will be utilized to calculate the 30-day running averages for electrical conductivity compliance; weekly boron concentration data will be utilized to calculate the monthly average and maximum boron concentrations for compliance.

(b) The Regional Water Board has established a non-regulatory performance goal for the LSJR that represents a potentially-achievable 30-day running average that is lower than the WQO. As the Salt and Boron Control Program is implemented, the Regional Water Board will continue to evaluate whether this performance goal is achievable during the irrigation seasons of Wet, Above Normal, Below Normal, and Dry Water Years, as specified in Table 4-6.

TABLE 4-6: ELECTRICAL CONDUCTIVITY PERFORMANCE GOAL PERIODS (except during Extended Dry Periods)

WY Type	Irrigation Season		Non-irrigation Season
	Mar-Jun	Jul-Sept	Oct-Feb
Wet	1350 µS/cm		
Above Normal	1350 µS/cm		
Below Normal	1350 µS/cm		
Dry	1350 µS/cm		
Critical			

(c) Attainment of the electrical conductivity Performance Goal will be evaluated using data collected at Crows Landing and Maze Road.

(d) Ten years after Regional Water Board's adoption of the Basin Plan Amendment, and based on the evaluations described in the subparagraphs above, the Regional Water Board will consider reopening the Basin Plan to potentially revise the LSJR electrical conductivity WQOs.

(e) During an Extended Dry Period, the electrical conductivity WQO will be 2470 µS/cm (30-day running average) to protect the AGR beneficial use. In addition, during an Extended Dry Period, the electrical conductivity WQO for protection of the potential MUN beneficial use shall be 2200 µS/cm as the average of the previous four (4) consecutive quarterly samples at a minimum.

An Extended Dry Period is based in part on the water year type numeric indicator identified in the State Water Board's San Joaquin Valley "60-20-20" Water Year Hydrologic Classification[6] as follows:

- Wet – 5
- Above Normal – 4
- Below Normal – 3
- Dry – 2
- Critically Dry – 1

The indicator values will be used as follows to determine when an Extended Dry Period is in effect:

- An Extended Dry Period shall begin when the sum of the current year's 60-20-20 indicator value and the previous two year's 60-20-20 indicator values total six (6) or less.

[6] The method for determining the San Joaquin Valley Water Year Hydrologic Classifications is defined in the State Water Board Revised Water Right Decision 1641, March 2000, Figure 2, page 189. This method uses the best available estimate of the 60-20-20 San Joaquin Valley water year hydrologic classification at the 75% exceedance level using the best available data published in the California Department of Water Resources' ongoing Bulletin 120 series.

- An Extended Dry Period shall be deemed to exist for one water year (12 months) following a period with an indicator value total of six (6) or less.

(2) In addition to meeting the requirements of the Vernalis Salinity Control Program, considerations for NPDES permitted discharges to the LSJR are as follows:

(a) When evaluating whether an NPDES point source discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion of the EC WQOs for the Lower San Joaquin River, the Regional Water Board should consider available dilution of the effluent in the receiving water, and may consider dilution as determined down to the first downstream diversion that provides AGR irrigation supply or MUN beneficial use in establishing mixing zones for those beneficial uses.

(b) If an NPDES point source discharge is deemed to have reasonable potential to cause or contribute to an instream excursion above the EC WQOs, water quality-based effluent limits shall be required. For publicly-owned treatment works (POTWs), the water quality-based effluent limitations may be established in terms of EC concentration or total dissolved solids (TDS) loading to account for site-specific consideration of dry weather versus wet weather conditions. However, concentration and loading limits shall not be applied at the same time. When establishing water quality-based effluent limitations for POTWs in terms of TDS loading, an EC to TDS ratio of 0.64 shall be used to convert EC concentrations to TDS concentrations, unless a discharger-specific ratio can be demonstrated. The design average dry weather flow of the POTW shall be used to calculate the TDS loading limits.

(c) For NPDES point source discharges, if water quality-based effluent limits are required:

i. effluent limitations for protection of AGR beneficial uses shall be expressed as monthly averages instead of thirty-day running averages;

ii. effluent limitations for protection of MUN beneficial uses should be expressed as an annual average.

(d) The Regional Water Board will incorporate the requirements of the EC water quality objectives for the Lower San Joaquin River when the NPDES permits are renewed or reopened at the discretion of the Regional Water Board.

4.5.1.1.3 Implementation Priority and Schedules

4.5.1.1.3.1 Salt Loading and the Vernalis Water Quality Objectives

The Regional Water Board will focus control actions on the most significant sources of salt and boron discharges to the LSJR. Priority for implementation of load allocations to control salt and boron discharges will be given to subareas with the greatest unit area salt loading (tons per acre per year) to the LSJR (Table 4-7). The priorities established in Table 4-7 will be reviewed by 28 July 2012 and every 6 years thereafter.

TABLE 4-7: PRIORITIES FOR IMPLEMENTING LOAD ALLOCATIONS[1]

Subarea	Priority
San Joaquin River Upstream of Salt Slough	Low
Grassland	High
Northwest Side	High
East Valley Floor	Low
Merced River	Low
Tuolumne River	Medium
Stanislaus River	Low
Delta Mendota Canal[2]	High
[1] Priorities based on the unit area salt loading from each subarea and mass load from the DMC [2] Delta Mendota Canal is not a subarea	

(1) The Regional Water Board will incorporate base load allocations into waste discharge requirements and real-time load allocations into conditions of waiver of waste discharge requirements by 28 July 2008. Dischargers regulated under a waiver of waste discharge requirements for dischargers participating in a real-time management program for the control of salt and boron in the LSJR shall comply with the waiver conditions within 1 year of the date of adoption of the waiver.

(2) Existing NPDES point source dischargers are low priority and subject to the compliance schedules for low priority discharges in Table 4-8. New point source discharges that begin discharging after the date of the adoption of this control program must meet the requirements of the Control Program for Salt and Boron Discharges into the LSJR upon the commencement of the discharge.

TABLE 4-8: SCHEDULE FOR COMPLIANCE WITH THE LOAD ALLOCATIONS FOR SALT AND BORON DISCHARGES INTO THE LSJR

Priority	Year to implement[1]	
	Wet through Dry Year Types	Critical Year Types
High	8	12
Medium	12	16
Low	16	20
[1] number of years from the effective date [28 July 2006] of this control program		

(3) A groundwater control program for sources of salt discharges into the LSJR will be developed by June 2020 if water quality objectives in the LSJR are not being attained.

4.5.1.1.3.2 Water Quality Objectives Upstream of the Airport Way Bridge near Vernalis

(1) The electrical conductivity water quality objectives for the San Joaquin River between its confluence with the Merced River and the Airport Way Bridge near Vernalis will be implemented by 1 January 2020.

TABLE 4-9 SUMMARY OF ALLOCATIONS AND CREDITS

BASE SALT LOAD ALLOCATIONS

Base Load Allocations (thousand tons of salt)

	Month / Period												
Year-type[1]	Jan	Feb	Mar	Apr 1 to Apr. 14	Pulse Period [2]	May 16 to May 31	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wet	41	84	116	23	72	31	0	0	5	45	98	44	36
Abv. Norm	44	84	64	26	71	14	0	0	0	44	58	35	32
Blw. Norm	22	23	31	11	45	8	0	0	0	38	41	34	30
Dry	28	39	25	5	25	1	0	0	0	25	31	27	28
Critical	18	15	11	0	0	0	0	0	0	19	30	26	23

REAL-TIME SALT LOAD ALLOCATIONS

Nonpoint source dischargers operating under waiver of waste discharge requirements or waste discharge requirements must participate in a Regional Water Board approved real-time management program and meet real-time load allocations. Loading capacity and real-time load allocations are calculated for a monthly time step. The following method is used to calculate real-time load allocations. Flows are expressed in thousand acre-feet per month and loads are expressed in tons per month.

Loading Capacity (LC) in tons per month is calculated by multiplying flow in thousand acre-ft per month by the salinity water quality objective in μS/cm, a unit conversion factor of 0.8293, and a coefficient of 0.85 to provide a 15 percent margin of safety to account for any uncertainty.

LC = Q * WQO * 0.8293 * 0.85

Where:
LC = total loading capacity in tons per month
Q = flow in the San Joaquin River at the Airport way Bridge near Vernalis in thousand acre-feet per month
WQO = salinity water quality objective for the LSJR at Airport Way Bridge near Vernalis in μS/cm

TABLE 4-9 SUMMARY OF ALLOCATIONS AND CREDITS (continued)

The sum of the real-time Load Allocations (LA) for nonpoint source dischargers are equal to a portion of the LSJR's total Loading Capacity (LC) as described by the following equation:

$LA = LC - L_{BG} - L_{CUA} - L_{GW} - \Sigma WLA$

Where:
LA = sum of the real-time Load Allocations for nonpoint source dischargers
L_{BG} = loading from background sources
L_{CUA} = consumptive use allowance
L_{GW} = loading from groundwater
ΣWLA = sum of the waste load allocations for all point sources

Background loading in tons is calculated using the following equation:

$L_{BG} = Q * 85\ \mu S/cm * 0.8293$

Consumptive use allowance loading is calculated with the following equation:

$L_{CUA} = Q * 230\ \mu S/cm * 0.8293$

Monthly groundwater Loading (L_{GW}) (in thousand tons)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
15	15	30	32	36	53	46	27	16	13	14	15

Waste load allocations for individual point sources are calculated using the following equation:

$WLA = Q_{PS} * WQO * 0.8293$

where:
WLA = waste load allocation in tons per month
Q_{PS} = effluent flow to surface waters from the NPDES permitted point source discharger (in thousand acre-feet per month)
WQO = salinity water quality objective for the LSJR at Airport Way Bridge near Venalis in $\mu S/cm$

APPORTIONING OF SALT LOAD ALLOCATION

An individual discharger or group of dischargers can calculate their load allocation by multiplying the nonpoint source acreage drained by the load allocation per acre.

$$\text{LA per acre} = \frac{\text{LA}}{\text{Total nonpoint source acreage}}$$

As of 1 August 2003, the total nonpoint source acreage of the LSJR Basin is 1.21-million acres. Nonpoint source land uses include all irrigated agricultural lands (including managed wetlands). Agricultural land includes all areas designated as agricultural or semi-agricultural land uses in the most recent land use surveys published by the California Department of Water Resources. California Department of Water Resources land use surveys are prepared and published on a county-by-county basis. Multiple counties or portions of counties may overlay a given subarea. The land use surveys must be used in combination with a Geographic Information System to quantify the agricultural land use in each subarea. Nonpoint source land areas will be updated every 6 years though an amendment to the Basin Plan if updated California Department of Water Resources land use surveys have been published. The following land use surveys (or portions thereof) are used to quantify agricultural land use in the LSJR watershed.

TABLE 4-9 SUMMARY OF ALLOCATIONS AND CREDITS (continued)

APPORTIONING OF SALT LOAD ALLOCATION (continued)

County	Year of most recent land use survey[1]
Merced	1995
Madera	1995
San Joaquin	1996
Fresno	1994
Stanislaus	1996
[1]-as of 1 August 2003	

Acreage of managed wetlands is based on the boundaries of the federal, private and state owned wetlands that comprise the Grassland Ecological Area in Merced County. Agricultural lands (as designated in DWR land uses surveys) within the Grassland Ecological Area are counted as an agricultural land use and not as managed wetlands. All other lands within the Grassland Ecological Area are considered to be managed wetlands.

CONSUMPTIVE USE ALLOWANCE

In addition to the base load allocations or real-time load allocations shown above, a consumptive use allowance (L_{CUA}) is provided to each discharger:

L_{CUA} in tons per month = discharge volume in thousand acre-feet per month * 230 μS/cm * 0.8293

SUPPLY WATER CREDITS

A supply water credit is provided to irrigators in the Grassland and Northwest Side Subareas that receive water from the DMC. This DMC supply water credit is equal to 50 percent of the added salt load, in excess of background, delivered to Grassland and Northwest Side subareas. The following fixed DMC supply water credits apply to dischargers operating under base load allocations:

DMC supply water credits (thousand tons)

	Month / Period												
Year-type[1]	Jan	Feb	Mar	Apr 1 to Apr. 14	Pulse Period [2]	May 16 to May 31	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NORTHWEST SIDE SUBAREA													
Wet	0.0	0.2	0.0	0.7	1.4	0.7	2.0	2.6	2.6	1.0	0.9	0.6	0.0
Abv. Norm	0.0	0.0	0.0	0.8	1.9	1.0	2.3	2.3	2.6	1.2	0.8	0.3	0.0
Blw. Norm	0.0	0.0	0.0	1.0	2.6	1.5	3.4	4.2	3.3	2.5	1.9	0.8	0.0
Dry	0.0	0.0	0.0	0.1	0.3	0.2	0.3	0.5	0.5	0.2	0.2	0.0	0.0
Critical	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRASSLAND SUBAREA													
Wet	2.1	5.9	13.9	7.8	17.3	8.8	22.6	20.8	23.2	17.2	16.0	10.4	3.7
Abv. Norm	1.2	4.8	9.4	10.4	24.7	13.6	27.6	20.3	24.5	23.9	16.6	7.5	2.6
Blw. Norm	1.4	5.7	13.8	12.5	29.5	15.9	32.6	29.2	29.8	32.9	25.3	12.8	4.5
Dry	2.2	6.7	15.9	11.1	23.4	11.2	22.9	23.1	24.0	28.0	23.7	13.0	5.3
Critical	3.3	8.9	17.2	10.2	24.1	13.3	33.3	32.5	31.8	27.5	28.7	13.6	5.9

TABLE 4-9 SUMMARY OF ALLOCATIONS AND CREDITS (continued)

The following method is used to calculate real-time DMC supply water credits in tons per month and applies to dischargers operating under real-time load allocations.

Real-time CVP Supply Water Credit = Q_{CVP}* (C_{CVP} - C_{BG}) * 0.8293*0.5

Where:
Q_{CVP} = volume of water delivered from CVP in thousand acre-feet per month[3]
C_{CVP} = electrical conductivity of water delivered from CVP in µS/cm[3]
C_{BG} = background electrical conductivity of 85 µS/cm

For irrigators in the Northwest Side Subarea an additional supply water credit is provided to account for salts contained in supply water diverted directly from the LSJR (LSJR diversion water credit). The LSJR diversion credit is equal to 50 percent of the added salt load (in excess of background) in supply water diverted from the San Joaquin River between the confluence of the Merced River and the Airport Way Bridge near Vernalis. The following fixed LSJR supply water credits apply to dischargers operating under base load allocations:

LSJR supply water credits (thousand tons)

	Month / Period												
Year-type[1]	Jan	Feb	Mar	Apr 1 to Apr. 14	Pulse Period [2]	May 16 to May 31	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wet	0.0	0.6	9.2	6.2	9.4	11.0	17.2	23.5	20.5	9.5	1.3	0	0
Abv. Norm	0.0	0.8	5.0	7.4	12.3	11.2	21.8	24.9	20.3	10.7	1.5	0	0
Blw. Norm	0.0	0.6	5.5	7.0	14.4	13.4	27.3	33.1	24.9	13.9	2.4	0	0
Dry	0.0	0.7	5.3	6.4	11.1	10.7	27.5	34.0	20.3	11.4	2.4	0	0
Critical	0.0	0.8	4.5	5.1	14.8	10.6	25.2	28.5	22.3	8.7	2.5	0	0

The following method is used to calculate Real-time LSJR supply water credits in tons per month and applies to dischargers operating under real-time load allocations.

Real-time LSJR Supply Water Credit = $Q_{LSJR\ DIV}$* ($C_{LSJR\ DIV}$ -C_{BG}) * 0.8293 * 0.5

Where:
$Q_{LSJR\ DIV}$ = volume of water diverted from LSJR between the Merced River Confluence and the Airport Way Bridge near Vernalis in thousand acre-feet per month[4]
$C_{LSJR\ DIV}$ = electrical conductivity of water diverted from the LSJR in µS/cm[4]
C_{BG} = background electrical conductivity of 85 µS/cm

SUPPLY WATER ALLOCATIONS

The U.S. Bureau of Reclamation DMC load allocation (LA_{DMC}) is equal to the volume of water delivered from the DMC (Q_{DMC}) to the Grassland and Northwest side Subareas at a background Sierra Nevada quality of 85 µS/cm.

LA_{DMC} = Q_{DMC} * 85 µS/cm * 0.8293

TABLE 4-9 SUMMARY OF ALLOCATIONS AND CREDITS (continued)

DILUTION FLOW ALLOCATIONS
Entities providing dilution flows obtain an allocation equal to the salt load assimilative capacity provided by this flow, calculated as follows: $A_{dil} = Q_{dil}*(C_{dil}-WQO)*0.8293$ Where: A_{dil} = dilution flow allocation in tons of salt per month Q_{dil} = dilution flow volume in thousand acre-feet per month C_{dil} = dilution flow electrical conductivity in µS/cm WQO = salinity water quality objective for the LSJR at Airport Way Bridge near Vernalis in µS/cm
[1] The water year classification will be established using the best available estimate of the 60-20-20 San Joaquin Valley water year hydrologic classification (as defined in Footnote 17 for Table 3 in the State Water Board's *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*, December 2006) at the 75% exceedance level using data from the Department of Water Resources Bulletin 120 series. The previous water year's classification will apply until an estimate is made of the current water year. [2] Pulse period runs from 4/15-5/15. Period and distribution of base load allocation and supply water credits between April 1 and May 31 may change based on scheduling of pulse flow as specified in State Water Board Revised Water Rights Decision 1641. Total base load allocation for April 1 through May 31 does not change but will be redistributed based on any changes in the timing of the pulse period [3]Methods used to measure and report the volume and electrical conductivity of water delivered from the CVP to irrigated lands must be approved by the Regional Water Board as part of the waiver conditions required to participate in a Regional Water Board approved real-time management program [4] Methods used to measure and report the volume and electrical conductivity of water diverted from the SJR between the confluence of the Merced and the Airport Way Bridge near Vernalis must be approved by the Regional Water Board as part of waste discharge requirements or waivers of waste discharge requirements conditions required to participate in a Regional Water Board approved real-time management program

4.5.2 Assessment of Biotoxicity of Major Point and Nonpoint Source Discharges in the Sacramento River and San Joaquin River Basins

In addition to numerical water quality objectives for toxicity, the Basin Plan contains a narrative water quality objective that requires all surface waters to "...be maintained free of toxic substances in concentrations that are toxic to or that produce detrimental physiological responses to human, plant, animal, and aquatic life." To check for compliance with this objective, the Regional Water Board initiated a biotoxicity monitoring program to assess toxic impacts from point and nonpoint sources in FY 86-87.

Toxicity testing monitoring requirements have been placed in NPDES permits, as appropriate. Since 1986-87, ambient toxicity testing (coupled with water quality chemistry to identify toxic

constituents) has been concentrated in the Delta and major tributaries. The Regional Water Board will continue to impose toxicity testing monitoring requirements in NPDES permits. The focus of ambient toxicity testing will continue to be the Delta and major tributaries.

4.5.3 Heavy Metals From Point and Nonpoint Sources

Heavy metals such as copper, zinc, mercury, lead, and cadmium impair beneficial uses of surface streams. These metals result from various point and nonpoint sources throughout the region, including mines, urban runoff, agriculture, and wastewater treatment plants. Discharges from abandoned or inactive mines, particularly in the Sacramento River watershed, severely impair local receiving waters. Available information suggests that such mines are by far the largest contributors of copper, zinc, and cadmium to surface waters in the Sacramento and San Joaquin River Basins.

Because the Delta and San Francisco Bay receive all upstream inputs, the effects of heavy metals may be focused on these water bodies. Although the relationship between cause and effect remains unclear, heavy metals have been implicated as a cause of problems in Delta biota (e.g., there is a health advisory limiting the consumption of striped bass because of elevated levels of mercury) and copper objectives have been exceeded in the Bay. Problems in the Bay and Delta are related to the effects of total metals loadings and dissolved metals concentrations.

The Regional Water Board plans to develop a mass emission strategy to control the loads of metals entering receiving waters and the Delta. Although the strategy will focus on control of discharges from inactive and abandoned mines, reasonable steps will also be taken to limit loads of metals from other significant sources. The Regional Water Board also plans to continue to monitor for metals in the Delta and principal tributaries to the Delta to assess compliance with water quality objectives, to assess impacts on beneficial uses, and to coordinate monitoring and metal reduction programs with the San Francisco Regional Water Quality Control Board.

Where circumstances warrant, the Regional Water Board will support action to clean up and abate pollution from identified sources. Funds from the State Water Pollution Cleanup and Abatement Account have been and are being used to clean up and abate discharges from selected abandoned or inactive mines. Abatement projects are underway at Iron Mountain Mine, Walker Mine, Mammoth Mine, Balaklala Mine, Keystone Mine, Stowell Mine, and Penn Mine, as data show that these mines are the most significant sources in terms of total metals discharged to receiving waters.

However, recent judicial decisions have imposed liability on the Regional Water Board for its cleanup actions at the Penn Mine. As long as the risk of such liability exists, the Regional Water Board will likely choose not to perform cleanup at any additional sites. Action by the State Legislature or the Congress will probably be required to resolve concerns of liability and facilitate the State's role in site remediation.

The Regional Water Board also will seek additional resources to update the Regional Abandoned Mines Inventory, to establish a monitoring program to track metals across the Delta and into the Bay, and to determine what loads the Delta can assimilate without resulting in adverse impacts. Although most of the significant mine portal discharges are in the process of being controlled, others need studies to determine their potential for cleanup. Since a major uncharacterized source of metals are the tailings piles associated with the mines, studies are needed to define the loads from these sources in order to establish priorities for abatement activities.

4.5.4 Mercury Discharges in the Sacramento River and San Joaquin River Basins

Mercury problems are evident region-wide. The main concern with mercury is that, like selenium, it bioaccumulates in aquatic systems to levels that are harmful to fish and their predators. Health advisories have been issued which recommend limiting consumption of fish taken from the Bay/Delta, Clear Lake, Lake Berryessa, Black Butte Reservoir, Lake Pilsbury, and Marsh Creek Reservoir. Concentrations of mercury in other water bodies approach or exceed National Academy of Science (NAS), U.S. Environmental Protection Agency (EPA), and/or U.S. Food and Drug Administration (FDA) guidelines for wildlife and human protection. In addition to these concerns, fish-eating birds taken from some bodies of water in the Basins have levels of mercury that can be expected to cause toxic effects. Bird-kills from mercury also have been documented in Lake Berryessa. (There is also concern for birds in the Delta, but no studies have been completed.) The Regional Water Board has done a preliminary assessment of the mercury situation in the Central Valley Region and concluded that the problem is serious and remedies will be complex and expensive.

The short-term strategy is to concentrate on correcting problems at upstream sites while monitoring the Delta to see whether upstream control activities measurably benefit the Delta. The Regional Water Board will support efforts to fund the detailed studies necessary to define assimilative capacity and to fully define uptake mechanisms in the biota.

In the next few years monitoring is scheduled to be done in the Delta and at upstream sources. The Regional Water Board will continue to support efforts to study how mercury is cycled through the Delta and to further characterize upstream sources.

4.5.4.1 Clear Lake Mercury

The Regional Water Board has a goal to reduce methylmercury concentrations in Clear Lake fish by reducing total mercury loads from various sources within the Clear Lake watershed.

Sources of mercury include past and present discharges from the Sulphur Bank Mercury Mine (SBMM) site, small mercury mines and geothermal sources, natural and anthropogenic erosion of soils with naturally occurring mercury, and atmospheric deposition. The goal of the Clear Lake mercury management strategy is to reduce fish tissue methylmercury concentrations by 60% of existing levels. This will be accomplished by reducing the concentration of total mercury in the surficial layer of lakebed sediment by 70% of existing levels and by further investigation and reduction of other mercury sources believed to have a high potential for mercury methylation. Through a complex process, total mercury is methylated and becomes bioavailable to organisms in the food web. The linkage between (1) the total mercury in the sediments derived from various sources and other sources of total mercury and (2) the concentration of methylmercury in ecological receptors, is complicated and subject to uncertainty. As additional information about these relationships becomes available, the Regional Water Board will revise and refine as appropriate the load allocation and implementation strategy to achieve fish tissue objectives.

4.5.4.1.1 Mercury Load Allocations

The strategy for meeting the fish tissue objectives is to reduce the inputs of mercury to the lake from tributaries and the SBMM site, combined with active and passive remediation of contaminated lake sediments. The load allocations for Clear Lake will result in a reduction in the overall mercury sediment concentration by 70% of existing concentrations. The load allocations

are assigned to the active sediment layer of the lakebed, the SBMM terrestrial site, the tributary creeks and surface water runoff to Clear Lake, and atmospheric deposition. Table 4-10 summarizes the load allocations. The load allocation to the active sediment layer is expressed as reducing concentrations of total mercury in the active sediment layer to 30% of current concentrations. The load allocation to the SBMM terrestrial site is 5% of the ongoing loads from the terrestrial mine site. The load allocation for the mine also includes reducing mercury concentrations in surficial sediment to achieve the sediment compliance goals for Oaks Arm shown in Table 4-11. The load allocation to tributary and surface water runoff is 80% of existing loads. These load allocations account for seasonal variation in mercury loads, which vary with water flow and rainfall. The analysis includes an implicit margin of safety in the reference doses for methylmercury that were used to develop the fish tissue objectives. It also includes an explicit margin of safety of 10% to account for uncertainty in the relationship between fish tissue concentrations and loads of total mercury. The reductions in loads of total mercury from all sources are expected to result in attainment of water quality objectives.

TABLE 4-10
MERCURY LOAD ALLOCATIONS

Mercury Source	Allocation
Clear Lake Sediment	30% of existing concentration
Sulphur Bank Mine	5% of existing load
Tributaries	80% of existing load
Atmosphere	No change

4.5.4.1.2 Sulphur Bank Mercury Mine

Reducing mercury concentrations in surficial sediment by 70% is an overall goal for the entire lake. To achieve water quality objectives, extremely high levels of mercury in the eastern end of Oaks Arm near SBMM must be reduced by more than 70%. To evaluate progress in lowering sediment concentrations, the following sediment compliance goals are established at sites that have been sampled previously.

Current and past releases from the Sulphur Bank Mercury Mine are a significant source of total mercury loading to Clear Lake. Ongoing annual loads from the terrestrial mine site to the lakebed sediments occur through groundwater, surface water, and atmospheric routes. Loads from ongoing releases from the terrestrial mine site should be reduced to 5% of existing inputs. Because of its high potential for methylation relative to mercury in lakebed sediments, mercury entering the lake through groundwater from the mine site should be reduced to 0.5 kg/year.

Past releases from the mine site are a current source of exposure through remobilization of mercury that exists in the lakebed sediments as a result of past releases to the lake from the terrestrial mine site. Past active mining operations, erosion and other mercury transport processes at SBMM have contaminated sediment in Oaks Arm. The load allocation assigned to SBMM includes reducing surficial sediment concentrations in Oaks Arm by 70% (more at sites nearest the mine site) to meet the sediment compliance goals in Table 4-11.

In 1990, the U.S. Environmental Protection Agency (USEPA) placed Sulphur Bank Mercury Mine on the National Priorities List under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The USEPA has already performed remediation actions to stabilize waste rock piles, reduce erosion, and control surface water on the site.

TABLE 4-11
SEDIMENT COMPLIANCE GOALS FOR MERCURY IN CLEAR LAKE

Site Designation	Location	Sediment Mercury Goal (a) (mg/kg dry weight)
Upper Arm UA-03	Center of Upper Arm on transect from Lakeport to Lucerne	0.8
Lower Arm LA-03	Center of Lower Arm, North and west of Monitor Point	1
Oaks Arm		
OA-01 (c)	0.3 km from SBMM	16 (b)
OA-02 (c)	0.8 km from SBMM	16 (b)
OA-03 (c)	1.8 km from SBMM	16
OA-04 (c)	3 km from SBMM	10
Narrows O1	7.7 km from SBMM	3

(a) Sediment goals are 30% of existing concentrations. Existing concentrations are taken as the average mercury concentrations in samples collected in 1996-2000 (Clear Lake Basin Plan Amendment Staff Report).
(b) Due to the exceptionally high concentrations existing at the eastern end of Oaks Arm, sediment goals at OA-01 and OA-02 are not 70% of existing concentrations. These goals are equal to the sediment goal established for OA-03.
(c) Sediment goal is part of the load allocation for SBMM.

Estimates of the current annual loads from the terrestrial mine site to the surficial lakebed sediment are under investigation. Existing data indicate that loads of total mercury from the terrestrial mine site are within a broad range of 1 to 568 kg mercury per year. New data may be used to refine the load estimates as discussed below. As part of verifying compliance with the load allocations, remediation activities to address current and past releases from SBMM should be conducted to meet the sediment compliance goals listed in Table 4-11 for sediments within one kilometer of the mine site, specifically at sites OA-01 and OA-02.

The Regional Water Board anticipates that fish tissue objectives for mercury will not be met unless the load reductions from Sulphur Bank Mercury Mine are attained.

The Regional Water Board will request that USEPA continue remediation activities on the mine site and prepare an implementation plan or plans that address the following: reduction of ongoing releases of mercury from the SBMM site through surface water, groundwater, and the atmosphere; necessary remediation for mercury in lakebed sediments previously deposited through mining, erosion, and other processes at the mine site; and monitoring and review activities. The implementation plans should provide interim sediment goals and explain how control actions will assist in achieving fish tissue objectives for mercury in Clear Lake. The Regional Water Board will request that USEPA submit remediation plans for Regional Board approval for the SBMM site within eight years after the effective date of this amendment and implement the plan two years thereafter. USEPA should complete remediation activities at the mine site and active lakebed sediment remediation within ten years of plan implementation.

USEPA anticipates implementing additional actions to address the ongoing surface and groundwater releases from the SBMM over the next several years. These actions are expected to lead to significant reductions in the ongoing releases from the mine pit, the mine waste piles and other ongoing sources of mercury releases from the terrestrial mine site. USEPA also currently plans to investigate what steps are appropriate under CERCLA to address the existing contamination in the lakebed sediments due to past releases from the SBMM. Regional Water Board staff will continue to work closely with the USEPA on these important activities. In addition, Regional Water Board staff will coordinate monitoring activities to investigate other sources of mercury loads to Clear Lake. These investigations by USEPA and the Regional Water Board should reduce the uncertainty that currently exists regarding the annual load of total mercury to the lake, the contribution of each source to that load, and the degree to which those sources lead to methylmercury exposure to and mercury uptake by fish in the lake. This information should lead to more refined decisions about what additional steps are appropriate and feasible to achieve the applicable water quality criteria.

The sediment compliance goals for Oaks Arm will require USEPA to address both (1) the ongoing releases from the terrestrial mine site and (2) the load of total mercury that currently exists in the active lakebed sediment layer as a result of past releases. Potential options to control the ongoing releases of mercury from the terrestrial mine site include: remediation of onsite waste rock, tailings and ore piles to minimize the erosion of mercury contaminated sediments into the lake; diversion of surface water run-on away from waste piles and the inactive mine pit; control and containment or treatment of surface water runoff; control of groundwater flow into Clear Lake; and reduction of mercury flux from the mine waste piles into the atmosphere.

Meeting the load allocation for the lakebed sediment will require remediation of contaminated sediment. Potential options to address the mercury that currently exists in the lakebed as a result of past releases and is being remobilized may include dredging the contaminated sediment, capping with clean sediments, facilitating natural burial of highly contaminated sediments, or reducing the transport of highly contaminated sediments from the Oaks Arm into the rest of the lake. Monitoring to assess progress toward meeting the load reduction goals from Sulphur Bank Mercury Mine should be planned and conducted as part of specific remediation activities. Baselines for mercury loads from the various ongoing inputs from the mine site should be established in order to evaluate successes of the remediation activities.

In order to refine the load estimates from SBMM, the Regional Water Board recommends that USEPA determine the following information: mercury concentrations and sediment deposition rates for sediment cores collected near the mine site; characterization of porewater in sediments near the mine site to determine sources, magnitude and impacts of mercury-containing fluids/groundwater entering the lake; estimates of total surface water and groundwater fluxes of mercury from SBMM, including transport through the wetlands north of the site; and patterns of sediment transport and deposition within the lake.

If additional information reveals that reaching the 95% reduction in mercury loads from the terrestrial mine site is technically infeasible or cost prohibitive, or otherwise not technically justified, the Regional Water Board will consider internal adjustments to the SBMM load allocation. It may be possible to adjust the allocation among the terrestrial site and the contaminated sediments associated with the SBMM, provided the internal reallocation achieves the same overall reduction in loads from mine-related sources (terrestrial mine site and ongoing contributions from highly contaminated sediments). Any internal adjustment must achieve the sediment compliance goals in the east end of Oaks Arm.

Although USEPA is currently spending public funds to address the releases from the SBMM, the owner of SBMM is the party that is legally responsible for addressing the past, current and future releases from the SBMM and for developing implementation plans, implementing control activities that result in achievement of the load reduction, and performing monitoring to verify the load reduction.

4.5.4.1.3 Tributaries and Surface Water Runoff

Past and current loads of total mercury from the tributaries and direct surface water runoff are also a source of mercury loading to the lake and to the active sediment layer in the lakebed. This section excludes loads from surface water runoff associated with the SBMM because those are addressed separately above. The loads of total mercury from the tributaries and surface water runoff to Clear Lake should be reduced by 20% of existing levels. In an average water year, existing loads are estimated to be 18 kg/year. Loads range from 1 to 60 kg/year, depending upon water flow rates and other factors. The load allocation applies to tributary inputs as a whole, instead of to individual tributaries. Efforts should be focused on identifying and controlling inputs from hot spots. The U.S. Bureau of Land Management, U.S. Forest Service, other land management agencies in the Clear Lake Basin, and Lake County shall submit plans for monitoring and implementation to achieve the necessary load reductions. The Regional Water Board will coordinate with the above named agencies and other interested parties to develop the monitoring and implementation plans. The purpose of the monitoring shall be to refine load estimates and identify potential hot spots of mercury loading from tributaries or direct surface runoff into Clear Lake. Hot spots may include erosion of soils with concentrations of mercury above the average for the rest of the tributary. If significant sources are identified, the Regional Water Board will coordinate with the agencies to develop and implement load reductions. The implementation plans shall include a summation of existing erosion control efforts and a discussion of feasibility and proposed actions to control loads from identified hot spots. The agencies will provide monitoring and implementation plans within five years after the effective date of this amendment and implement load reduction plans within five years thereafter. The goal is to complete the load reductions within ten years of implementation plan approval.

Regional Water Board staff will work with the Native American Tribes in the Clear Lake watershed on mercury reduction programs for the tributaries and surface water runoff. Staff will solicit the Tribe’s participation in the development of monitoring and implementation plans.

4.5.4.1.4 Wetlands

The Regional Water Board is concerned about the potential for wetland areas to be significant sources of methylmercury. Loads and fate of methylmercury from wetlands that drain to Clear Lake are not fully understood. The potential for production of methylmercury should be assessed during the planning of any wetlands or floodplain restoration projects within the Clear Lake watershed. The Regional Water Board establishes a goal of no significant increases of methylmercury to Clear Lake resulting from such activities. As factors contributing to mercury methylation are better understood, the possible control of existing methylmercury production within tributary watersheds should be examined.

4.5.4.1.5 Atmospheric Deposition

Atmospheric loads of mercury originating outside of the Clear Lake watershed and depositing locally are minimal. Global and regional atmospheric inputs of mercury are not under the jurisdiction of the Regional Water Board. Loads of mercury from outside of the Clear Lake

watershed and depositing from air onto the lake surface are established at the existing input rate, which is estimated to be 1 to 2 kg/year.

4.5.4.1.6 Public Education

An important component of the Clear Lake mercury strategy is public education. Until the effects of all mercury reduction efforts are reflected in fish tissue levels, the public needs to be continually informed about safe fish consumption levels. The Lake County Public Health Department will provide outreach and education to the community, emphasizing portions of the population that are at risk, such as pregnant women and children. Education efforts may include recommendations to eat smaller fish and species having lower mercury concentrations.

4.5.4.1.7 Monitoring and Review

The monitoring plan for Clear Lake will determine whether mercury loads have been reduced to meet sediment compliance goals and fish tissue objectives. Monitoring will include fish tissue, water and sediment sampling. The Regional Water Board will oversee the preparation of detailed monitoring plans and resources to conduct monitoring of sediment, water and fish to assess progress toward meeting the water quality objectives. Chapter 5, Surveillance and Monitoring, provides details for monitoring in Clear Lake.

The Regional Water Board will review the progress toward meeting the fish tissue objectives for Clear Lake every five years. The review will be timed to coincide with the five-year review to be conducted by USEPA for the Record of Decision for the Sulphur Bank Mercury Mine Superfund Site. The Clear Lake mercury management strategy was developed with existing information. The Regional Water Board recognizes that there are uncertainties with the load estimates and the correlation between reductions in loads of total mercury, methylmercury uptake by biota, and fish tissue concentrations. Regional Water Board staff will consider any new data to refine load estimates and allocations from sources within the Clear Lake watershed. Estimates of existing loads from SBMM or the tributaries will be refined during the review process. If new data indicate that the linkage analysis or load allocations will not result in attainment of the fish tissue objectives, or the fish tissue objectives or load allocations require adjustment, revisions to the Basin Plan will be proposed.

4.5.4.2 Cache Creek Watershed Mercury Program

The Cache Creek watershed methylmercury and total mercury implementation program applies to Cache Creek (from Clear Lake to the Settling Basin outflow and North Fork Cache Creek from Indian Valley Reservoir Dam to the main stem Cache Creek), Bear Creek, Sulphur Creek, and Harley Gulch. This implementation program is intended to reduce loads of methylmercury and total mercury to achieve all applicable water quality standards for mercury and methylmercury, including the site-specific water quality objectives for methylmercury in fish tissue. Guidance for monitoring mercury in fish, water, and sediment is provided in Chapter 5, Surveillance and Monitoring.

Historic mining activities in the Cache Creek watershed have discharged and continue to discharge large volumes of inorganic mercury (termed total mercury) to creeks in the watershed. Much of the mercury discharged from the mines is now distributed in the creek channels and floodplain downstream from the mines. Natural erosion processes can be expected to slowly move the mercury downstream out of the watershed over the next several hundred years. However, current and proposed activities in and around the creek channel can enhance mobilization of this mercury. Activities in upland areas, such as road maintenance and grazing

and timber activities can add to the mercury loads reaching Cache Creek, particularly when the activities take place in areas that have elevated mercury levels.

Total mercury in the creeks is converted to methylmercury by bacteria in the sediment. The concentration of methylmercury in fish tissue is directly related to the concentration of methylmercury in the water. The concentration of methylmercury in the water column is controlled in part by the concentration of total mercury in the sediment and the rate at which the total mercury is converted to methylmercury. The rate at which total mercury is converted to methylmercury is variable from site to site, with some sites (i.e., wetlands and marshes) having greatly enhanced rates of methylation.

Since methylmercury in the water column is directly related to mercury levels in fish, the following methylmercury load allocations are assigned to tributaries and the main stem of Cache Creek.

4.5.4.2.1 Methylmercury Load Allocations

Tables 4-12 and 13 provide methylmercury load allocations for Cache Creek, its tributaries, and instream methylmercury production. Allocations are expressed as a percent of existing methylmercury loads. The methylmercury allocations will be achieved by reducing the annual average methylmercury (unfiltered) concentrations to site-specific, aqueous methylmercury goals, which are 0.14 ng/L in Cache Creek, 0.06 ng/L in Bear Creek, and 0.09 ng/L in Harley Gulch. The allocations in Tables 4-12 and 4-13 apply to sources of methylmercury entering each tributary or stream segment. In aggregate, the sources to each tributary or stream segment shall have reductions of methylmercury loads as shown below.

Table 4-13 provides the load allocation within Bear Creek and its tributaries to attain the allocation for Bear Creek described in Table 4-12. The inactive mines listed in Table 4-15 are assigned a 95% total mercury load reduction. Reductions in mercury loads from mines, erosion, and other sources in the Sulphur Creek watershed are expected to reduce in channel production of methylmercury to meet the Sulphur Creek methylmercury allocation.

To achieve the water quality objectives and the methylmercury allocations listed in Tables 4-12 and 13, the following actions are needed: 1) reduce loads of total mercury from inactive mines, 2) where feasible, implement projects to reduce total mercury inputs from existing mercury-containing sediment deposits in creek channels and creek banks downstream from historic mine discharges, 3) reduce erosion of soils with enriched total mercury concentrations, 4) limit activities in the watershed that will increase methylmercury discharges to the creeks and, where feasible, reduce discharges of methylmercury from existing sources, and 5) evaluate other remediation actions that are not directly linked to activities of a discharger. Because methylmercury is a function of total mercury, reductions in total mercury loads are needed to achieve the methylmercury load allocations. Methylmercury allocations will be achieved in part by natural erosion processes that remove mercury that has deposited in creek beds and banks since the start of mining.

Table 4-14 summarizes implementation actions, affected watersheds, and agencies or persons assigned primary responsibility for mercury load reduction projects, and required completion dates for the projects. For purposes of this Basin Plan Implementation Program, the term "project" refers to actions or activities that result in a discharge of mercury to Cache Creek or are conducted within the 10-year floodplain.

TABLE 4-12
CACHE CREEK METHYLMERCURY ALLOCATIONS

Source	Existing Annual Load (g/yr)	Acceptable Annual Load (g/yr)	Allocation (% of existing load)
Cache Creek (Clear Lake to North Fork confluence)	36.8	11	30%
North Fork Cache Creek	12.4	12.4	100%
Harley Gulch	1.0	0.04	4%
Davis Creek	1.3	0.7	50%
Bear Creek @ Highway 20	21.1	3	15%
Within channel production and ungauged tributaries	49.5	32	65%
		7 (a)	10% (a)
Total of loads	122	66	54%
Cache Creek at Yolo (b)	72.5	39	54%
Cache Creek Settling Basin Outflow (c)	87	12	14%

a. The allocation includes a margin of safety, which is set to 10% of the acceptable loads. In terms of acceptable annual load estimates, the margin of safety is 7 g/yr.
b. Cache Creek at Yolo is the compliance point for the tributaries and Cache Creek channel for meeting the allocations and aqueous goals. Agricultural water diversions upstream of Yolo remove methylmercury (50 g/year existing load).
c. The Settling Basin Outflow is the compliance point for methylmercury produced in the Settling Basin.

TABLE 4-13
BEAR CREEK METHYLMERCURY ALLOCATIONS

Source	Existing Annual Load (g/yr)	Acceptable Annual Load (g/yr)	Allocation (% of existing load)
Bear Creek @ Bear Valley Road	1.7	0.9	50%
Sulphur Creek	8	0.8	10%
In channel production and ungauged tributaries	11.4	1	10%
		0.3 (a)	10% (a)
Total of loads	21.1	3	15%
Bear Creek at Hwy 20 (b)	21.1	3	15%

a. The allocation includes a margin of safety, which is set to 10% of the acceptable loads. In terms of acceptable annual load estimates, the margin of safety is 0.3 g/yr.
b. Bear Creek at Highway 20 is the compliance point for Bear Creek and its tributaries.

TABLE 4-14
IMPLEMENTATION SUMMARY

Implementation Activity	Affected Watersheds	Assigned Responsibility	Action	Completion Date
Inactive Mines	Bear Creek, Harley Gulch, Sulphur Creek	Mine owners and other responsible parties, USBLM	Cleanup mines, sediment, and wetlands	2011
Creek Sediments- Harley Gulch Delta	Harley Gulch	USBLM	Conduct additional studies	2006
			Submit report on engineering options	2008
			Conduct projects, as required	2011
Creek Sediments- Upper Watershed	Bear Creek, Davis Creek, Harley Gulch, Sulphur Creek, and Cache Creek (Harley Gulch to Camp Haswell)	USBLM, SLC, CDFW, Colusa, Lake, and Yolo Counties, private landowners	Conduct additional studies	2007
			Feasibility studies	(Scope and time schedule for plan and reports determined as needed)
			Conduct Projects (as required)	
Erosion Control- Upper Watershed	Sub-watersheds with “enriched” mercury. Includes areas of Bear Creek, Sulphur Creek, and Cache Creek (Harley Gulch to Camp Haswell)	USBLM, SLC, CDFW, Colusa, Lake, and Yolo Counties, private landowners	Conduct additional studies	2006
			Identify activities that increase erosion	2007
			Submit erosion control plans, as required	2009
			Implement erosion control plans, as required	2011
Erosion Control from New Projects, 10-yr Floodplains	Cache Creek (Harley Gulch to Settling Basin), Bear and Sulphur Creeks, Harley Gulch	Yolo County, Reclamation Board, private landowners, US Army Corps of Engineers	Implement management practices and monitoring for erosion control	During and after project construction
New Reservoirs, Ponds, and Wetlands	Cache Creek watershed	Yolo County or project proponents	Submit plans to control methylmercury discharges	Prior to project construction

TABLE 4-14
IMPLEMENTATION SUMMARY

Implementation Activity	Affected Watersheds	Assigned Responsibility	Action	Completion Date
Anderson Marsh	Cache Creek at Clear Lake	California Department of Parks and Recreation	Conduct additional studies	2006
			Submit report on management options	2008
			Conduct Project (as required)	2011

4.5.4.2.2 Inactive Mines

By 6 February 2009, the Regional Water Board shall adopt cleanup and abatement orders or take other appropriate actions to control discharges from the inactive mines (Table 4-14) in the Cache Creek watershed. Responsible parties shall develop and submit for Executive Officer approval plans, including a time schedule, to reduce loads of mercury from mining or other anthropogenic activities by 95% of existing loads consistent with State Water Resources Control Board Resolution 92-49. The goal of the cleanup is to restore the mines to pre-mining conditions with respect to the discharge of mercury. Mercury and methylmercury loads produced by interaction of thermal springs with mine wastes from the Turkey Run and Elgin mines are considered to be anthropogenic loading. The responsible parties shall be deemed in compliance with this requirement if cleanup actions and maintenance activities are conducted in accordance with the approved plans. Cleanup actions at the mines shall be completed by 2011.

The wetland immediately downstream from the Abbott and Turkey Run mines in Harley Gulch contains mercury and is a source of methylmercury. After mine cleanup has been initiated, the responsible parties and owners of the wetland shall develop and submit for Executive Officer approval a cleanup and abatement plan to reduce the wetland's methylmercury loads to meet the Harley Gulch aqueous methylmercury allocation. The wetland cleanup and abatement shall be completed by 2011. Cleanup and abatement at the wetland should not be implemented prior to cleanup actions at the upstream mines.

The Sulphur Creek streambed and flood plain directly below the Central, Cherry Hill, Empire, Manzanita, West End and Wide Awake Mines contains mine waste. After mine cleanup has been initiated, the responsible parties and owners of the streambed and floodplain shall develop and submit for Executive Officer approval a cleanup and abatement plan to reduce anthropogenic mercury loading in the creek.

TABLE 4-15
CACHE CREEK WATERSHED INACTIVE MINES (a)

Mine	Average Annual Load Estimate, kg mercury/year (b)
Abbott and Turkey Run Mines	7
Rathburn and Rathburn-Petray Mines	20
Petray North and South Mines	5
Wide Awake Mine	0.8
Central, Cherry Hill, Empire, Manzanita, and West End Mines	5
Elgin Mine	3
Clyde Mine	0.4

a. The mines are grouped by current landowner. Although cleanup requirements apply to each mine, a single owner or responsible party having adjacent mines may apply the 95% reduction to the total discharge from their mines.

b. Estimates of average annual loads are preliminary, based on data collected by the California Geological Survey (Rathburn, Rathburn-Petray, Petray North, and Petray South mines) and Regional Water Board staff (other mines). Load estimates do not include mercury that would be discharged in extreme erosional events. Responsible parties may be required to refine the load estimates.

4.5.4.2.3 Creek Sediment – Upper Watershed

There are areas downstream from mines in Harley Gulch, Bear Creek, Sulphur Creek, Davis Creek and Cache Creek that have significant deposits of mercury-containing sediment that were derived, at least in part, from historic discharges from the mines. Where feasible, sediment discharges from these deposits need to be reduced or eliminated.

The Regional Water Board and the USBLM will conduct additional studies to determine the extent of mercury in sediment at the confluence of Harley Gulch and Cache Creek. The Regional Water Board will require the USBLM to evaluate engineering options to reduce erosion of this material to Cache Creek. If feasible projects are identified, the Regional Water Board will require USBLM to cleanup the sediment.

At other sites, further assessments are needed to determine whether responsible parties should be required to conduct feasibility studies to evaluate methods to control sources of mercury and methylmercury. The Executive Officer will, to the extent appropriate, prioritize the need for feasibility studies and subsequent remediation actions based on mercury concentrations and masses, erosion potential, and accessibility. Staff intends to complete the assessments by 6 February 2009. Where applicable, the Executive Officer will notify responsible parties to submit feasibility studies. Following review of the feasibility studies, the Executive Officer will determine whether cleanup actions will be required. Responsible parties that could be required to conduct feasibility studies include the US Bureau of Land Management (USBLM); State Lands Commission (SLC), California Department of Fish and Wildlife (CDFW); Yolo, Lake, and Colusa Counties, mine owners, and private landowners. Assessments are needed of stream beds and banks in the following areas: Cache Creek from Harley Gulch to Camp Haswell, Harley Gulch, Sulphur Creek, and Bear Creek south of the Bear Valley Road crossing.

4.5.4.2.4 Erosion Control – Upper Watershed

Activities in upland parts of the watershed (i.e., outside the active floodplain), such as road construction and maintenance, grazing, timber management and other activities, can result in increased erosion and transport of mercury to the creeks, especially in parts of the watershed where the soils have enriched levels of mercury. Enriched soil and sediment is defined as having an average concentration of mercury of 0.4 mg/kg, dry weight in the silt/clay fraction (less than 63 microns). Provisions described below are applicable in the following areas: the Cache Creek watershed (Harley Gulch to Camp Haswell), Harley Gulch and Sulphur Creek watersheds, and the Bear Creek watershed south of the Bear Valley Road crossing. Some projects subject to this implementation plan may be subject to permits, including general stormwater permits. This implementation plan does not preclude the requirement to obtain any applicable federal, state, or local permit applicable to such projects.

4.5.4.2.4.1 Road Construction and Maintenance

Management practices shall be implemented to control erosion from road construction and maintenance activities in parts of the watershed identified above. All California Department of Transportation (Caltrans) road construction projects or maintenance activities that result in soil disturbance shall comply with the Caltrans statewide Storm Water Management Plan and implement best management practices to control erosion, including pre-project assessments to identify areas with enriched mercury and descriptions of additional management practices that will be implemented in these areas. Water quality and sediment monitoring may be required to ensure compliance with these requirements. For paved roads, entities maintaining or constructing road shall implement the Caltrans or equivalent management practices to comply with these requirements. For unpaved roads, entities maintaining or constructing road shall implement all reasonable management practices to control erosion during construction and maintenance activities. By 6 February 2009, county and agency road departments shall submit information describing the management practices that will be implemented to control erosion.

4.5.4.2.4.2 Other Activities

A goal of the Regional Water Board is to minimize erosion from areas with enriched mercury concentrations. Further studies are needed to identify specific upland sites within the watershed areas described above that have enriched mercury concentrations and to evaluate whether activities at these sites could result in increased erosion (i.e., grazing, timber harvest activities, etc.) or contribute to increases in methylmercury production. Staff will identify areas with enriched mercury concentrations by 6 February 2008. After the studies are complete, the Executive Officer will require affected landowners and/or land managers to 1) submit reports that identify anthropogenic activities on their lands that could result in increased erosion and 2) implement management practices to control erosion. As necessary, erosion control plans will be required no later than 6 February 2011. Entities responsible for controlling erosion include the US Bureau of Land Management (USBLM); State Lands Commission (SLC); California Department of Fish and Wildlife (CDFW); Yolo, Lake, and Colusa Counties; and private landowners.

Landowners implementing new projects or proposing change in land use on land in the enriched areas shall implement practices to control erosion and minimize discharges of mercury and methylmercury. If the dischargers are not implementing management practices to control erosion or methylmercury discharges, the Regional Water Board may consider individual prohibitions of waste discharge. For proposed changes in land use or new projects, landowners

shall submit a plan including erosion estimates from the new project, erosion control practices, and, if a net increase in erosion is expected to occur, a remediation plan.

4.5.4.2.5 Erosion Control in the 10-Year Floodplains

Sediment and soil in the depositional zone of creeks downstream of mines in the Cache Creek watershed contains mercury. A goal of this plan is to minimize erosion of the mercury-containing sediment and soil due to human activities in order to protect beneficial uses in Cache Creek and to reduce loads of mercury moving downstream to the Settling Basin and the Delta. Some projects subject to this implementation plan may be subject to permits, including general stormwater permits. This implementation plan does not preclude the requirement to obtain any applicable federal, state, or local permit applicable to such projects.

The following requirements for erosion control apply to all projects conducted within the 10 year floodplains of Cache Creek (from Harley Gulch to the Settling Basin outflow), Bear Creek (from tributaries draining Petray and Rathburn Mines to Cache Creek), Sulphur Creek, and Harley Gulch.

Project proponents are required to: 1) implement management practices to control erosion and 2) conduct monitoring programs that evaluate compliance with the turbidity objective, and submit monitoring results to the Regional Water Board. The monitoring program must include monitoring during the next wet season in which the project sites are inundated. In general, there must be monitoring for each project. However, in cases where projects are being implemented as part of a detailed resource management plan that includes erosion control practices, monitoring is not required as a condition of this amendment for individual projects. Instead, the project proponent may conduct monitoring at designated sites up and downstream of the entire management plan area.

Upon written request by project proponents, the Executive Officer may waive the turbidity monitoring requirements for a project, or group of projects, if the project proponents submit an alternative method for assessing compliance with the turbidity objective.

Whenever practicable, proponents should maximize removal of mercury enriched sediment from the floodplain. Sediment removed from the channel or the Settling Basin must be placed so that it will not erode into the creek. For projects related to habitat restoration or erosion control consistent with a comprehensive resource management plan, the project proponent may relocate sediment within the channel if the proponent uses the sediment to enhance habitat and provides appropriate erosion controls.

Some projects may not be able to meet the turbidity objectives even when all reasonable management practices will be implemented to control erosion. These projects may still be implemented if project proponents implement actions (offset projects) in some other part of the watershed that would reduce or otherwise prevent discharges of sediment containing mercury in an amount at least equivalent to the incremental increases expected from the original project. Removal of sediment from the Settling Basin would be an acceptable offset project.

All bridge, culvert, or road construction or maintenance activities that may cause erosion within the 10-year flood plains must follow the Caltrans management practices or equivalent to control erosion.

The Executive Officer may waive, consistent with State and federal law, the requirement for erosion control from a project conducted in the 10-year floodplain for habitat conservation or development activities for bank swallows that are proposed under the State's adopted Bank

Swallow Recovery Plan (Department of Fish and Game (later renamed the Department of Fish and Wildlife), 1992).

4.5.4.2.6 New Reservoirs, Ponds, and Wetlands

Reservoirs, ponds, impoundments and wetlands generally produce more methylmercury than streams or rivers. Building new impoundments and wetlands that discharge to creeks in the Cache Creek watershed can add to the existing loads of methylmercury in Cache Creek and its tributaries. New impoundments, including reservoirs and ponds, and constructed wetlands shall be constructed and operated in a manner that would preclude an increase in methylmercury concentrations in Cache Creek, Bear Creek, Harley Gulch, or Sulphur Creek. This requirement applies to all new projects in the watershed, including gravel mining pits in lower Cache Creek that are being reclaimed as ponds and wetlands, for which physical construction is started after the approval of this implementation plan. “Preclude an increase in methylmercury concentrations” shall be defined as a measurable increase in aqueous concentration of methylmercury downstream of the discharge relative to upstream of the discharge.

Any entity creating an impoundment or constructed wetland that has the potential through its design to discharge surface water to Cache Creek, Bear Creek, Harley Gulch, or Sulphur Creek (uncontrollable discharge after inundation by winter storm flows is excepted) must submit plans to the Regional Water Board that describe design and management practices that will be implemented to limit the concentration of methylmercury in discharges to the creek.

The Executive Officer will consider granting exceptions to the no net increase requirement in methylmercury concentration if: 1) dischargers provide information that demonstrates that all reasonable management practices to limit discharge concentrations of methylmercury are being implemented and 2) the projects are being developed for the primary purpose of enhancing fish and wildlife beneficial uses. In granting exceptions to the no net increase requirement, the Executive Officer will consider the merits of the project and whether to require the discharger to propose other activities in the watershed that could offset the incremental increases in methylmercury concentration in the creek. The Regional Water Board will periodically review the progress towards achieving the objectives and may consider prohibitions of methylmercury discharge if the plan described above is ineffective.

The Cache Creek Nature Preserve (CCNP), which includes a wetland restored from a gravel excavation, currently minimizes any methylmercury discharges to Cache Creek by holding water within the wetlands. If water management in the CCNP wetlands is changed significantly, the operator must submit plans describing management practices that will be implemented to limit methylmercury discharge to Cache Creek.

4.5.4.2.7 Anderson Marsh Methylmercury

The Regional Water Board, in coordination with California Department of Parks and Recreation (DPR), will continue to conduct methylmercury studies in Anderson Marsh. If the Regional Water Board finds that Anderson Marsh is a significant methylmercury source to Cache Creek, the Regional Water Board will require DPR to evaluate potential management practices to reduce methylmercury loads. The Regional Water Board will then consider whether to require DPR to implement a load reduction project.

4.5.4.2.8 Cache Creek Settling Basin

Although the Cache Creek settling basin retains about one half of the total mercury attached to sediment that enters the basin, there is a net increase in methylmercury discharged from the

settling basin. Methylmercury loads are expected to decrease as inflow mercury concentrations decline. The Regional Water Board will continue to conduct methylmercury studies in the basin and work with the Reclamation Board and the US Army Corps of Engineers to develop settling basin improvements to retain more sediment and reduce methylmercury loads. The Sacramento-San Joaquin Delta mercury implementation plan will include total mercury load reduction requirements for the settling basin.

4.5.4.2.9 Geothermal and Spring Sources

In general, geothermal springs that discharge mercury and sulfate may not be controllable. However, geothermal discharges adjacent to Sulphur Creek are potential candidates for remediation or mercury offset projects. As needed, the Executive Officer will make a determination of the suitability of geothermal source controls for offset or remediation projects.

Thermal springs used by the Wilbur Hot Springs resort are a source of mercury and methylmercury to Sulphur Creek. Discharges of mercury or methylmercury from springs used or developed by the Wilbur Hot Springs resort shall not exceed current loads.

4.5.4.2.10 Potential Actions

This control plan focuses on reducing mercury discharges from mercury mines, controlling activities that mobilize past discharges from the mines, controlling activities that enhance methylation of mercury, and implementing cleanup and abatement activities at sites where sediment rich in mercury has accumulated. Responsibility for these actions may be assigned to responsible parties. There are a number of other actions that may be considered that would reduce loads of mercury in the creek that are not directly the responsibility of a discharger. The following actions are recommended for further evaluation:

- Construction of a settling basin upstream of Rumsey. The facility could trap mercury enriched sediment, reduce downstream loads and preserve space in the existing settling basin in Yolo Bypass.
- Methylmercury reduction plans for Bear Creek
- Load reductions from Davis Creek

4.5.4.2.11 Mercury Offset Program and Alternative Load Allocations

The Regional Water Board recognizes that cleanup of mines and non-point sources will require substantial financial resources. The Regional Water Board, therefore, will allow entities participating in approved mercury offset programs to conduct offset projects in the Cache Creek watershed. Offset programs shall be focused on projects where funding is not otherwise available. Subject to approval by the Executive Officer, entities participating in an offset program may partner with agencies in mercury control actions. The framework for offset programs will be developed in future Basin Plan amendments.

The methylmercury load allocations in Tables 4-12 and 13 are assigned to watersheds. To allow offset program proponents to conduct projects within the watersheds to reduce loads, the Regional Water Board may consider alternative load allocations that will achieve the water quality objectives.

4.5.4.2.12 Public Education

The local county health departments should provide outreach and education regarding the risks of consuming fish containing mercury, emphasizing portions of the population that are at risk, such as pregnant women and children.

4.5.4.2.13 Adaptive Implementation

The Regional Water Board will review the progress toward meeting the water quality objectives and the Basin Plan requirements at least every five years. The Regional Water Board recognizes that it may take hundreds of years to achieve the fish tissue objectives. The Regional Water Board considers entities to be in compliance with this mercury reduction plan if they comply with the above requirements for mercury, methylmercury, and erosion controls. The Regional Water Board recognizes that there are uncertainties with the load estimates and the correlation between reductions in loads of total mercury, methylmercury uptake by biota, and fish tissue concentrations. Using an adaptive management approach, however, the Regional Water Board will evaluate new data and scientific information to determine the most effective control program and allocations to reduce methylmercury and total mercury sources in the watershed.

4.5.4.2.14 Monitoring and Review

The monitoring guidance for Cache Creek is described in Chapter 5, Surveillance and Monitoring. Regional Water Board staff will oversee the preparation of detailed monitoring plans and resources to conduct monitoring of sediment, water, and fish to assess progress toward meeting the water quality objectives. Regional Water Board staff will take the lead in determining compliance with fish tissue objectives for Cache Creek. Monitoring for cleanup of mines or compliance with the erosion control requirements is the responsibility of the entity performing the cleanup or erosion control.

4.5.4.3 Delta Mercury Control Program

The Delta Mercury Control Program applies specifically to the Delta and Yolo Bypass waterways listed in Appendix 43.

This amendment was adopted by the Regional Water Quality Control Board on 22 April 2010, and approved by the U.S. Environmental Protection Agency on 20 October 2011. The Effective Date of the Delta Mercury Control Program shall be 20 October 2011, the date of U.S. EPA approval.

4.5.4.3.1 Program Overview

The Delta Mercury Control Program is designed to protect people eating one meal/week (32 g/day) of trophic levels 3 and 4 Delta fish, plus some non-Delta (commercial market) fish. The Regional Water Board recognizes that some consumers eat four to five meals per week (128-160 g/day) of a variety of Delta fish species. The fish tissue objectives will be re-evaluated during the Phase 1 Delta Mercury Control Program Review and later program reviews to determine whether objectives protective of a higher consumption rate can be attained as methylmercury reduction actions are developed and implemented.

Additional information about methylmercury source control methods must be developed to determine how and if Dischargers can attain load and waste load allocations set by the Board. Information is also needed about the methylmercury control methods' potential benefits and

adverse impacts to humans, wildlife, and the environment. Therefore, the Delta Mercury Control Program will be implemented through a phased, adaptive management approach.

Phase 1 spans from 20 October 2011 through the Phase I Delta Mercury Control Program Review, expected to be by 20 October 2020. Phase 1 emphasizes studies and pilot projects to develop and evaluate management practices to control methylmercury. Phase 1 includes provisions for: implementing pollution minimization programs and interim mass limits for inorganic (total) mercury point sources in the Delta and Yolo Bypass; controlling sediment-bound mercury in the Delta and Yolo Bypass that may become methylated in agricultural lands, wetland, and open-water habitats; and reducing total mercury loading to San Francisco Bay, as required by the Water Quality Control Plan for the San Francisco Bay Basin.

Phase 1 also includes: the development of upstream mercury control programs for major tributaries; the development and implementation of a mercury exposure reduction program to protect humans; and the development of a mercury offset program.

At the end of Phase 1, the Regional Water Board shall conduct a Phase 1 Delta Mercury Control Program Review that considers: modification of methylmercury goals, objectives, allocations and/or the Final Compliance Date; implementation of management practices and schedules for methylmercury controls; and adoption of a mercury offset program for dischargers who cannot meet their load and waste load allocations after implementing all reasonable load reduction strategies. The review also shall consider other potential public and environmental benefits and negative impacts (e.g., habitat restoration, flood protection, water supply, fish consumption) of attaining the allocations. The fish tissue objectives, the linkage analysis between objectives and sources, and the attainability of the allocations will be re-evaluated based on the findings of Phase 1 control studies and other information. The linkage analysis, fish tissue objectives, allocations, and time schedules shall be adjusted at the end of Phase 1, or subsequent program reviews, if appropriate.

Phase 2 begins after the Phase 1 Delta Mercury Control Program Review or 20 October 2022, whichever occurs first, and ends in 2030. During Phase 2, dischargers shall implement methylmercury control programs and continue inorganic (total) mercury reduction programs. Compliance monitoring and implementation of upstream control programs also shall occur in Phase 2.

4.5.4.3.2 Load and Waste Load Allocations

Final methylmercury waste load allocations for point sources and load allocations for non-point sources are listed in Tables 4-16 through 4-19. For each subarea listed in Table 4-16, the sum of allocations for agricultural drainage, atmospheric wet deposition, open water, urban (nonpoint source), and wetlands and the individual allocations for tributary inputs (Table 4-19), NPDES facilities and NPDES facilities future growth (Table 4-17), and NPDES MS4 (Table 4-18) within that subarea equals that subarea's assimilative capacity. New or expanded methylmercury discharges that begin after 20 October 2011 may necessitate adjustments to the allocations.

Load allocations are specific to Delta subareas, which are shown on Figure A43. The load allocations for each Delta subarea apply to the sum of annual methylmercury loads produced by different types of nonpoint sources: agricultural lands, wetlands, and open-water habitat in each subarea, as well as atmospheric wet deposition to each subarea (Table 4-16), and runoff from urban areas outside of Municipal Separate Storm Sewer System (MS4) service areas. The subarea allocations apply to both existing and future discharges.

Waste load allocations apply to point sources, which include individual NPDES permitted facility discharges and runoff from urban areas within MS4 service areas within the Delta and Yolo Bypass (Tables 4-17 and 4-18, respectively).

Methylmercury allocations are assigned to tributary inputs to the Delta and Yolo Bypass (Table 4-19). Future upstream control programs are planned for tributaries to the Delta through which management practices will be implemented to meet load allocations for tributary inputs assigned by the Delta Mercury Control Program.

Load allocations for the tributary inputs, urban areas outside of MS4 service areas, open-water habitat, and atmospheric deposition, and waste load allocations for the MS4s, are based on water years 2000 through 2003, a relatively dry period. Annual loads are expected to fluctuate with rainfall volume and other factors. As a result, attainment of these allocations shall be assessed as a five-year average annual load. Allocations for these sources will be re-evaluated during review of the Phase 1 Delta Mercury Control Program as wet year data become available.

4.5.4.3.3 Margin of Safety

The Delta Mercury Control program includes an explicit margin of safety of 10%.

4.5.4.3.4 Final Compliance Date

Methylmercury load and waste load allocations for dischargers in the Delta and Yolo Bypass shall be met as soon as possible, but no later than 2030, unless the Regional Water Board modifies the implementation schedule and Final Compliance Date.

During Phase 1, all dischargers shall implement reasonable, feasible controls for inorganic (total) mercury.

All dischargers should implement methylmercury management practices identified during Phase 1 that are reasonable and feasible. However, implementation of methylmercury management practices identified in Phase 1 is not required for the purposes of achieving methylmercury load allocations for nonpoint sources until the beginning of Phase 2.

The Regional Water Board will, as necessary, include schedules of compliance in NPDES permits for compliance with water quality-based effluent limits based on the waste load allocations. The compliance schedules must be consistent with the requirements of federal laws and regulations, including, USEPA regulations 40 CFR 122.47, State laws and regulations, including State Water Board Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits, and the Final Compliance Date. The Regional Board will review the feasibility of meeting wasteload allocations based on reliable data and information regarding variability in methylmercury concentrations and treatment efficiencies and time needed to comply with the wasteload allocations. The Phase 1 Control Studies are designed to provide this information. As needed, the Regional Board shall incorporate the Phase 1 Control Studies into compliance schedules. When Phase 1 studies are complete, the Regional Board will review the need for additional time during Phase 2 for NPDES permittees to comply with the final wasteload allocations.

4.5.4.3.5 Implementation Program

4.5.4.3.5.1 Point Sources

The regulatory mechanism to implement the Delta Mercury Control Program for point sources shall be through NPDES permits.

4.5.4.3.5.1.1 Requirements for NPDES Permitted Facilities

By 20 April 2012, all facilities listed in Table 4-17 shall submit individual pollutant minimization program workplans to the Regional Water Board. The dischargers shall implement their respective pollutant minimization programs within 30 days after receipt of written Executive Officer approval of the workplans. Until the NPDES permitted facility achieves compliance with its waste load allocation, the discharger shall submit annual progress reports on pollution minimization activities implemented and evaluation of their effectiveness, including a summary of mercury and methylmercury monitoring results.

During Phase 1, all facilities listed in Table 4-17 shall limit their discharges of inorganic (total) mercury to facility performance-based levels. The interim inorganic (total) mercury effluent mass limit is to be derived using current, representative data and shall not exceed the 99.9th percentile of 12-month running effluent inorganic (total) mercury loads (lbs/year). For intermittent dischargers, the interim inorganic (total) mercury effluent mass limit shall consider site-specific discharge conditions. The limit shall be assigned in permits and reported as an annual load based on a calendar year. At the end of Phase 1, the interim inorganic (total) mercury mass limit will be re-evaluated and modified as appropriate.

NPDES permitted facilities that begin discharging to the Delta or Yolo Bypass during Phase 1 shall comply with the above requirements.

4.5.4.3.5.1.2 Requirements for NPDES Permitted Urban Runoff Discharges

MS4 dischargers listed in Table 4-18 shall implement best management practices (BMPs) to control erosion and sediment discharges consistent with their existing permits and orders with the goal of reducing mercury discharges.

The Sacramento MS4 (CAS082597), Contra Costa County MS4 (CAS083313), and Stockton MS4 (CAS083470) permittees shall implement pollution prevention measures and BMPs to minimize total mercury discharges. This requirement shall be implemented through mercury reduction strategies required by their existing permits and orders. Annually, the dischargers shall report on the results of monitoring and a description of implemented pollution prevention measures and their effectiveness.

The Sacramento MS4 (CAS082597), Contra Costa County MS4 (CAS083313), and Stockton MS4 (CAS083470) shall continue to conduct mercury control studies to monitor and evaluate the effectiveness of existing BMPs per existing requirements in permits and orders, and to develop and evaluate additional BMPs as needed to reduce their mercury and methylmercury discharges into the Delta and Yolo Bypass.

4.5.4.3.5.2 Nonpoint Sources

Nonpoint sources shall be regulated through the authority contained in State and federal laws and regulations, including State Water Board's Nonpoint Source Implementation and Enforcement Policy.

Table 4-16 contains methylmercury load allocations for non-point sources in the Delta and Yolo Bypass waterways listed in Appendix 43.

During Phase 1, all nonpoint sources in the Delta and Yolo Bypass shall implement reasonable, feasible actions to reduce sediment in runoff with the goal of reducing inorganic mercury loading to the Yolo Bypass and Delta, in compliance with existing Basin Plan objectives and requirements, and Irrigated Lands Regulatory Program requirements.

Attainment of methylmercury load allocations at the end of 2030 will be determined by comparing monitoring data and documentation of methylmercury management practice implementation for each subarea with loads specified in Table 4-16 and Table 4-19.

For subareas not in compliance with allocations by 2030, the Regional Water Board may develop load allocations for individual sources and require individual monitoring and waste discharge requirements.

In subareas needing reductions in methylmercury, proponents of new wetland and wetland restoration projects scheduled for construction after 20 October 2011 shall (a) participate in Control Studies as described below, or shall implement site-specific study plans, that evaluate practices to minimize methylmercury discharges, and (b) implement methylmercury controls as feasible. New wetland projects may include pilot projects and associated monitoring to evaluate management practices that minimize methylmercury discharges.

4.5.4.3.5.3 Phase 1 Control Studies

Point and nonpoint source dischargers, working with other stakeholders, shall conduct methylmercury control studies (Control Studies) to evaluate existing control methods and, as needed, develop additional control methods that could be implemented to achieve their methylmercury load and waste load allocations. The Regional Water Board will use the Phase 1 Control Studies' results and other information to consider amendments to the Delta Mercury Control Program during the Phase 1 Delta Mercury Control Program Review. A Technical Advisory Committee, described below, will review the Control Studies' designs and results.

4.5.4.3.5.3.1 Study Participants

Control Studies can be developed through a stakeholder group approach or other collaborative mechanism, or by individual dischargers. Individual dischargers are not required to do individual studies if the individual dischargers join a collaborative study group(s).

Control Studies are required for:

(1) Irrigated agricultural lands that discharge to the Yolo Bypass and Delta subareas that require methylmercury source reductions.
(2) Managed wetlands and wetland restoration projects that discharge to the Yolo Bypass and Delta subareas that require methylmercury source reductions.
(3) Existing NPDES permitted facilities in the Delta and the Yolo Bypass (listed in Table 4-17).
(4) Sacramento Area MS4, Stockton MS4, and Contra Costa County MS4 service areas within and upstream of the legal Delta boundary.
(5) State and Federal agencies whose activities affect the transport of mercury and the production and transport of methylmercury through the Yolo Bypass and Delta, or which manage open water areas in the Yolo Bypass and Delta, including but not limited to Department of Water Resources, State Lands Commission, Central Valley Flood

Protection Board, U.S. Army Corps of Engineers, and U.S. Bureau of Reclamation. If appropriate during Phase 1, the Executive Officer will require other water management agencies whose activities affect methylmercury levels in the Delta and Yolo Bypass to participate in the Control Studies.

(6) Other significant sources of methylmercury not listed above, as identified and deemed appropriate by the Executive Officer.

Dischargers in the Central Valley that are not subject to the Delta Mercury Control Program but may be subject to future mercury control programs in upstream tributary watersheds are encouraged to participate in the coordinated Delta Control Studies. Dischargers in and upstream of the Delta who participate in the Control Studies will be exempt from conducting equivalent Control Studies required by future upstream mercury control programs.

4.5.4.3.5.3.2 Study Objectives

The Control Studies shall evaluate existing control methods and, as needed, additional control methods that could be implemented to achieve methylmercury load and waste load allocations. The Control Studies shall evaluate the feasibility of reducing sources more than the minimum amount needed to achieve allocations.

Phase 1 studies also may include an evaluation of innovative actions, watershed approaches, offsets projects, and other short and long-term actions that result in reducing inorganic (total) mercury and methylmercury to address the accumulation of methylmercury in fish tissue and to reduce methylmercury exposure.

Dischargers may evaluate the effectiveness of using inorganic (total) mercury controls to control methylmercury discharges.

Dischargers may conduct characterization studies to inform and prioritize the Control Studies. Characterization studies may include, but not be limited to, evaluations of methylmercury and total mercury concentrations and loads in source waters, receiving waters, and discharges, to determine which discharges act as net sources of methylmercury, and which land uses result in the greatest net methylmercury production and loss.

Final reports for Control Studies shall include a description of methylmercury and/or inorganic (total) mercury management practices identified in Phase 1; an evaluation of the effectiveness, and costs, potential environmental effects, and overall feasibility of the control actions. Final reports shall also include proposed implementation plans and schedules to comply with methylmercury allocations as soon as possible.

If the Control Study results indicate that achieving a given methylmercury allocation is infeasible, then the discharger, or an entity representing a discharger, shall provide detailed information on why full compliance is not achievable, what methylmercury load reduction is achievable, and an implementation plan and schedule to achieve partial compliance.

4.5.4.3.5.3.3 Control Study Workplans

Control Studies shall be implemented through Control Study Workplan(s). The Control Study Workplan(s) shall provide detailed descriptions of how methylmercury control methods will be identified, developed, and monitored, and how effectiveness, costs, potential environmental effects, and overall feasibility will be evaluated for the control methods.

The Control Study Workplan(s) shall include details for organizing, planning, developing, prioritizing, and implementing the Control Studies.

The Control Studies will be governed using an Adaptive Management approach.

4.5.4.3.5.3.4 Technical Advisory Committee and Adaptive Management Approach

The Regional Water Board commits to supporting an Adaptive Management approach. The adaptive management approach includes the formation of a Stakeholder Group(s) and a Technical Advisory Committee (TAC). Regional Water Board staff, working with the TAC and Stakeholder Group(s), will provide a Control Study Guidance Document for stakeholders to reference.

The TAC shall be comprised of independent experts who would convene as needed to provide scientific and technical peer review of the Control Study Workplan(s) and results, advise the Board on scientific and technical issues, and provide recommendations for additional studies and implementation alternatives developed by the dischargers. The Board shall form and manage the TAC with recommendations from the dischargers and other stakeholders, including tribes and community organizations.

Board staff shall work with the TAC and Stakeholder Group(s) to review the Control Study Workplan(s) and results. As new information becomes available from the Control Studies or outside studies that result in redirection and/or prioritization of existing studies, dischargers may amend the Control Study Workplan(s) with Executive Officer approval.

4.5.4.3.5.3.5 Mercury Control Studies Schedule

(1) By 20 April 2012, entities required to conduct Control Studies shall submit for Executive Officer approval either: (1) a report(s) describing how dischargers and stakeholders plan to organize to develop a coordinated, comprehensive Control Study Workplan(s), or (2) a report describing how individual dischargers will develop individual Control Study Workplans. For dischargers conducting coordinated studies, the report shall include a list of participating dischargers, stakeholders, tribes, and community groups. Dischargers shall be considered in compliance with this reporting requirement upon written commitment to either be part of a group developing a Control Study Workplan or develop an individual Control Study Workplan.

(2) Control Study Workplans shall be submitted to the Regional Water Board by 20 July 2012. With Executive Officer approval, an additional nine months may be allowed for Workplans being developed by a collaborative stakeholder approach. The Control Study Workplan(s) shall contain a detailed plan for the Control Studies and the work to be accomplished during Phase 1. Regional Water Board staff and the TAC will review the Workplans and provide recommendations for revising Workplans if necessary.

Within four months of submittal, the Executive Officer must determine if the Workplans are acceptable. After four months, Workplans are deemed approved and ready to implement if no written approval is provided by the Executive Officer, unless the Executive Officer provides written notification to extend the approval process.

Dischargers shall be considered in compliance with this reporting requirement upon timely submittal of workplans and revisions.

(3) By 20 October 2015, entities responsible for Control Studies shall submit report(s) to the Regional Water Board documenting progress towards complying with the Control Study Workplan(s). The report shall include amended workplans for any additional studies needed to address methylmercury reductions. The TAC will review the progress reports and may recommend what additional or revised studies should be undertaken to complete the objectives of the Control Studies. Staff will review the progress reports and recommendations of the TAC and provide a progress report to the Regional Water Board.

(4) By 20 October 2018, entities responsible for Control Studies shall complete the studies and submit to the Regional Water Board Control Studies final reports that present the results and descriptions of methylmercury control options, their preferred methylmercury controls, and proposed methylmercury management plan(s) (including implementation schedules), for achieving methylmercury allocations. In addition, final report(s) shall propose points of compliance for non-point sources.

If the Executive Officer determines that dischargers are making significant progress towards developing, implementing and/or completing the Phase 1 Control Studies but that more time is needed to finish the studies, the Executive Officer may consider extending a study's deadlines.

The Executive Officer may, after public notice, extend time schedules up to two years if the dischargers demonstrate reasonable attempts to secure funding for the Phase 1 studies but experience severe budget shortfalls.

Annually, staff shall publicly report to the Regional Water Board progress of upstream mercury program development, discharger and stakeholder coordination, Control Study Workplan status, implementation of Control Studies, actions implemented or proposed to meet load and waste load allocations, and the status of the formation and activities of the TAC.

By 20 October 2015, the Executive Officer shall provide a comprehensive report to the Regional Water Board on Phase 1 progress, including progress of upstream mercury control program development, Control Studies, actions implemented or proposed to meet Delta Mercury Control Program load and waste load allocations, and the status and progress of the TAC.

If dischargers do not comply with Control Study implementation schedules, the Executive Officer shall consider issuing individual waste discharge requirements or ordering the production of technical reports and/or management plans.

4.5.4.3.5.3.6 Phase 1 Delta Mercury Control Program Review

By 20 October 2020, at a public hearing, and after a scientific peer review and public review process, the Regional Water Board shall review the Delta Mercury Control Program and may consider modification of objectives, allocations, implementation provisions and schedules, and the Final Compliance Date.

If the Executive Officer allows an extension for the Control Studies' schedule, then the Delta Mercury Control Program Review may be delayed up to two years. If the Delta Mercury Control Program Review is delayed more than one year, the Regional Water Board should consider extending the schedule for Phase 2 implementation of methylmercury controls, and the Final Compliance Date.

The Regional Water Board shall assess: (a) the effectiveness, costs, potential environmental effects, and technical and economic feasibility of potential methylmercury control methods; (b)

whether implementation of some control methods would have negative impacts on other project or activity benefits; (c) methods that can be employed to minimize or avoid potentially significant negative impacts to project or activity benefits that may result from control methods; (d) implementation plans and schedules proposed by the dischargers; and (e) whether methylmercury allocations can be attained.

The Regional Water Board shall use any applicable new information and results of the Control Studies to adjust the relevant allocations and implementation requirements as appropriate. Interim limits established during Phase 1 and allocations will not be reduced as a result of early actions that result in reduced inorganic (total) mercury and/or methylmercury in discharges.

As part of the Phase 1 Delta Mercury Control Program Review and subsequent program reviews, the Regional Water Board may consider adjusting the allocations to allow methylmercury discharges from existing and new wetland restoration and other aquatic habitat enhancement projects if dischargers provide information that demonstrates that 1) all reasonable management practices to limit methylmercury discharges are being implemented and 2) implementing additional methylmercury management practices would negatively impact fish and wildlife habitat or other project benefits. The Regional Water Board will consider the merits of the project(s) and whether to require the discharger(s) to propose other activities in the watershed that could offset the methylmercury. The Regional Water Board will periodically review the progress towards achieving the allocations and may consider additional conditions if the plan described above is ineffective.

The Regional Water Board shall conduct the Phase 1 Delta Mercury Program Review based on information received in Phase 1. If the Regional Water Board does not receive timely information to review and update the Delta Mercury Control Program, then allocations shall not be raised but may be lowered and the 2030 Final Compliance Date shall not be changed for those individual dischargers who did not complete the Phase 1 requirements.

The Regional Water Board shall require implementation of appropriate management practices. The methylmercury management plan(s) developed in Phase 1 shall be initiated as soon as possible, but no later than one (1) year after Phase 2 begins.

The Regional Water Board shall review this control program two years prior to the end of Phase 2, and at intervals no more than 10 years thereafter.

4.5.4.3.5.4 Compliance Monitoring

Within two years after the start of Phase 2, entities responsible for meeting load and waste load allocations shall monitor methylmercury loads and concentrations and submit annual reports to the Regional Water Board. The points of compliance for waste load allocations for NPDES facilities shall be the effluent monitoring points described in individual NPDES permits. The points of compliance for MS4s required to conduct methylmercury monitoring are those locations described in the individual MS4 NPDES permits or otherwise determined to be representative of the MS4 service areas and approved by the Executive Officer on an MS4-specific basis. The points of compliance and monitoring plans for non-point sources shall be determined during the Control Studies. Compliance with the load allocations for nonpoint sources and waste load allocations for MS4s may be documented by monitoring methylmercury loads at the compliance points or by quantifying the annual average methylmercury load reduced by implementing pollution prevention activities and source and treatment controls.

Entities will be allowed to comply with their mercury receiving water monitoring requirements by participating in a regional monitoring program, when such a program is implemented.

Chapter 5, Surveillance and Monitoring, contains additional monitoring guidance.

4.5.4.3.5.5 Requirements for State and Federal Agencies

Open water allocations are assigned jointly to the State Lands Commission, the Department of Water Resources, and the Central Valley Flood Protection Board as applicable. Other agencies that are identified in Phase 1 that implement actions and activities that have the potential to contribute to methylmercury production and loss in open water will be required to take part in the studies. In the Phase 1 review, the Regional Water Board will modify, as appropriate, the list of entities that are responsible for meeting the open water allocations. Open water allocations apply to the methylmercury load that fluxes to the water column from sediments in open-water habitats within channels and floodplains in the Delta and Yolo Bypass.

The State Lands Commission, Central Valley Flood Protection Board, Department of Water Resources, and other identified agencies shall conduct Control Studies and evaluate options to reduce methylmercury in open waters under jurisdiction of the State Lands Commission and floodplain areas inundated by flood flows. These agencies shall evaluate their activities to determine whether operational changes or other practices or strategies could be implemented to reduce ambient methylmercury concentrations in Delta open water areas and floodplain areas inundated by managed floodplain flows. Evaluations shall include inorganic mercury reduction projects. By 20 April 2012, these agencies shall demonstrate how the agencies have secured adequate resources to fund the Control Studies. Regional Water Board staff will work with the agencies to develop the Control Studies and evaluate potential mercury and methylmercury reduction actions.

Activities including water management and impoundment in the Delta and Yolo Bypass, maintenance of and changes to salinity objectives, dredging and dredge materials disposal and reuse, and management of flood conveyance flows are subject to the open water methylmercury allocations. Agencies responsible for these activities in the Delta and Yolo Bypass include, but are not limited to, Department of Water Resources, State Lands Commission, Central Valley Flood Protection Board, U.S. Bureau of Reclamation, U.S. Army Corps of Engineers (USACE), and the State Water Resources Control Board. Control Studies shall be completed for the activities that have the potential to increase ambient methylmercury levels. These agencies may conduct their own coordinated Control Studies or may work with the other stakeholders in comprehensive, coordinated Control Studies.

The agencies should coordinate with wetland and agricultural landowners during Phase 1 to characterize existing methylmercury discharges to open waters from lands immersed by managed flood flows and develop methylmercury control measures.

New wetland, floodplain, and other aquatic habitat restoration and enhancement projects, including but not limited to projects developed, planned, funded, or approved by individuals, private businesses, non-profit organizations, and local, State, and federal agencies such as USACE, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration Fisheries, U.S. Environmental Protection Agency, U.S. Bureau of Reclamation, State Water Resources Control Board, California Department of Water Resources, and California Department of Fish and Wildlife, shall comply with all applicable requirements of this program, including conducting or participating in Control Studies and complying with allocations. To the extent allowable by their regulatory authority, Federal, State, and local agencies that fund, approve, or implement such new projects shall direct project applicants/grantees/loanees to apply to or consult with the Regional Water Board to ensure full compliance with the water quality requirements herein.

4.5.4.3.5.6 Dredging and Dredge Material Reuse

Dredging activities and activities that reuse dredge material in the Delta should minimize increases in methyl and total mercury discharges to Delta waterways (Appendix 43). The following requirements apply to dredging and excavating projects in the Delta and Yolo Bypass where a Clean Water Act 401 Water Quality Certification or other waste discharge requirements are required. The Clean Water Act 401 Water Quality Certifications shall include the following conditions:

(1) Employ management practices during and after dredging activities to minimize sediment releases into the water column.

(2) Ensure that under normal operational circumstances, including during wet weather, dredged and excavated material reused at upland sites, including the tops and dry-side of levees, is protected from erosion into open waters.

In addition to the above requirements, the following requirements apply to the California Department of Water Resources, USACE, the Port of Sacramento, the Port of Stockton, and other State and federal agencies conducting dredging and excavating projects in the Delta and Yolo Bypass:

(1) Characterize the total mercury mass and concentration of material removed from Delta waterways (Appendix 43) by dredging activities.

(2) Conduct monitoring and studies to evaluate management practices to minimize methylmercury discharges from dredge return flows and dredge material reuse sites. Agencies shall:

- By 20 October 2013, project proponents shall submit a study workplan(s) to evaluate methylmercury and mercury discharges from dredging and dredge material reuse, and to develop and evaluate management practices to minimize increases in methyl and total mercury discharges. The proponents may submit a comprehensive study workplan rather than conduct studies for individual projects. The comprehensive workplan may include exemptions for small projects. Upon Executive Officer approval, the plan shall be implemented.

- By 20 October 2018, final reports that present the results and descriptions of mercury and methylmercury control management practices shall be submitted to the Regional Water Board.

Studies should be designed to achieve the following aims for all dredging and dredge material reuse projects. When dredge material disposal sites are utilized to settle out solids and return waters are discharged into the adjacent surface water, methylmercury concentrations in return flows should be equal to or less than concentrations in the receiving water. When dredge material is reused at aquatic locations, such as wetland and riparian habitat restoration sites, the reuse should not add mercury-enriched sediment to the site or result in a net increase of methylmercury discharges from the reuse site.

The results of the management practices studies should be applied to future projects.

4.5.4.3.5.7 Cache Creek Settling Basin Improvement Plan and Schedule

Department of Water Resources, Central Valley Flood Protection Board, and USACE, in conjunction with any landowners and other interested stakeholders, shall implement a plan for management of mercury contaminated sediment that has entered and continues to enter the Cache Creek Settling Basin (Basin) from the upstream Cache Creek watershed. The agencies shall:

(1) By 20 October 2012, the agencies shall take all necessary actions to initiate the process for Congressional authorization to modify the Basin, or other actions as appropriate, including coordinating with the USACE.

(2) By 20 October 2013, the agencies shall develop a strategy to reduce total mercury from the Basin for the next 20 years. The strategy shall include a description of, and schedule for, potential studies and control alternatives, and an evaluation of funding options. The agencies shall work with the landowners within the Basin and local communities affected by Basin improvements.

(3) By 20 October 2015, the agencies shall submit a report describing the long term environmental benefits and costs of sustaining the Basin's mercury trapping abilities indefinitely.

(4) By 20 October 2015, the agencies shall submit a report that evaluates the trapping efficiency of the Cache Creek Settling Basin and proposes, evaluates, and recommends potentially feasible alternative(s) for mercury reduction from the Basin. The report shall evaluate the feasibility of decreasing mercury loads from the basin, up to and including a 50% reduction from existing loads.

(5) By 20 October 2017, the agencies shall submit a detailed plan for improvements to the Basin to decrease mercury loads from the Basin.

The agencies shall submit the strategy and planning documents described above to the Regional Water Board for approval by the Executive Officer. During Phase 1, the agencies should consider implementing actions to reduce mercury loads from the Basin. Beginning in Phase 2, the agencies shall implement a mercury reduction plan.

4.5.4.3.5.8 Tributary Watersheds

Table 4-19 identifies methylmercury allocations for tributary inputs to the Delta and Yolo Bypass.

The sum total of 20-year average total mercury loads from the tributary watersheds identified in Table 4-19 needs to be reduced by 110 kg/yr. Initial reduction efforts should focus on watersheds that contribute the most mercury-contaminated sediment to the Delta and Yolo Bypass, such as the Cache Creek, American River, Putah Creek, Cosumnes River, and Feather River watersheds.

Future mercury control programs will address the tributary watershed methylmercury allocations and total mercury load reductions assigned to tributary inputs to the Delta and Yolo Bypass. Additional methylmercury and total mercury load reductions may be required within those watersheds to address any mercury impairment within those watersheds.

Mercury control programs will be developed for tributary inputs to the Delta by the following dates:

2012: American River;
2016: Feather, Sacramento, San Joaquin, and Mokelumne Rivers, and Marsh and Putah Creeks; and
2017: Cosumnes River and Morrison Creek.

4.5.4.3.5.9 Mercury Offsets

The intent of an offset program is to optimize limited resources to maximize environmental benefits. The overall objectives for an offset program are to (1) provide more flexibility than the current regulatory system provides to improve the environment while meeting regulatory requirements (i.e., load and wasteload allocations) at a lower overall cost and (2) promote watershed-based initiatives that encourage earlier and larger load reductions to the Delta than would otherwise occur.

On or before 20 October 2020, the Regional Water Board will consider adoption of a mercury (inorganic and/or methyl) offsets program. During Phase 1, stakeholders may propose pilot offset projects for public review and Regional Water Board approval. The offsets program and any Phase 1 pilot offset projects shall be based on the following key principles:

- Offsets shall be consistent with existing USEPA and State Board policies and with the assumptions and requirements upon which this and other mercury control programs are established.
- Offsets should not include requirements that would leverage existing discharges as a means of forcing dischargers to bear more than their fair share of responsibility for causing or contributing to any violation of water quality standards. In this context “fair share” refers to the dischargers’ proportional contribution of methylmercury load.
- Offset credits should only be available to fulfill a discharger’s responsibility to meet its (waste) load allocation after reasonable load reduction and pollution prevention strategies have been implemented.
- Offsets should not be allowed in cases where local human or wildlife communities bear a disparate or disproportionate pollution burden as a result of the offset.
- Offset credits should be available upon generation and last long enough (i.e., not expire quickly) to encourage feasible projects.
- Creditable load reductions achieved should be real, quantifiable, verifiable, and enforceable by the Regional Water Board.

Alternatives to direct load credits may be developed.

4.5.4.3.5.10 Exposure Reduction Program

While methylmercury and mercury source reductions are occurring, the Regional Water Board recognizes that activities should be undertaken to protect those people who eat Delta fish by reducing their methylmercury exposure and its potential health risks. The Exposure Reduction Program (ERP) is not intended to replace timely reduction of mercury and methylmercury loads to Delta waters.

The Regional Water Board will investigate ways, consistent with its regulatory authority, to address public health impacts of mercury in Delta fish, including activities that reduce actual and potential exposure of and mitigate health impacts to those people and communities most likely to be affected by mercury in Delta caught fish, such as subsistence fishers and their families (State Water Board Resolution No. 2005-0060).

By 20 October 2012, Regional Water Board staff shall work with dischargers (either directly or through their representatives), State and local public health agencies (including California Department of Public Health, California Office of Health Hazard Assessment, and county public health and/or environmental health departments), and other stakeholders, including community-based organizations, tribes, and Delta fish consumers, to complete an Exposure Reduction Strategy. The purposes of the Strategy will be to recommend to the Executive Officer how dischargers will be responsible for participating in an ERP, to set performance measures, and to propose a collaborative process for developing, funding and implementing the program. The Strategy shall take into account the proportional share of methylmercury contributed by individual dischargers. If dischargers (either directly or through their representatives) do not participate in the collaborative effort to develop the ERP, the Regional Water Board will evaluate and implement strategies, consistent with the Regional Water Board's regulatory authority, to assure participation from all dischargers or their representatives.

The objective of the Exposure Reduction Program is to reduce mercury exposure of Delta fish consumers most likely affected by mercury.

The Exposure Reduction Program must include elements directed toward:

- Developing and implementing community-driven activities to reduce mercury exposure;
- Raising awareness of fish contamination issues among people and communities most likely affected by mercury in Delta-caught fish such as subsistence fishers and their families;
- Integrating community-based organizations that serve Delta fish consumers, tribes, and public health agencies in the design and implementation of an exposure reduction program;
- Identifying resources, as needed, for community-based organizations and tribes to participate in the Program;
- Utilizing and expanding upon existing programs and materials or activities in place to reduce mercury, and as needed, create new materials or activities; and
- Developing measures for program effectiveness.

The dischargers, either individually or collectively, or based on the Exposure Reduction Strategy, shall submit an exposure reduction workplan for Executive Officer approval by 20 October 2013. The workplan shall address the Exposure Reduction Program objective, elements, and dischargers' coordination with other stakeholders. Dischargers shall integrate or, at a minimum, provide good-faith opportunities for integration of community-based organizations, tribes, and consumers of Delta fish into planning, decision making, and implementation of exposure reduction activities.

The dischargers shall implement the workplan by six months after Executive Officer approval of workplan. Every three years after workplan implementation begins, the dischargers, individually or collectively, shall provide a progress report to the Executive Officer. Dischargers shall participate in the Exposure Reduction Program until they comply with all requirements related to their individual or subarea methylmercury allocation.

The California Department of Public Health, the California Office of Environmental Health Hazard Assessment, and the local county public health and/or environmental health departments should collaborate with dischargers and community and tribal members to develop and implement exposure reduction programs and provide guidance to dischargers and others that are conducting such activities. The California Department of Public Health and/or other appropriate agency should seek funds to contribute to the Exposure Reduction Program and to continue it beyond 2030, if needed, until fish tissue objectives are attained.

The State Water Board should develop a statewide policy that defines the authority and provides guidance for exposure reduction programs, including guidance on addressing public health impacts of mercury, activities that reduce actual and potential exposure of, and mitigating health impacts to those people and communities most likely to be affected by mercury.

4.5.4.3.5.11 Exceptions for Low Threat Discharges

Discharges subject to a waiver of waste discharge requirements based on a finding that the discharges pose a low threat to water quality, except for discharges subject to water quality certifications, are exempt from the mercury requirements of this Delta Mercury Control Program.

Discharges subject to waste discharge requirements for dewatering and other low threat discharges to surface waters are exempt from the mercury requirements of this Delta Mercury Control Program.

TABLE 4-16
METHYLMERCURY LOAD AND WASTE LOAD ALLOCATIONS FOR EACH DELTA SUBAREA BY SOURCE CATEGORY

Source Type	DELTA SUBAREA													
	Central Delta		Marsh Creek		Mokelumne River		Sacramento River		San Joaquin River		West Delta		Yolo Bypass	
	Current Load (g/yr)	Allocation (g/yr)	Current Load (g/yr)	Allocation (g/yr)	Current Load (g/yr)	Allocation (g/yr)	Current Load (g/yr)	Allocation (g/yr)	Current Load (g/yr)	Allocation (g/yr)	Current Load (g/yr)	Allocation (g/yr)	Current Load (g/yr)	Allocation (g/yr)
Methylmercury Load Allocations														
Agricultural drainage [d]	37	37	2.2	0.40	1.6	0.57	36	20	23	8.3	4.1	4.1	19	4.1
Atmospheric wet deposition	7.3	7.3	0.23	0.23	0.29	0.29	5.6	5.6	2.7	2.7	2.4	2.4	4.2	4.2
Open water	370	370	0.18	0.032	4.0	1.4	140	78	48	17	190	190	100	22
Tributary Inputs [a]	37	37	1.9	0.34	110	39	2,034	1,129	367	133			462	100
Inputs from Upstream Subareas	(b)	(b)	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	(b)	(b)	- - -	- - -
Urban (nonpoint source)	0.14	0.14	---	---	0.018	0.018	0.62	0.62	0.0022	0.0022	0.066	0.066	---	---
Wetlands [d]	210	210	0.34	0.061	30	11	94	52	43	16	130	130	480	103
Methylmercury Waste Load Allocations														
NPDES facilities [a]	1.3	1.3	0.086	0.086	0	0	162	90	40	15	0.0019	0.0019	1.0	0.42
NPDES facilities future growth [a]	---	0.32 [b]	---	0.21	---	0	---	8.6	---	2.1	---	0.25 [b]	---	0.60
NPDES MS4 [a]	5.4	5.4	1.2	0.30	0.045	0.016	2.8	1.6	4.8	1.7	3.2	3.2	1.5	0.38
Total Loads [c] (g/yr)	**668**	**668**	**6.14**	**1.66**	**146**	**52.6**	**2,475**	**1,385**	**528**	**195**	**330**	**330**	**1,068**	**235**

Table 4-16 Footnotes:

(a) Values shown for Tributary Inputs, NPDES Facilities, NPDES Facilities Future Growth, and NPDES MS4 represent the sum of several individual discharges. See Tables 4-17, 4-18, and 4-19 for allocations for the individual discharges that should be used for compliance purposes.

(b) The Central Delta subarea receives flows from the Sacramento, Yolo Bypass, Mokelumne, and San Joaquin subareas. The West Delta subarea receives flows from the Central Delta and Marsh Creek subareas. These within-Delta flows have not yet been quantified because additional data are needed for loss rates across the subareas. Federal and state agencies whose activities affect methylmercury loss and production processes in the Delta and Yolo Bypass are assigned joint responsibility for the open water allocation. These subarea inflows are expected to decrease substantially (e.g., 40 80%) as upstream mercury management practices take place. As a result, reductions for sources within the Central and West subareas and tributaries that drain directly to these subareas are not required.

(c) For each Delta subarea, the allocations in Table 4-16 for agricultural drainage, atmospheric wet deposition, open water, urban (nonpoint source), and wetlands plus the individual allocations for tributary inputs (Table 4-19), NPDES facilities and NPDES facilities future growth (Table 4-17), and NPDES MS4 (Table 4-18) within that subarea equal the Delta subarea's TMDL (assimilative capacity).

(d) The load allocations apply to the net methylmercury loads, where the net loads equal the methylmercury load in outflow minus the methylmercury loads in source water (e.g., irrigation water and precipitation).

TABLE 4-17
MUNICIPAL AND INDUSTRIAL WASTEWATER METHYLMERCURY (MEHG) ALLOCATIONS

PERMITTEE [a]	NPDES Permit No.	MeHg Waste Load Allocation [b] (g/yr)
Central Delta		
Discovery Bay WWTP	CA0078590	0.37
Lincoln Center Groundwater Treatment Facility	CA0084255	0.018
Lodi White Slough WWTP	CA0079243	0.94
Metropolitan Stevedore Company	CA0084174	[c]
Unassigned allocation for NPDES facility discharges	[d]	0.31
Marsh Creek		
Brentwood WWTP	CA0082660	0.14
Unassigned allocation for NPDES facility discharges	[d]	0.16
Sacramento River		
Rio Vista Northwest WWTP	CA0083771	0.069
Rio Vista WWTP	CA0079588	0.056
Sacramento Combined WWTP	CA0079111	0.53
SRCSD Sacramento River WWTP	CA0077682	89
Unassigned allocation for NPDES facility discharges	[d]	8.5
San Joaquin River		
Deuel Vocational Inst. WWTP	CA0078093	0.021
Manteca WWTP	CA0081558	0.38
Mountain House Community Services District WWTP	CA0084271	0.37
Oakwood Lake Subdivision Mining Reclamation [f]	CA0082783	0.38 [f]
Stockton WWTP	CA0079138	13
Tracy WWTP	CA0079154	0.77
Unassigned allocation for NPDES facility discharges	[d]	1.7
West Delta		
GWF Power Systems [e]	CA0082309	0.0052
Mirant Delta LLC Contra Costa Power Plant	CA0004863	[e]
Ironhouse Sanitation District	CA0085260	0.030
Unassigned allocation for NPDES facility discharges	[d]	0.22
Yolo Bypass		
Davis WWTP [g]	CA0079049	0.17 [g]
Woodland WWTP	CA0077950	0.43
Unassigned allocation for NPDES facility discharges	[d]	0.42

Table 4-17 Footnotes:

(a) If NPDES facilities that have allocations in Table 4-17 regionalize or consolidate, their waste load allocations can be summed.

(b) Methylmercury waste load allocations apply to annual (calendar year) discharge methylmercury loads.

(c) A methylmercury waste load allocation for non-storm water discharges from the Metropolitan Stevedore Company (CA0084174) shall be established in its NPDES permit once it completes three sampling events for methylmercury in its discharges. Its waste load allocation is a component of the "Unassigned Allocation" for the Central Delta subarea.

(d) Table 4-17 contains unassigned waste load allocations for new discharges to surface water that begin after 20 October 2011. New discharges that may be allotted a portion of the unassigned allocation may come from (1) existing facilities that previously discharged to land and then began to discharge to surface water or diverted discharges to another facility that discharges to surface water as part of ongoing regionalization efforts; (2) newly built facilities that have not previously discharged to land or water; and (3) expansions to existing facilities beyond their allocations listed in Table 4-17 where the additional allocation does not exceed the product of the net increase in flow volume and 0.06 ng/l methylmercury. The sum of all new and/or expanded methylmercury discharges from NPDES facilities within each Delta subarea shall not exceed the Delta subarea-specific waste load allocation listed in Table 4-17.

(e) Methylmercury loads and concentrations in heating/cooling and power facility discharges vary with intake water conditions. To determine compliance with the allocations, dischargers that that use ambient surface water for cooling water shall conduct concurrent monitoring of the intake water and effluent. The methylmercury allocations for such heating/cooling and power facility discharges are 100%, such that the allocations shall become the detected methylmercury concentration found in the intake water. GWF Power Systems (CA0082309) acquires its intake water from sources other than ambient surface water and therefore has a methylmercury allocation based on its effluent methylmercury load.

(f) The waste load allocation for the Oakwood Lake Subdivision Mining Reclamation (CA0082783) shall be assessed as a five-year average annual methylmercury load.

(g) The City of Davis WWTP (CA0079049) has two discharge locations; wastewater is discharged from Discharge 001 to the Willow Slough Bypass upstream of the Yolo Bypass and from Discharge 002 to the Conaway Ranch Toe Drain in the Yolo Bypass. The methylmercury load allocation listed in Table 4-17 applies only to Discharge 002, which discharges seasonally from about February to June. Discharge 001 is encompassed by the Willow Slough watershed methylmercury allocation listed in Table 4-19.

TABLE 4-18
MS4 METHYLMERCURY (MEHG) WASTE LOAD ALLOCATIONS FOR URBAN RUNOFF WITHIN EACH DELTA SUBAREA

Permittee	NPDES Permit No.	MeHg Waste Load Allocation [a, b] (g/yr)
Central Delta		
Contra Costa (County of) [c]	CAS083313	0.75
Lodi (City of)	CAS000004	0.053
Port of Stockton MS4	CAS084077	0.39
San Joaquin (County of)	CAS000004	0.57
Stockton Area MS4	CAS083470	3.6
Marsh Creek		
Contra Costa (County of) [c]	CAS083313	0.30
Mokelumne River		
San Joaquin (County of)	CAS000004	0.016
Sacramento River		
Rio Vista (City of)	CAS000004	0.0078
Sacramento Area MS4	CAS082597	1.0
San Joaquin (County of)	CAS000004	0.11
Solano (County of)	CAS000004	0.041
West Sacramento (City of)	CAS000004	0.36
Yolo (County of)	CAS000004	0.041
San Joaquin River		
Lathrop (City of)	CAS000004	0.097
Port of Stockton MS4	CAS084077	0.0036
San Joaquin (County of)	CAS000004	0.79
Stockton Area MS4	CAS083470	0.18
Tracy (City of)	CAS000004	0.65
West Delta		
Contra Costa (County of) [c]	CAS083313	3.2
Yolo Bypass		
Solano (County of)	CAS000004	0.021
West Sacramento (City of)	CAS000004	0.28
Yolo (County of)	CAS000004	0.083

Table 4-18 Footnotes:

(a) Some MS4s service areas span multiple Delta subareas and are therefore listed more than once. The allocated methylmercury loads for all MS4s are based on the average methylmercury concentrations observed in runoff from urban areas in or near the Delta during water years 2000 through 2003, a relatively dry period. Annual loads are expected to fluctuate with water volume and other factors. As a result, attainment of these allocations shall be assessed as a five-year average annual load. Allocations may be revised during review of the Delta Mercury Control Program to include available wet year data.

(b) The methylmercury waste load allocations include all current and future permitted urban discharges not otherwise addressed by another allocation within the geographic boundaries of urban runoff management agencies within the Delta and Yolo Bypass, including but not limited to Caltrans facilities and rights-of-way (NPDES No. CAS000003), public facilities, properties proximate to banks of waterways, industrial facilities, and construction sites.

(c) The Contra Costa County MS4 discharges to both the Delta and San Francisco Bay. The above allocations apply only to the portions of the MS4 service area that discharge to the Delta within the Central Valley Water Quality Control Board's jurisdiction.

TABLE 4-19
TRIBUTARY WATERSHED
METHYLMERCURY (MEHG) ALLOCATIONS

Tributary	MeHg Load Allocation [a] (g/yr)
Central Delta	
Bear Creek @ West Lane / Mosher Creek @ Morada Lane (sum of watershed loads)	11
Calaveras River @ railroad tracks u/s West Lane	26
Marsh Creek	
Marsh Creek @ Highway 4	0.34
Mokelumne River	
Mokelumne River @ Interstate 5	39.3 (39) [b]
Sacramento River	
Morrison Creek @ Franklin Boulevard	4.2
Sacramento River @ Freeport	1,125 (1,100) [b]
San Joaquin River	
French Camp Slough downstream of Airport Way	4.0
San Joaquin River @ Vernalis	129 (130)[b]
Yolo Bypass	
Cache Creek	30 [c]
Dixon Area	0.77
Fremont Weir	39
Knights Landing Ridge Cut	22
Putah Creek @ Mace Boulevard	2.4
Ulatis Creek near Main Prairie Road	2.1
Willow Slough	3.9

Table 4-19 Footnotes:

(a) Methylmercury allocations are assigned to tributary inputs to the Delta and Yolo Bypass. Mercury control programs designed to achieve the allocations for tributaries listed in Table 4-19 will be implemented by future Basin Plan amendments. Methylmercury load allocations are based on water years 2000 through 2003, a relative dry period. Annual loads are expected to fluctuate with water volume and other factors. As a result, attainment of these allocations shall be assessed as a five-year average annual load. Allocations will be revised during review of the Delta Mercury Control Program to include available wet year data.

(b) Tributary load allocations rounded to two significant figures for compliance evaluation.

(c) The allocation for water from Cache Creek entering the Yolo Bypass in this table is designed to achieve fish tissue objectives in the Yolo Bypass and Delta established by the Delta Mercury Control Program. The allocation in Table 4-12 assigned by the Cache Creek Mercury Control Program applies to the Cache Creek Settling Basin and requires a greater reduction so that fish within the Settling Basin can achieve water quality objectives for methylmercury in fish tissue that apply to Cache Creek, including the Settling Basin.

4.5.5 Pesticide Discharges

The control of pesticide discharges to surface waters from nonpoint sources will be achieved primarily by the development and implementation of management practices that minimize or eliminate the amount discharged. The Board will use water quality monitoring results to evaluate the effectiveness of control efforts and to help prioritize control efforts.

Regional Board monitoring will consist primarily of chemical analysis and biotoxicity testing of major water bodies receiving irrigation return flows. The focus will be on pesticides with use patterns and chemical characteristics that indicate a high probability of entering surface waters at levels that may impact beneficial uses. Board staff will advise other agencies that conduct water quality and aquatic biota monitoring of high priority chemicals, and will review monitoring data developed by these agencies. Review of the impacts of "inert" ingredients contained in pesticide formulations will be integrated into the Board's pesticide monitoring program.

When a pesticide is detected more than once in surface waters, investigations will be conducted to identify sources. Priority for investigation will be determined through consideration of the following factors: toxicity of the compound, use patterns and the number of detections. These investigations may be limited to specific watersheds where the pesticide is heavily used or local practices result in unusually high discharges. Special studies will also be conducted to determine pesticide content of sediment and aquatic life when conditions warrant. Other agencies will be consulted regarding prioritization of monitoring projects, protocol, and interpretation of results.

The Board recognizes that implementation of the authorities of agencies that regulate pesticide use, including CDPR, USEPA Office of Pesticide Programs, and County Agricultural Commissioners, should be one of the primary mechanisms for addressing pesticide-caused water quality impairments. To ensure that new pesticides do not create a threat to water quality, the Board, either directly or through the State Water Resources Control Board, will review the pesticides that are processed through the Department of Pesticide Regulation's (DPR) registration program. Where use of the pesticide may result in a discharge to surface waters, the Board staff will make efforts to ensure that label instructions or use restrictions require management practices that will result in compliance with water quality objectives. When the Board determines that despite any actions taken by DPR, use of the pesticide may result in discharge to surface waters in violation of the objectives, the Board will take regulatory action, such as adoption of a prohibition of discharge or issuance of waste discharge requirements to control discharges of the pesticide. Monitoring may be required to verify that management practices are effective in protecting water quality.

The Board will notify pesticide dischargers through public notices, educational programs and DPR of the water quality objectives related to pesticide discharges. Dischargers will be advised to implement management practices that result in full compliance with these objectives by 1 January 1993, unless required to do so earlier. (Dischargers of carbofuran, malathion, methyl parathion, molinate and thiobencarb must meet the requirements detailed in the Prohibitions section.) During this time period, dischargers will remain legally responsible for the impacts caused by their discharges.

The Board will conduct reviews of the management practices being followed to verify that they produce discharges that comply with water quality objectives. It is anticipated that practices associated with one or two pesticides can be reviewed each year. Since criteria, control methods and other factors are subject to change, it is also anticipated that allowable management practices will change over time, and control practices for individual pesticides will have to be reevaluated periodically.

Public hearings will be held at least once every two years to review the progress of the pesticide control program. At these hearings, the Board will

- review monitoring results and identify pesticides of greatest concern,
- review changes or trends in pesticide use that may impact water quality,
- consider approval of proposed management practices for the control of pesticide discharges,
- set the schedule for reviewing management practices for specific pesticides, and
- consider enforcement action.

After reviewing the testimony, the Board will place the pesticides into one of the following three classifications. When compliance with water quality objectives and performance goals is not obtained within the timeframes allowed, the Board will consider alternate control options, such as prohibition of discharge or issuance of waste discharge requirements.

(1) Where the Board finds that pesticide discharges pose a significant threat to drinking water supplies or other beneficial uses, it will request DPR to act to prevent further impacts. If DPR does not proceed with such action(s) within six months of the Board's request, the Board will act within a reasonable time period to place restrictions on the discharges.

(2) Where the Board finds that currently used discharge management practices are resulting in violations of water quality objectives, but the impacts of the discharge are not so severe as to require immediate changes, dischargers will be given three years, with a possibility of three one year time extensions depending on the circumstances involved, to develop and implement practices that will meet the objectives. During this period of time, dischargers may be required to take interim steps, such as meeting Board established performance goals to reduce impacts of the discharges. Monitoring will be required to show that the interim steps and proposed management practices are effective.

(3) The Board may approve the management practices as adequate to meet water quality objectives. After the Board has approved specific management practices for the use and discharge of a pesticide, no other management practice may be used until it has been reviewed by the Board and found to be equivalent to or better than previously approved practices. Waste discharge requirements will be waived for irrigation return water per Resolution No. 82-036 if the Board determines that the management practices are adequate to meet water quality objectives and meet the conditions of the waiver policy. Enforcement action may be taken against those who do not follow management practices approved by the Board.

Carbofuran, malathion, methyl parathion, molinate and thiobencarb have been detected in surface waters at levels that impact aquatic organisms. Review of management practices associated with these materials is under way and is expected to continue for at least another two years. A timetable of activities related to these pesticides is at the end of the Prohibitions section. A detailed assessment of the impacts of these pesticides on aquatic organisms is also being conducted and water quality objectives will be adopted for these materials by the State or Regional Board by the end of 1993.

In conducting a review of pesticide monitoring data, the Board will consider the cumulative impact if more than one pesticide is present in the water body. This will be done by initially assuming that the toxicities of pesticides are additive. This will be evaluated separately for each beneficial use using the following additive. This will be evaluated separately for each beneficial use using the following formula:

$$\frac{C_1}{O_1} + \frac{C_2}{O_2} + \cdots + \frac{C_i}{O_i} = S$$

Where:

C = The concentration of each pesticide.

O = The water quality objective or criterion for the specific beneficial use for each pesticide present, based on the best available information. Note that the numbers must be acceptable to the Board and performance goals are not to be used in this equation.

S = The sum. A sum exceeding one (1.0) indicates that the beneficial use may be impacted.

The above formula will not be used if it is determined that it does not apply to the pesticides being evaluated. When more than one pesticide is present, the impacts may not be cumulative or they may be additive, synergistic or antagonistic. A detailed assessment of the pesticides involved must be conducted to determine the exact nature of the impacts.

For most pesticides, numerical water quality objectives have not been adopted. USEPA criteria and other guidance are also extremely limited. Since this situation is not likely to change in the near future, the Board will use the best available technical information to evaluate compliance with the narrative objectives. Where valid testing has developed 96 hour LC50 values for aquatic organisms (the concentration that kills one half of the test organisms in 96 hours), the Board will consider one tenth of this value for the most sensitive species tested as the upper limit (daily maximum) for the protection of aquatic life. Other available technical information on the pesticide (such as Lowest Observed Effect Concentrations and No Observed Effect Levels), the water bodies and the organisms involved will be evaluated to determine if lower concentrations are required to meet the narrative objectives.

To ensure the best possible program, the Board will coordinate its pesticide control efforts with other agencies and organizations. Wherever possible, the burdens on pesticide dischargers will be reduced by working through the DPR or other appropriate regulatory processes. The Board may also designate another agency or organization as the responsible party for the development and/or implementation of management practices, but it will retain overall review and control authority. The Board will work with water agencies and others whose activities may influence pesticide levels to minimize concentrations in surface waters.

Since the discharge of pesticides into surface waters will be allowed under certain conditions, the Board will take steps to ensure that this control program is conducted in compliance with the federal and state antidegradation policies. This will primarily be done as pesticide discharges are evaluated on a case by case basis.

4.5.5.1 Central Valley Regional Water Quality Control Board Actions

The Regional Water Board will implement the following actions related to programs regulating pesticide discharges:

(1) Track USEPA and DPR pesticide evaluation and registration activities as they relate to water quality and share monitoring and research data with USEPA and DPR;

(2) When necessary, request that USEPA coordinate implementation of the Federal Insecticide, Fungicide, and Rodenticide Act and the Clean Water Act;

(3) Encourage USEPA and DPR to fully address water quality concerns within their pesticide registration and use regulation processes, including urban runoff and wastewater discharges as well as agricultural runoff. This shall include providing comments in coordination with the State Water Resources Control Board on USEPA registration reviews for pesticides of concern;

(4) Work with DPR, County Agricultural Commissioners, and the Structural Pest Control Board to promote pesticide application practices that result in discharges that comply with water quality regulations by participating in and providing support for regulatory and educational activities that promote these practices;

(5) Assemble available information (such as monitoring data) to assist USEPA and DPR in taking actions necessary to protect water quality;

(6) Use authorities (e.g., through permits or waste discharge requirements) to require implementation of best management practices and control measures to minimize pesticide discharges to surface waters;

(7) Staff will provide periodic updates to the Board on overall progress at addressing pesticide related water quality concerns. These updates may include implementation control programs for specific pesticides, and coordination with USEPA and DPR;

(8) Work with stakeholders to develop a Pyrethroid Research Plan no later than 19 February 2021 that will describe research and studies to inform future iterations of this control program (e.g., potential objectives, program refinement). The Board will coordinate and consult with the Delta Science Program, Delta Independent Science Board, Delta Stewardship Council, Department of Fish and Wildlife, and Delta Regional Monitoring Program, as appropriate, and will seek to implement the plan through available funding mechanisms; including, but not limited to grants, bonds, agency/department funding, fees, etc. Topics of the Plan could include: potential refinement of partition coefficients; further assessing the need to incorporate temperature effects in toxicity relationships; consideration of synergists and potential mixture effects with other commonly occurring contaminants (e.g., piperonyl butoxide) on pyrethroid toxicity; consideration of the need for chronic toxicity values for taxa for which data are not currently available; evaluation of sub-lethal effects; fate and transport of particulate bound pyrethroids; consideration of monitoring and laboratory methods for both pyrethroid chemistry and toxicity testing and inter-laboratory comparison.

4.5.5.2 Pyrethroid Pesticides Control Program

In order to reduce discharges of pyrethroids to surface waters, the pyrethroids control program will rely on coordination with the agencies that regulate pesticide use (California Department of Pesticide Regulation and U.S. EPA Office of Pesticide Programs), implementation of

management practices as part of a conditional prohibition to address elevated levels of pyrethroids before a water body becomes impaired, and data collection to inform future actions. The pyrethroids control program is taking a phased approach and the Board will periodically re-visit the program in the future to consider whether additional actions are required.

(1) The Regional Water Board will take actions and encourage actions by other agencies that support attainment of the narrative water quality objective for toxicity with respect to pyrethroid pesticides, as specified in the Basin Plan under the heading Pesticide Discharges.

(2) Following 19 February 2019, the Board will require monitoring information from dischargers, as described in the Monitoring and Surveillance Chapter under the heading Pyrethroid Pesticides Discharges (p. 5-12).

(3) The pyrethroid pesticides numeric triggers represent maximum allowable levels above which additional management actions may be required. The Regional Water Board may seek additional reductions in pyrethroid pesticides concentrations and exceedance frequencies if such reductions are necessary to account for additive effects with pyrethroids not identified in Table 4-2 or synergistic effects with other chemicals or to protect beneficial uses.

(4) The Regional Water Board will review the pyrethroid pesticides prohibition, the pyrethroid pesticides total maximum daily load allocations, the numeric pyrethroid triggers, and the implementation provisions for pyrethroid pesticide discharges in the Basin Plan no later than 19 February 2034 as part of the Triennial Review process or other process. Following this review, the Regional Water Board may consider the adoption of pyrethroid water quality objectives. Board staff will provide updates to the Regional Water Board on the progress of the pyrethroids control program at least every 3 years as part of the Triennial Review or Executive Officer report, beginning with the first Triennial Review scheduled after 19 February 2021.

4.5.5.2.1 Addressing Known Water Quality Impairments

4.5.5.2.1.1 Total Maximum Daily Loads for Pyrethroids in Urban Water Bodies

The loading capacity for each water body segment listed in Table 4-21 is equal to the numeric triggers for pyrethroids (Table 4-2). Wasteload allocations equal to the loading capacity are assigned to all permitted municipal separate storm sewer systems (MS4s) that discharge to Table 4-21 water bodies. Compliance with wasteload allocations will be determined using appropriate representative receiving water monitoring as described in Chapter 5, Surveillance and Monitoring.

The following TMDL numeric targets will be used to protect aquatic life:

(1) Pyrethroid Pesticides Water Column Additivity Numeric Target: The numeric target is equal to the Acute Pyrethroid Trigger and Chronic Pyrethroid Trigger in Table 4-2 and applies to the receiving waters listed in Table 4-21.

(2) Pyrethroid-Caused Sediment Toxicity Numeric Target: The pyrethroid-caused sediment toxicity numeric target is the evaluation of the narrative water quality objective for toxicity using standard aquatic toxicity tests to determine toxicity in bed sediments. The toxic determination is based on comparison of the test organism's response to the sample and a control. The standard aquatic toxicity test in Table 4-20 will be

used to determine compliance with the sediment toxicity numeric target. If other stressors are identified as the cause of toxicity, it will not be considered an exceedance of the pyrethroid-caused sediment toxicity numeric target.

TABLE 4-20: SEDIMENT TOXICITY TEST TO EVALUATE THE SEDIMENT TOXICITY NUMERIC TARGET

Parameter	Test	Biological Endpoint Assessed
Sediment Toxicity	*Hyalella azteca* (10-day)	Survival

In the water bodies listed in Table 4-21, discharges shall be reduced to ensure attainment of the pyrethroid numeric targets and allocations as soon as practicable but no later than 19 February 2039.

MS4 permittees who discharge to water bodies listed in Table 4-21 shall attain the wasteload allocations by developing and implementing a Pesticide Plan that identifies management practices to reduce pyrethroid pesticides in urban runoff to the maximum extent practicable. MS4 permittees who discharge to water bodies listed in Table 4-21 are required to submit pyrethroid management plans (which may be included in existing pesticide management plans) for the control of pyrethroid pesticide discharges to those water bodies no later than 19 February 2020. Pyrethroid management plans may include actions required by state and federal regulations. The pyrethroid management plan can be included with the MS4's storm water management plan, as appropriate. The management practices listed in Section 4.5.5.2.2.3 shall be considered for inclusion in the pyrethroid management plan. A MS4 discharger has the discretion to implement any of the practices listed in Section 4.5.5.2.2.3, or may identify others that are not included here, but must provide justification to the Board regarding their decision whether to select or not select each management practice listed in this section. Management practices may be implemented by individual urban runoff management entities, jointly by two or more entities acting in concert, or cooperatively through a regional or statewide approach that addresses urban pesticide water pollution, including with domestic or municipal wastewater dischargers, as appropriate.

A progress report shall be provided to the Board annually or at a frequency consistent with a discharger's permit requirements to document the management practices that have been implemented, to evaluate attainment of the wasteload allocations, and to identify effective actions to be taken in the future. The progress report can be included in existing reports to the Board, as appropriate. If the management practices do not result in attainment of the wasteload allocations, then the MS4 discharger shall either identify reasonable and feasible additional/alternative practices for implementation if any are available, or provide a justification for why current practices will result in attainment by the compliance date. This justification may include actions required by state and federal regulations.

TABLE 4-21: WATER BODY SEGMENTS WITH TOTAL MAXIMUM DAILY LOADS (TMDLs) FOR PYRETHROID PESTICIDES

Water Body Segment
Arcade Creek
Chicken Ranch Slough
Curry Creek (Placer and Sutter Counties)
Elder Creek
Kaseberg Creek (tributary to Pleasant Grove Creek, Placer County)
Morrison Creek
Pleasant Grove Creek (upstream of Fiddyment Road)
Pleasant Grove Creek, South Branch
Strong Ranch Slough

4.5.5.2.1.2 Agricultural Waters Bodies with Known Pyrethroid Pesticides Impairments

Discharges of pyrethroid pesticides to water bodies listed in Table 4-22 will be controlled using existing Regional Water Board regulatory programs. Agricultural dischargers (either individual dischargers or a discharger group or coalition) to water bodies listed in Table 4-22 are required to submit pyrethroid management plans (or modifications to existing pesticide management plans) for the control of pyrethroid pesticide discharges to those water bodies no later than 20 April 2019. The pyrethroid management plans will describe the actions that dischargers will take to reduce pyrethroid pesticides discharges to levels that do not exceed the narrative water quality objective for toxicity by the required compliance date.

At a minimum, pyrethroid management plans for agricultural dischargers to the water bodies listed in Table 4-22 must describe:

(1) The sources of pyrethroid pesticides causing nonattainment of narrative water quality objective for toxicity;

(2) The actions that the dischargers will take to reduce pyrethroid pesticides discharges and attain the narrative water quality objective for toxicity as soon as practicable, but no later than 19 February 2039;

(3) A schedule for the implementation of those actions;

(4) A monitoring plan to track effectiveness of pollution control practices;

(5) The process for revising the pyrethroid management plan if the actions do not effectively reduce pyrethroid pesticides discharges or the implemented actions have water quality impacts that must be addressed.

Pyrethroid management plans may address discharges to multiple downstream water bodies for which discharge reductions are required. Pyrethroid management plans may include actions required by state and federal regulations. Revisions to pyrethroid management plans may be required if applicable triggers are not achieved. If a water body that is not attaining the narrative water quality objective for toxicity with respect to pyrethroid pesticides is being used by the discharger to represent water quality conditions in multiple water bodies, pyrethroid management plans must address pyrethroid pesticides in all of the represented water bodies.

TABLE 4-22: WATER BODY SEGMENTS WITH KNOWN PYRETHROID PESTICIDE IMPAIRMENTS RECEIVING AGRICULTURAL DISCHARGES

Water Body Segment
Del Puerto Creek
Hospital Creek (San Joaquin and Stanislaus Counties)
Ingram Creek (from confluence with Hospital Creek to Highway 33 crossing)
Ingram Creek (from confluence with San Joaquin River to confluence with Hospital Creek)
Mustang Creek (Merced County)

4.5.5.2.2 Conditional Prohibition Implementation Components

4.5.5.2.2.1 Municipal Storm Water Discharges

Dischargers subject to the conditional prohibition of pyrethroid pesticides discharges are required to develop and implement pyrethroid management plans to reduce pyrethroid levels in their discharges to the maximum extent practicable. A pyrethroid management plan may be included in the discharger's storm water management plan (SWMP). A pyrethroid management plan must identify a set of management practices that, taken as a whole, may be reasonably expected to effectively reduce pyrethroid levels in their discharges, and to consider whether there are potential water quality concerns with replacement insecticide products. The management practices listed in Section 4.5.5.2.2.3 shall be considered for inclusion in a discharger's pyrethroid management plan. A pyrethroid management plan may include any of the practices listed in Section 4.5.5.2.2.3, or may identify others that are not included here, but must provide justification to the Board regarding their decision whether to select or not select each practice listed in this section. Pyrethroid management plans may include actions required by state and federal regulations. Management practices may be implemented by individual urban runoff management entities, jointly by two or more entities acting in concert, or cooperatively through a regional or statewide approach that addresses urban pesticide water pollution, including with domestic or municipal wastewater dischargers, as appropriate.

A progress report shall be provided to the Board annually or at a frequency consistent with the discharger's permit requirements to document the management practices that have been implemented, to evaluate pyrethroid concentrations with respect to the pyrethroid triggers, and to identify effective actions to be taken in the future. The progress report can be included in other reports submitted to the Board, as appropriate. If the management practices do not result in discharge concentrations at or below the pyrethroid numeric triggers, then the MS4 discharger shall either identify any available, reasonable and feasible additional/alternative practices for implementation, or provide a justification for why current practices are expected to result in achieving the triggers within a reasonable timeframe. This justification may include actions required by state and federal regulations.

Pyrethroid management plans are completed when it can be demonstrated that the Acute and Chronic Pyrethroid Triggers are not exceeded in discharges and the demonstration is approved by the Executive Officer.

4.5.5.2.2.2 Municipal and Domestic Wastewater Discharges

Dischargers subject to the conditional prohibition of pyrethroid pesticides discharges are required to develop and implement pyrethroid management plans to reduce pyrethroid levels in their discharges. Pyrethroid management plans, which can be included in dischargers' Pollution Prevention Plan, shall identify management practices to reduce discharges of pyrethroid pesticides. The pyrethroid triggers are intended to indicate when management practices are to be implemented by the discharger; the pyrethroid triggers are not criteria for interpreting the

narrative toxicity objective, and are not for use as numeric water quality-based effluent limitations or for reasonable potential analysis.

A pyrethroid management plan must identify a set of management practices that taken as a whole, may be reasonably expected to effectively reduce pyrethroid levels in their discharges, and to consider whether there are potential water quality concerns with replacement insecticide products. The management practices listed in Section 4.5.5.2.2.3 shall be considered for inclusion in a discharger's pyrethroid management plan. In considering management practices for pyrethroids, a domestic or municipal wastewater discharger has the discretion to implement any of the practices listed in Section 4.5.5.2.2.3, or may identify others that are not included here, but must provide justification to the Board regarding decision whether to select or not select each practice listed in this section. Management practices may be implemented by individual NPDES permittees, jointly by two or more permittees acting in concert, or cooperatively through a regional or statewide approach, including with municipal storm water dischargers, as appropriate.

Mid-term and end-term progress reports shall be provided to the Board to document the management practices that have been implemented and to track effectiveness during each permit term. These progress reports can be included in existing reports to the Board as appropriate. If the management practices are inadequate to result in pyrethroid discharge concentrations at or below the numeric triggers in Table 4-2, then the modification of the pyrethroid management plan will be required to identify additional actions to be taken to reduce pyrethroid discharges if reasonable and feasible actions are available or a justification for why current practices will result in achieving the applicable triggers within a reasonable timeframe. This justification may include actions required by state and federal regulations.

Pyrethroid management plans are completed when it can be demonstrated that the Acute and Chronic Pyrethroid Triggers are not exceeded in discharges and the demonstration is approved by the Executive Officer.

4.5.5.2.2.3 Best Management Practices for Storm Water and Wastewater Dischargers

The following management practices shall be considered by municipal storm water dischargers and by municipal and domestic wastewater dischargers and implemented as appropriate. Some of these practices may be accomplished by participation in organizations such as California Stormwater Quality Association (CASQA), which coordinates with DPR and other organizations taking actions to protect water quality from the use of pesticides in the urban environment. Other practices may also be proposed. If the State Water Resources Control Board establishes a statewide water quality control plan that requires best management practices for the control of urban pesticide discharges, compliance with those requirements shall be deemed in compliance with this section.

4.5.5.2.2.3.1 Education and outreach activities

(1) Undertake targeted outreach programs to encourage communities within a discharger's jurisdiction to reduce their reliance on pesticides that threaten water quality, focusing efforts on those most likely to use pesticides that threaten water quality, potentially by working with DPR, County Agricultural Commissioners, and the University of California Statewide Integrated Pest Management Program, or other entities as appropriate;

(2) Make available point-of-purchase outreach materials to pesticide retailer(s) in or near the Permittee's jurisdiction. These materials shall provide targeted information on proper pesticide use and disposal, potential adverse impacts on water quality, and less toxic methods of pest prevention and control.

(3) Conduct outreach to Permittee's residents and businesses who may hire structural pest control and landscape professionals that contains messages that (a) explain the links between pesticide usage and water quality; and (b) provides information about structural pest control IPM certification programs and IPM for landscape professionals;

(4) Encourage public and private management practices (e.g., landscape design, irrigation management, etc.) that minimize pesticide runoff.

4.5.5.2.2.3.2 Pesticide pollution prevention activities

(1) Reduce reliance on pyrethroids and other pesticides that threaten water quality by adopting and implementing policies or procedures that minimize the use of pesticides that threaten water quality in the discharger's operations and on the discharger's property;

(2) Develop and implement an Integrated Pest Management policy that:

(a) Is consistent with IPM as defined by the University of California Statewide IPM Program (UC-IPM) or the California Structural Pest Control Board definition.

(b) Applies to all Permittee staff who conduct or contract for pest management and to pest management vendors under contract to the Permittee.

(c) Assigns responsibilities to a designated staff position and/or department to coordinate Permittee activities and ensure that the IPM policy is implemented.

4.5.5.2.2.3.3 Support of Pollution Prevention through the Pesticide Regulatory Process

Track USEPA and DPR pesticide evaluation and registration activities as they relate to surface water quality and encourage these agencies to accommodate urban water quality concerns within their pesticide registration processes. This may include assembling and submitting available information (such as monitoring data) to USEPA and DPR during public comment periods to assist in their pesticide evaluation and registration activities. This best management practice would be implemented most effectively through a cooperative regional or statewide approach.

4.5.5.2.2.4 Agricultural Discharges

If the prohibition trigger is exceeded in a receiving water after 19 February 2022, all dischargers in the areas represented by that receiving water monitoring location shall implement a pyrethroid management plan for pyrethroids. Pyrethroid management plans may be developed by a third-party representing multiple dischargers in an area under a Water Board regulatory program, such as the Irrigated Lands Regulatory Program or Dairy Order. Pyrethroid management plans are due no later than 1 year after the discharger or the Board identifies that an applicable trigger has been exceeded.

4.5.5.2.3 Vector Control Discharges

Discharges of pyrethroid pesticides from vector control applications are subject to the *Statewide NPDES Permit for Biological and Residual Pesticide Discharges to waters of the United States from Vector Control Applications*. Vector control dischargers are not subject to any additional implementation provisions for attainment of the pyrethroid triggers or TMDLs for pyrethroids.

4.5.5.3 Diazinon and Chlorpyrifos Runoff into the Sacramento and Feather Rivers

(1) The Sacramento and Feather River pesticide runoff control program shall:

(a) ensure compliance with water quality objectives applicable to diazinon and chlorpyrifos water quality objectives in the Sacramento and Feather Rivers through the implementation of management practices;
(b) ensure that measures that are implemented to reduce discharges of diazinon and chlorpyrifos do not lead to an increase in the discharge of other pesticides to levels that cause or contribute to violations of applicable water quality objectives and Regional and State Water Board policies; and
(c) ensure that discharges of pesticides to surface waters are controlled so that the pesticide concentrations are at the lowest levels that are technically and economically achievable.

(2) Dischargers must consider whether a proposed alternative to diazinon or chlorpyrifos has the potential to degrade ground or surface water. If the alternative to diazinon or chlorpyrifos has the potential to degrade ground water, alternative pest control methods must be considered. If the alternative to diazinon or chlorpyrifos has the potential to degrade surface water, control measures must be implemented to ensure that applicable water quality objectives and Regional Water and State Board policies are not violated, including State Water Resources Control Board Resolution 68-16.

(3) Compliance with water quality objectives, waste load allocations, and load allocations for diazinon and chlorpyrifos in the Sacramento and Feather Rivers is required by August 11, 2008.

The water quality objectives and allocations will be implemented through the adoption or modification of waivers of waste discharge requirements, and general or individual waste discharge requirements where provisions necessary for implementation are not already in place.

(4) The Regional Water Board will review the diazinon and chlorpyrifos allocations and the implementation provisions in the Basin Plan no later than 30 June 2013.

(5) Regional Water Board staff will meet at least annually with staff from the Department of Pesticide Regulation and representatives from the California Agricultural Commissioners and Sealers Association to review pesticide use and instream pesticide concentrations during the dormant spray and irrigation application season and to consider the effectiveness of management measures in meeting water quality objectives and load allocations.

(6) The Waste Load Allocations (WLA) for all NPDES-permitted dischargers, Load Allocations (LA) for nonpoint source discharges, and the Loading Capacity of the Sacramento and Feather Rivers shall not exceed the sum (S) of one (1) as defined below.

$$S = \frac{C_D}{WQO_D} + \frac{C_C}{WQO_C} \leq 1.0$$

where

C_D = diazinon concentration in µg/L of point source discharge for the WLA; nonpoint source discharge for the LA; or the Sacramento or Feather Rivers for the LC.

C_C = chlorpyrifos concentration in µg/L of point source discharge for the WLA; nonpoint source discharge for the LA; or the Sacramento or Feather Rivers for the LC.

WQO_D = acute or chronic diazinon water quality objective in µg/L.

WQO_C = acute or chronic chlorpyrifos water quality objective in µg/L.

Available samples collected within the applicable averaging period for the water quality objective will be used to determine compliance with the allocations and loading capacity. Prior to performing any averaging calculations, only chlorpyrifos and diazinon results from the same sample will be used in calculating the sum (S). For purposes of calculating the sum (S) above, analytical results that are reported as "nondetectable" concentrations are considered to be zero.

Compliance with the load allocations will be determined where the nonpoint source discharges into the Sacramento or Feather Rivers.

(7) The established waste load and load allocations for diazinon and chlorpyrifos and the water quality objectives for diazinon and chlorpyrifos in the Sacramento and Feather Rivers represent a maximum allowable level. The Regional Water Board shall require any additional reductions in diazinon or chlorpyrifos levels necessary to account for additive or synergistic toxicity effects or to protect beneficial uses in tributary waters.

(8) Pursuant to CWC §13267, the Executive Officer will require dischargers to submit a management plan that describes the actions that the discharger will take to reduce diazinon and chlorpyrifos discharges and meet the applicable allocations.

The management plan may include actions required by State and federal pesticide regulations. The Executive Officer will require the discharger to document the relationship between the actions to be taken and the expected reductions in diazinon and chlorpyrifos discharge(s). The Executive Officer will allow individual dischargers or a discharger group or coalition to submit management plans.

The management plan must comply with the provisions of any applicable waiver of waste discharge requirements or waste discharge requirements. The Executive Officer may require revisions to the management plan if compliance with applicable allocations is not attained or the management plan is not reasonably likely to attain compliance. When requiring any revisions to the management plan, the Executive Officer may consider the relative contributions of diazinon and chlorpyrifos to the lack of compliance with the allocations.

(9) Any waiver of waste discharge requirements or waste discharge requirements that govern the control of pesticide runoff that is discharged directly or indirectly into the Sacramento or Feather Rivers must be consistent with the policies and actions described in paragraphs 1-8.

(10) In determining compliance with the waste load allocations, the Regional Water Board will consider any data or information submitted by the discharger regarding diazinon and chlorpyrifos inputs from sources outside of the jurisdiction of the permitted discharge, including any diazinon and chlorpyrifos present in precipitation; and any applicable provisions in the discharger's NPDES permit requiring the discharger to reduce the discharge of pollutants to the maximum extent practicable.

(11) The above provisions for control of diazinon and chlorpyrifos discharges apply to the Sacramento and Feather Rivers as described in Table 3-4.

4.5.5.4 Diazinon and Chlorpyrifos Runoff in the San Joaquin River Basin

(1) The pesticide runoff control program shall:
   (a) Ensure compliance with water quality objectives applicable to diazinon and chlorpyrifos in the San Joaquin River through the implementation of management practices.
   (b) Ensure that measures that are implemented to reduce discharges of diazinon and chlorpyrifos do not lead to an increase in the discharge of other pesticides to levels that cause or contribute to violations of applicable water quality objectives and Regional Water Board policies; and
   (c) Ensure that discharges of pesticides to surface waters are controlled so that pesticide concentrations are at the lowest levels that are technically and economically achievable.

(2) Dischargers must consider whether a proposed alternative to diazinon or chlorpyrifos has the potential to degrade ground or surface water. If the alternative has the potential to degrade groundwater, alternative pest control methods must be considered. If the alternative has the potential to degrade surface water, control measures must be implemented to ensure that applicable water quality objectives and Regional Water Board policies are not violated, including State Water Resources Control Board Resolution 68-16.

(3) Compliance with applicable water quality objectives, load allocations, and waste load allocations for diazinon and chlorpyrifos in the San Joaquin River is required by 1 December 2010.

The water quality objectives and allocations will be implemented through one or a combination of the following: the adoption of one or more waivers of waste discharge requirements, and general or individual waste discharge requirements. To the extent not already in place, the Regional Water Board expects to adopt or revise the appropriate waiver(s) or waste discharge requirements by 31 December 2007.

(4) The Regional Water Board intends to review the diazinon and chlorpyrifos allocations and the implementation provisions in the Basin Plan at least once every five years, beginning no later than 31 December 2009.

(5) Regional Water Board staff will meet at least annually with staff from the Department of Pesticide Regulation and representatives from the California Agricultural Commissioners and Sealers Association to review pesticide use and instream pesticide concentrations during the dormant spray and irrigation application seasons, and to consider the effectiveness of management measures in meeting water quality objectives and load allocations.

(6) The Waste Load Allocations (WLA) for all NPDES-permitted dischargers, Load Allocations (LA) for nonpoint source discharges, and the Loading Capacity of the San Joaquin River from the Mendota Dam to Vernalis shall not exceed the sum (S) of one (1) as defined below.

$$S = \frac{C_D}{WQO_D} + \frac{C_C}{WQO_C} \leq 1.0$$

where

C_D = diazinon concentration in µg/L of point source discharge for the WLA; nonpoint source discharge for the LA; or San Joaquin River for the LC.
C_C = chlorpyrifos concentration in µg/L of point source discharge for the WLA; nonpoint source discharge for the LA; or San Joaquin River for the LC.
WQO_D = acute or chronic diazinon water quality objective in µg/L.
WQO_C = acute or chronic chlorpyrifos water quality objective in µg/L.

Available samples collected within the applicable averaging period for the water quality objective will be used to determine compliance with the allocations and loading capacity. For purposes of calculating the sum (S) above, analytical results that are reported as "non-detectable" concentrations are considered to be zero.

(7) At a minimum, Loading Capacity shall be calculated for each of the following six water quality compliance points in the San Joaquin River:

- San Joaquin River at the Airport Way Bridge near Vernalis (United States Geological Survey (USGS) Identification Number 11303500)
- San Joaquin River at the Maze Boulevard (Highway 132) Bridge (USGS Identification Number 11290500)
- San Joaquin River at Las Palmas Avenue near Patterson (USGS Identification Number 11274570)
- San Joaquin River at Hills Ferry Road
- San Joaquin River at Highway 165 near Stevinson (USGS Identification Number 11260815)
- San Joaquin River at Sack Dam

The load allocations for non-point source discharges into the San Joaquin River are assigned to the following subareas:

(a) The combined Stanislaus River; North Stanislaus; and Vernalis North subareas.
(b) The combined Tuolumne River; Northeast Bank; and Westside Creek subareas.
(c) The combined Turlock; Merced; and Greater Orestimba subareas.
(d) The combined Stevinson and Grassland subareas.
(e) The combined Bear Creek and Fresno-Chowchilla subareas.

The established waste load and load allocations for diazinon and chlorpyrifos, and the water quality objectives for chlorpyrifos and diazinon in the San Joaquin River represent a maximum allowable level. The Regional Water Board shall require any additional reductions in diazinon and chlorpyrifos levels necessary to account for additional additive or synergistic toxicity effects or to protect beneficial uses in tributary waters.

(8) Pursuant to CWC Section 13267, the Executive Officer will require dischargers to submit a management plan that describes the actions that the discharger will take to reduce diazinon and chlorpyrifos discharges and meet the applicable allocations by the required compliance date.

The management plan may include actions required by State and federal pesticide regulations. The Executive Officer will require the discharger to document the

relationship between the actions to be taken and the expected reductions in diazinon and chlorpyrifos discharges. The Executive Officer will allow individual dischargers or a discharger group or coalition to submit management plans.

The management plan must comply with the provisions of any applicable waiver of waste discharge requirements or waste discharge requirements.

The Executive Officer may require revisions to the management plan if compliance with applicable allocations is not attained or the management plan is not reasonably likely to attain compliance.

(9) If the loading capacity in the San Joaquin River is not being met by the compliance date, dischargers in subareas where load allocations are not being met will be required to revise their management plans and implement an improved complement of management measures to meet the loading capacity.

(10) Any waiver of waste discharge requirements or waste discharge requirements that govern the control of pesticide runoff that is discharged directly or indirectly into the San Joaquin River must be consistent with the policies and actions described in paragraphs 1 - 9.

(11) In determining compliance with the waste load allocations, the Regional Water Board will consider any data or information submitted by the discharger regarding diazinon and chlorpyrifos inputs from sources outside of the jurisdiction of the permitted discharger, including any diazinon and chlorpyrifos present in precipitation, and other available relevant information; and any applicable provisions in the discharger's NPDES permit requiring the discharger to reduce the discharge of pollutants to the maximum extent possible.

4.5.5.5 Diazinon and Chlorpyrifos Runoff into the Sacramento-San Joaquin Delta Waterways (as identified in Appendix 42)

(1) The pesticide runoff control program shall:
- (a) Ensure compliance with water quality objectives applicable to diazinon and chlorpyrifos in the Sacramento-San Joaquin Delta Waterways through the implementation of management practices.
- (b) Ensure that measures that are implemented to reduce discharges of diazinon and chlorpyrifos do not lead to an increase in the discharge of other pesticides to levels that cause or contribute to violations of applicable water quality objectives and Regional Water Board plans and policies, and
- (c) Ensure that discharges of pesticides to surface waters are controlled so that pesticide concentrations are at the lowest levels that are technically and economically achievable.

(2) Dischargers must consider whether any proposed alternative to the use of diazinon or chlorpyrifos has the potential to degrade ground or surface water. If the alternative has the potential to degrade groundwater, alternative pest control methods must be considered. If the alternative has the potential to degrade surface water, control measures must be implemented to ensure that applicable water quality objectives and Regional Water Board plans and policies are not violated, including State Water Resources Control Board Resolution 68-16.

(3) Compliance with applicable water quality objectives, load allocations, and waste load allocations for diazinon and chlorpyrifos in the Delta Waterways is required by December 1, 2011.

The water quality objectives and allocations will be implemented through one or a combination of the following: the adoption of one or more waivers of waste discharge requirements, and general or individual waste discharge requirements. To the extent not already in place, the Regional Water Board expects to adopt or revise the appropriate waiver(s) or waste discharge requirements by December 31, 2009.

(4) The Regional Water Board intends to review the diazinon and chlorpyrifos allocations and the implementation provisions in the Basin Plan at least once every five years, beginning no later than December 31, 2010.

(5) Regional Water Board staff will meet at least annually with staff from the Department of Pesticide Regulation and representatives from the California Agricultural Commissioners and Sealers Association to review pesticide use and instream pesticide concentrations during the dormant spray and irrigation application seasons and to consider the effectiveness of management measures in meeting water quality objectives and load allocations.

(6) The waste load allocations (WLA) for all NPDES-permitted dischargers, load allocations (LA) for nonpoint source discharges, and the loading capacity (LC) of each of the Sacramento-San Joaquin Delta Waterways defined in Appendix 42 shall not exceed the sum (S) of one (1) as defined below.

$$S = \frac{C_D}{WQO_D} + \frac{C_C}{WQO_C} \leq 1.0$$

where

C_D = diazinon concentration in µg/L of point source discharge for the WLA; nonpoint source discharge for the LA; or a Delta Waterway for the LC.
C_C = chlorpyrifos concentration in µg/L of point source discharge for the WLA; nonpoint source discharge for the LA; or a Delta Waterway for the LC.
WQO_D = acute or chronic diazinon water quality objective in µg/L.
WQO_C = acute or chronic chlorpyrifos water quality objective in µg/L.

Available samples collected within the applicable averaging period for the water quality objective will be used to determine compliance with the allocations and loading capacity. For purposes of calculating the sum (S) above, analytical results that are reported as "non-detectable" concentrations are considered to be zero.

(7) The established waste load and load allocations for diazinon and chlorpyrifos, and the water quality objectives for chlorpyrifos and diazinon in the Delta Waterways represent a maximum allowable level. The Regional Water Board shall require any additional reductions in diazinon and chlorpyrifos levels necessary to account for additional additive or synergistic toxicity effects or to protect beneficial uses in tributary waters.

(8) Pursuant to CWC Section 13267, the Executive Officer will require dischargers to submit a management plan that describes the actions that the discharger will take to reduce diazinon and chlorpyrifos discharges and meet the applicable allocations by the required compliance date. The management plan may include actions required by State and

Federal pesticide regulations. The Executive Officer will require the discharger to document the relationship between the actions to be taken and the expected reductions in diazinon and chlorpyrifos discharges. The Executive Officer will allow individual dischargers or a discharger group or coalition to submit management plans. The management plan must comply with the provisions of any applicable waiver of waste discharge requirements or waste discharge requirements. The Executive Officer may require revisions to the management plan if compliance with applicable allocations is not attained or the management plan is not reasonably likely to attain compliance.

(9) If the loading capacity in one or more Delta Waterways is not being met by the compliance date, direct or indirect dischargers to the those waterways whose discharge exceeds their load allocation will be required to revise their management plans and implement an improved complement of management measures to meet the loading capacity.

(10) Any waiver of waste discharge requirements or waste discharge requirements that govern the control of pesticide runoff that is discharged directly or indirectly into the Delta Waterways must be consistent with the policies and actions described in paragraphs 1 – 9.

(11) In determining compliance with the waste load allocations, the Regional Water Board will consider any data or information submitted by the discharger regarding diazinon and chlorpyrifos inputs from sources outside of the jurisdiction of the permitted discharger, including any diazinon and chlorpyrifos present in precipitation and other available relevant information; and any applicable provisions in the discharger's NPDES permit requiring the discharger to reduce the discharge of pollutants to the maximum extent possible.

(12) The above provisions for control of diazinon and chlorpyrifos discharges to the Delta Waterways do not apply to dischargers to the Sacramento and San Joaquin Rivers upstream of the Delta.

4.5.5.6 Diazinon and Chlorpyrifos Discharges

(1) The diazinon and chlorpyrifos discharge control program shall:

(a) Ensure compliance with water quality objectives for diazinon and chlorpyrifos in the Sacramento and San Joaquin River Basins through the implementation of management practices;

(b) Ensure measures that are implemented to reduce discharges of diazinon and/or chlorpyrifos do not lead to an increase in the discharge of other pesticides to levels that cause or contribute to exceedances of applicable water quality objectives.

(c) Encourage implementation of measures or practices by all dischargers that result in concentrations of chlorpyrifos and diazinon in all discharges that are below the water quality objective concentrations.

(2) Dischargers are responsible for ensuring that their pesticide discharges to surface water and groundwater, including discharges of pesticides used as alternatives to diazinon and/or chlorpyrifos do not cause or contribute to exceedance of applicable water quality objectives.

(3) Except as otherwise stated in the Basin Plan, compliance with water quality objectives for diazinon and chlorpyrifos shall be as soon as practicable. The Regional Board shall establish time schedules for compliance with such objectives in Waste Discharge Requirements or waivers in accordance with existing laws and policies. Where no existing law or policy directs the length of the compliance schedule, discharges shall be reduced to ensure compliance with the proposed water quality objectives not later than 16 August 2027.

The Board will ensure that dischargers will comply with diazinon and chlorpyrifos water quality objectives by modifying existing waste discharge requirements and existing waivers (where provisions necessary for implementation are not already in place), by adopting new waste discharge requirements or waivers, or by enforcing the diazinon and chlorpyrifos discharge prohibition. If necessary, the Board will ensure that existing waste discharge requirements and waivers will be modified as soon as possible, but no later than 16 August 2022.

(4) The Central Valley Water Board intends to review the diazinon and chlorpyrifos implementation provisions in the Basin Plan no later than 16 August 2024.

(5) The water quality objectives for diazinon and chlorpyrifos represent a maximum allowable level and shall be considered additively as defined by the Policy for Application of Water Quality Objectives (Section 4.2.2.1.9). The Board shall require additional reductions in diazinon or chlorpyrifos levels if such reductions are necessary to account for additive or synergistic toxicity effects or to protect beneficial uses.

(6) The Executive Officer shall require agricultural dischargers that discharge diazinon and/or chlorpyrifos to water bodies listed in Table 3-4 Applicable Water Bodies that are not attaining the diazinon and/or chlorpyrifos objective(s) to submit management plans. These management plans shall consider the watershed of the water body that is not attaining the objective(s) and must describe actions that the agricultural discharger will take to meet applicable diazinon and chlorpyrifos water quality objectives by the required compliance dates. Management plans must describe:

The causes of the nonattainment of objectives;

(b) The actions that the discharger will take to reduce diazinon and/or chlorpyrifos discharges in order to meet the diazinon and/or chlorpyrifos water quality objectives as soon as practicable but no later than 16 August 2027.
(c) A schedule for the implementation of those actions;
(d) A monitoring plan to track effectiveness of pollution controls; and
(e) A commitment to revise pollution controls, as necessary.

Management plans for water bodies not attaining the water quality objective(s) as of 16 August 2017 are due no later than 16 August 2018. Management plans that address diazinon and/or chlorpyrifos exceedances and that have already been submitted can be used to fulfill this requirement, provided that they contain all the required elements 6a through 6e described above.

After 16 August 2017, if the Executive Officer determines that a water body listed in Table 3-4 Applicable Water Bodies is exceeding an applicable diazinon and/or chlorpyrifos water quality objective, the Executive Officer shall require that dischargers that discharge diazinon and/or chlorpyrifos to that water body submit a management plan to the Board. Management plans are due within one year after the discharger receives notification that such a determination has been made.

If a water body that is exceeding the diazinon and/or chlorpyrifos objective(s) is being used by a discharger to represent water quality conditions in multiple water bodies, the Executive Officer shall require the submittal of a management plan that addresses all of the represented water bodies.

Management plans may include actions required under state and federal pesticide laws and regulations. Management plans must include documentation of the relationship between the actions to be taken and reductions in diazinon and/or chlorpyrifos discharges that are reasonably likely to attain compliance with diazinon and chlorpyrifos water quality objectives. The Executive Officer may allow individual dischargers or a discharger group or coalition to submit management plans. The management plan must comply with the provisions of any applicable waste discharge requirements or waiver. Management plans may address discharges to multiple downstream water bodies for which discharge reductions are required. The Executive Officer may require revisions to the management plan if compliance with applicable water quality objectives is not attained.

(7) Any waste discharge requirements or waivers that govern the control of pesticide discharges to Table 3-4 Applicable Water Bodies, must be consistent with the policies and actions described in paragraphs 1-6 of this section.

4.5.6 Dredging in the Sacramento River and San Joaquin River Basins

Large volumes of sediment are transported in the waters of the Sacramento and San Joaquin Rivers which drain the Central Valley. The average annual sediment load to San Francisco Bay from these two rivers is estimated to be 8 million cubic yards. Dredging and riverbank protection projects are ongoing, continuing activities necessary to keep ship channels open, prevent flooding, and control riverbank erosion. The Delta, with over 700 miles of waterways, is a major area of activity. At present, the Corps is overseeing the conduct and planning of rehabilitation work along 165 miles of levees surrounding 15 Delta islands. In addition, virtually all of the Delta levees have been upgraded by island owners or reclamation districts. The magnitude of recent operations, such as the Stockton and Sacramento Ship Channel Deepening Projects and Sacramento River Bank Protection Project, is discussed in recent U.S. Army Corps of Engineers Reports. For example, the Corps removes over 10 million cubic yards of sediment yearly from the Sacramento River. If the Sacramento River Deep Water Ship Channel is widened and deepened as proposed currently, 25 million cubic yards of bottom material will be removed from the river during the 5-year project.

Environmental impacts of dredging operations and materials disposal include temporary dissolved oxygen reduction, increased turbidity and, under certain conditions, the mobilization of toxic chemicals and release of biostimulatory substances from the sediments. The direct destruction and burial of spawning gravels and alteration of benthic habitat may be the most severe impacts. The existing regulatory process must be consistently implemented to assure protection of water quality and compliance with the certification requirements of Section 401 of the Federal Clean Water Act.

The Regional Water Board continues to work with dredging interests in the San Francisco Bay and Delta to develop a long term management strategy (LTMS) for handling dredge spoils. We will adopt requirements for all significant dredging operations and upland disposal projects in the Region.

4.5.7 Nitrate Pollution of Ground Water in the Sacramento and San Joaquin River Basins

Since 1980, over 200 municipal supply wells have been closed in the Central Valley because of nitrate levels exceeding the State's 45 mg/l drinking water standard. Proposals have been submitted to assess the extent of the problem and explore possible regulatory responses, but without success. The increasing population growth in the Valley is expected to accelerate the problem's occurrence in the years ahead.

The Regional Water Board considers nitrate pollution to be a critical issue for beneficial use protection in the Central Valley Region. Staff will continue efforts to obtain study funds. Since nitrate pollution of ground water is not restricted to the Central Valley Region, the Regional Water Board recommends the State Water
Board take the lead in developing programs for controlling ground water contamination resulting from the use of nitrogen fertilizer on irrigated crops.

4.5.8 Temperature and Turbidity Increases Below Large Water Storage and Diversion Projects in the Sacramento River Basin

The storage and diversion of water for hydroelectric and other purposes can impact downstream beneficial uses because of changes in temperature and the introduction of turbidity. There are several large facilities in the Basin which have had a history of documented or suspected downstream impairments.

Where problems have been identified, the staff will work with operators to prepare management agency agreements or make recommendations to State Water Board regarding requirements to remedy the problems. Where problems are suspected, the staff will seek additional monitoring.

4.5.9 Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel (DWSC) (Regional Water Board Resolution No. R5-2005-0005)

The purpose of this control program is to implement a dissolved oxygen TMDL to achieve compliance with the Basin Plan dissolved oxygen water quality objectives in the DWSC. The numeric targets for this TMDL are the existing dissolved oxygen water quality objectives.

The dissolved oxygen impairment in the DWSC is caused by the following three main contributing factors:

- Loads of oxygen demanding substances from upstream sources that react by numerous chemical, biological, and physical mechanisms to remove dissolved oxygen from the water column in the DWSC.

- Geometry of the DWSC that impacts various mechanisms that add or remove dissolved oxygen from the water column, such that net oxygen demand exerted in the DWSC is increased.

- Reduced flow through the DWSC impacts various mechanisms that add or remove dissolved oxygen from the water column, such that net oxygen demand exerted in the DWSC is increased.

For the purpose of this control program, net oxygen demand is defined as the combined impact of all chemical, biological, and physical mechanisms that add or remove dissolved oxygen from the water column. When the amount of oxygen removed from the water column is greater than the amount added there is a decrease in the dissolved oxygen concentration. When dissolved oxygen concentrations in the DWSC are below Basin Plan objectives, the assimilative capacity of the water column has been exceeded and the associated excess net oxygen demand (ENOD) is given by the equation:

$$ENOD = \{DO_{obj} - DO_{meas}\} \times \{Q_{DWSC} + 40\} \times 5.4$$

In the above equation DO_{obj} is the applicable Basin Plan dissolved oxygen objective in milligrams per liter, DO_{meas} is the measured dissolved oxygen concentration in the DWSC in milligrams per liter, Q_{DWSC} is the net daily flow rate through the DWSC in cubic feet per second (adjusted by 40 cfs to account for flow measurement error), and 5.4 is a unit conversion factor that provides ENOD in units of pounds of net oxygen demand per day in the DWSC.

To account for technical uncertainty a margin of safety (MOS) equal to 20% of ENOD is added to the overall required reduction of ENOD:

$$MOS = -0.2 \times ENOD$$

ENOD plus the MOS must be addressed by those collectively responsible for each of the three contributing factors:

$$ENOD - MOS = 1.2 \times ENOD = [\Sigma WLA + \Sigma LA] + R_{DWSC} + R_{Flow}$$

where $[\Sigma WLA + \Sigma LA]$ is the amount of ENOD and MOS for which sources of oxygen demanding substances are responsible, R_{DWSC} is the amount of ENOD and MOS for which DWSC geometry is responsible, and R_{Flow} is the amount of ENOD and MOS for which reduced DWSC flow is responsible.

This TMDL does not specify the relative responsibility among the three contributing factors. Each of the three contributing factors are considered to be 100% responsible for addressing ENOD and MOS. Those parties collectively responsible for each contributing factor must coordinate with those collectively responsible for the other factors to implement control measures addressing ENOD and MOS.

Those parties responsible for sources of oxygen demanding substances $[\Sigma WLA + \Sigma LA]$ are allocated relative responsibility for excess net oxygen demand as follows:

(1) 30% as a waste load allocation for the City of Stockton Regional Wastewater Control Facility.
(2) 60% as a load allocation to non-point sources of algae and/or precursors in the watershed.
(3) 10% as a reserve for unknown sources and impacts, and known or new sources that have no reasonable potential to impact.

In measuring compliance with waste load and load allocations, credit will be given for control measures implemented after 12 July 2004.

For the purpose of this control program, non-point source discharges are discharges from irrigated lands. Irrigated lands are lands where water is applied for producing crops and, for the purpose of this control program, includes, but is not limited to, land planted to row, field, and

tree crops, as well as commercial nurseries, nursery stock production, managed wetlands and rice production.

For the purpose of this control program, oxygen demanding substances and their precursors are any substance or substances that consume, have the potential to consume, or contribute to the growth or formation of substances that consume or have the potential to consume oxygen from the water column.

The source area for loads of oxygen demanding substances and their precursors being addressed by this TMDL includes the SJR watershed that drains downstream of Friant Dam and upstream of the confluence of the San Joaquin River and Disappointment Slough, with the exception of the western slope of the Sierra Nevada foothills above the major reservoirs of New Melones Lake on the Stanislaus, Don Pedro Reservoir on the Tuolumne, Lake McClure on the Merced, New Hogan Reservoir on the Calaveras, Comanche Reservoir on the Mokelumne, and those portions of the SJR watershed that fall within Mariposa, Tuolumne, Calaveras, and Amador Counties.

Measures will also need to be implemented to reduce the impact of both the DWSC geometry and reduced flow through the DWSC.

The Regional Water Board will take the following actions, as necessary and appropriate, to implement this TMDL:

(1) The Regional Water Board will use its authority under California Water Code § 13267 (or alternately by Waste Discharge Requirements and NPDES permits) to require that entities responsible for point and non-point sources of oxygen demanding substances and their precursors within the TMDL source area perform the following studies by December 2008. These studies must identify and quantify:

   (a) sources of oxygen demanding substances and their precursors in the dissolved oxygen TMDL source area

   (b) growth or degradation mechanisms of these oxygen demanding substances in transit through the source area to the DWSC

   (c) the impact of these oxygen demanding substances on dissolved oxygen concentrations in the DWSC under a range of environmental conditions and considering the effects of chemical, biological, and physical mechanisms that add or remove dissolved oxygen from the water column in the DWSC

   A study plan describing how ongoing studies and future studies will address these information needs must be submitted to Regional Water Board staff by 23 October 2006. The study plan and studies may be conducted by individual responsible entities or in collaboration with other entities.

(2) The Regional Water Board establishes the following waste load allocations:

   (a) The waste load allocations of oxygen demanding substances and their pre-cursors for all NPDES-permitted discharges are initially set at the corresponding effluent limitations applicable on 28 January 2005.

   (b) Waste load allocations and permit conditions for new or expanded point source discharges in the SJR Basin upstream of the DWSC, including NPDES and stormwater, will be based on the discharger demonstrating that the discharge will

have no reasonable potential to cause or contribute to a negative impact on the dissolved oxygen impairment in the DWSC.

(3) The Regional Water Board will require any project that requires a Clean Water Act Section 401 Water Quality Certification from the Regional Water Board, and that has the potential to impact dissolved oxygen conditions in the DWSC, to evaluate and fully mitigate those impacts. This includes, but is not limited to:

(a) Future projects that increase the cross-sectional area of the DWSC

(b) Future water resources facilities projects that reduce flow through the DWSC

(4) The Regional Water Board will require, pursuant to California Water Code § 13267, the United States Army Corps of Engineers to submit by 31 December 2006 a technical report identifying and quantifying:

(a) the chemical, biological, and physical mechanisms by which loads of substances into, or generated within the DWSC, are converted to oxygen demand

(b) the impact that the Stockton Deep Water Ship Channel has on re-aeration and other mechanisms that affect dissolved oxygen concentrations in the water column

(5) The Regional Water Board may consider alternate measures, as opposed to direct control, of certain contributing factors if these measures adequately address the impact on the dissolved oxygen impairment and do not degrade water quality in any other way.

(6) The Regional Water Board will review allocations and implementation provisions based on the results of the oxygen demand and precursor studies and the prevailing dissolved oxygen conditions in the DWSC by December 2009.

(7) The Regional Water Board will require compliance with waste load allocations and load allocations for oxygen demanding substances and their precursors, and development of alternate measures to address non-load related factors by 31 December 2011.

(8) The established allocations and implementation provisions represent a maximum allowable level for the purpose of addressing the dissolved oxygen impairment in the DWSC. Where more than one allocation may be applicable, the most stringent allocation applies. The Regional Water Board may take other, more restrictive, actions affecting the contributing factors to this impairment as needed to protect other beneficial uses or to implement other water quality objectives.

4.5.10 Clear Lake Nutrients

Nuisance algae blooms impair beneficial uses in Clear Lake, which is a violation of the narrative basin plan objective that states “water shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses”

Research and studies have concluded that there are likely multiple factors that influence the occurrence of nuisance algae blooms in Clear Lake. Recent improvements in water clarity may be due to a reduction in phosphorus loading or a result of other factors such as iron or sulfur availability, changes to lake ecology (introduced species, etc.), water year type or a combination

of factors. For the purposes of this program of implementation both phosphorus loading and other factors that may affect algae growth will be addressed.

(1) Modeling studies predict that a 40% reduction in average phosphorus loading will significantly reduce the incidence of algae blooms. A 40% reduction would equal an annual allowable loading of approximately 87,100 kg. Therefore, for this program of implementation, an average annual (five year rolling average) phosphorus load of 87,100 kg is established as the loading capacity for Clear Lake.

(2) Waste load allocations for the NPDES facilities discharging to the lake or tributaries are as follows:

(a) Lake County Stormwater Permittees (Lake County, City of Clearlake, City of Lakeport) - 2,000 kg phosphorus/yr
(b) California Department of Transportation (Caltrans) – 100 kg phosphorus/yr

(3) The load allocation for nonpoint source dischargers is 85,000 kg/yr average annual load (five year rolling average). The U.S. Bureau of Land Management (USBLM), U.S. Forest Service (USFS), Lake County (County) and irrigated agriculture are responsible for controlling phosphorus discharges from those portions of the watershed within their respective authority.

(4) Regional Water Board staff will work with the responsible parties – Stormwater permittees, Caltrans, USBLM, USFS, County and irrigated agriculture – to develop and implement a plan to collect the information needed to determine what factors are important in controlling nuisance blooms and to recommend what control strategy should be implemented. The responsible parties will submit the plan to the Regional Water Board by 19 June 2008. The plan should address the following topics:

- Studies to assess the current limnological conditions and to determine the appropriate measures necessary for Clear Lake to meet the Basin Plan objectives
- Appropriate monitoring for evaluating conditions in the lake
- Effective collection of phosphorus loading information from the various sources
- Practices implemented or planned to control phosphorus loading to the lake
- Develop criteria to determine when Clear Lake is no longer impaired

(5) Compliance with load and waste load allocations for phosphorus in Clear Lake is required by 19 June 2017. However, by 19 September 2012, the Regional Water Board will consider information developed and determine whether the phosphorus load and waste load allocations should continue to be required or if some other control strategy or approach is more appropriate. To the extent that other controllable water quality factors, besides phosphorus, cause or contribute to nuisance algae blooms, those factors will be addressed in revisions to this program of implementation. Implementation of phosphorus control practices to achieve load and waste load allocations will occur under waste discharge requirements or waivers of waste discharge requirements.

(6) If Clear Lake is attaining its beneficial uses and the Regional Water Board determine that phosphorus loads above allocated amounts are not causing or contributing to nuisance algae problems, the Regional Water Board will amend the Basin Plan to revise this nutrient control program for Clear Lake.

4.5.11 Point Source Discharges Containing Trihalomethanes Lower New Alamo and Ulatis Creeks

Municipal wastewater that is chlorinated to remove bacteria generally forms trihalomethanes as disinfection by-products. The Policy for Implementation of Toxics Standards for Inland Waters, Enclosed Bays, and Estuaries of California ("State Implementation Plan" or "SIP") (see the 15th Policy in State Water Board Policies and Plans, page IV-10.01) implements criteria for priority pollutants, including trihalomethanes. However, the SIP does not address situations where water quality objectives for water bodies downstream of the first receiving water are more stringent than the water quality objectives for the first receiving water.

Old Alamo Creek is tributary to New Alamo Creek and Ulatis Creek. Ulatis Creek, downstream of the confluence with New Alamo Creek, is within the legal boundary of the Delta. Old Alamo Creek is not designated MUN, but New Alamo and Ulatis Creeks are designated MUN. The SIP does not specifically address how to determine the need for water quality-based effluent limitations or calculate water quality-based effluent limitations in this situation, so special permitting provisions are needed for discharges of trihalomethanes to Old Alamo Creek.

With respect to the site-specific water quality objectives in Table 3-2 for trihalomethanes in New Alamo Creek, from Old Alamo Creek to Ulatis Creek, and Ulatis Creek, from New Alamo Creek to Cache Slough, the following provisions shall apply to any point source discharges into Old Alamo Creek. For determining if water quality-based effluent limitations are necessary, Section 1.3 of the SIP does not apply. For calculation of water quality-based effluent limitations, Section 1.4 of the SIP does not apply, unless specified below.

Determination of Need for Water Quality-Based Effluent Limitations:

Step 1: For chlorodibromomethane (DBCM), dichlorobromomethane (DCBM) and chloroform, if the pollutant is not detected in the effluent and any of the reported detection limits is less than or equal to the site-specific objectives specified in Table 3-2 (the site-specific objectives specified in Table 3-2 will be referred to as C), then water quality-based effluent limitations are not necessary. If the pollutant is not detected in the effluent and all of the detection limits are greater than site-specific objectives (C), then proceed to Step 5. If the pollutant is detected in the effluent then proceed to Step 2.

Step 2: Determine the observed maximum ambient background concentration for DBCM, DCBM, and chloroform. The observed maximum ambient background concentrations shall be measured in New Alamo Creek at Lewis Road and is the B, as defined in section 1.4.3.1 of the SIP. If the background (B) is greater than the site-specific objectives (C), then water quality-based effluent limitations are necessary. If the background (B) is less than or equal to the site-specific objectives (C), then proceed to Step 3.

Step 3: Determine the observed maximum pollutant concentration for the effluent (MEC). If the MEC is less than or equal to the site-specific objectives (C), water quality-based effluent limitations are not necessary. If the MEC is greater than the site-specific objectives (C), then proceed to Step 4 to determine if water quality-based effluent limitations are necessary.

Step 4: If the in-stream maximum concentrations of DBCM, DCBM or chloroform at the terminus of Old Alamo Creek are greater than the site-specific objectives (C), then water quality-based effluent limitations are necessary for the constituents that exceeded the applicable objectives.

Step 5: If the pollutant has not been detected in the effluent and all detection limits are greater than the site-specific objectives (C), then the discharger shall be required to conduct twice-

monthly monitoring of the effluent and of the terminus of Old Alamo Creek between 1 November and 31 March using detection limits less than or equal to the site-specific objectives (C). Steps 1-4 above will then be applied to these data to determine whether water-quality based effluent limitations are necessary.

Calculation of water quality-based effluent limitations for DBCM, DCBM, and chloroform shall be as follows:

An Attenuation Factor, which is the median of the individual sample attenuation values, is necessary because the water quality objectives do not apply in the first receiving water of the discharge (i.e., do not apply in Old Alamo Creek). If water quality-based effluent limitations are required, an attenuation factor to account for the reduction in constituent concentrations between the point of effluent discharge to Old Alamo Creek and the terminus of Old Alamo Creek shall be applied to the calculation of the Effluent Concentration Allowance (ECA), which is one of the factors used in the derivation of the effluent limitations as described in Section 1.4B of the SIP.

The ECA shall be calculated as:

ECA = Attenuation Factor x [C + D(C-B)]when C > B
ECA = Attenuation Factor x C when C ≤ B

Where:

Attenuation Factor = the median of the individual sample attenuation values derived from all representative historical data for the 1 November through 31 March period of each year. An individual sample attenuation value is calculated as the effluent constituent concentration measured on a given day divided by the in-stream constituent concentration at the terminus of Old Alamo Creek measured the same day. It should be noted that the effluent should be sampled prior to sampling at the terminus of Old Alamo Creek.

C = the site-specific objective specified in Table 3-2

D = dilution credit, as determined in section 1.4.2 of the SIP

B = background concentration, as defined by Section 1.4.3 of the SIP, and measured in New Alamo Creek at Lewis Road

Dilution credits may be allowed in deriving water quality-based effluent limitations for DBCM, DCBM, and chloroform in accordance with Section 1.4.2 of the SIP.

The Average Monthly Effluent Limitation (AMEL) and the Maximum Daily Effluent Limitation (MDEL) shall be calculated in accordance with Section 1.4 of the SIP using the ECA calculated above.

4.6 ESTIMATED COSTS OF AGRICULTURAL WATER QUALITY CONTROL PROGRAMS AND POTENTIAL SOURCES OF FINANCING

4.6.1 San Joaquin River Subsurface Agricultural Drainage Control Program

The estimates of capital and operational costs to achieve the selenium objective for the San Joaquin River range from $3.6 million/year to $27.4 million/year (1990 dollars). The cost of meeting water quality objectives in Mud Slough (north), Salt Slough, and the wetland supply channels is approximately $2.7 million /year (1990 dollars).

Potential funding sources include:

(1) Private financing by individual sources.

(2) Bonded indebtedness or loans from governmental institutions.

(3) Surcharge on water deliveries to lands contributing to the drainage problem.

(4) Ad Valorem tax on lands contributing to the drainage problem.

(5) Taxes and fees levied by a district created for the purpose of drainage management.

(6) State or federal grants or low-interest loan programs.

(7) Single-purpose appropriations from federal or State legislative bodies (including land retirement programs).

4.6.2 Lower San Joaquin River Salt and Boron Control Program

The estimates of capital and operational costs to implement drainage controls needed to achieve the salt and boron water quality objectives at the Airport Way Bridge near Vernalis range from 27 to 38 million dollars per year (2003 dollars).

Potential funding sources include:

(1) Those identified in the San Joaquin River Subsurface Agricultural Drainage Program and the Pesticide Control Program.

(2) Annual fees for waste discharge requirements.

4.6.3 Pesticide Control Program

Based on an average of $15 per acre per year for 500,000 acres of land planted to rice and an average of $5 per acre per year for the remaining 3,500,000 acres of irrigated agriculture in the Sacramento and San Joaquin River Basins, the total annual cost to agriculture is estimated at $25,000,000. Financial assistance for complying with this program may be obtainable through the U.S.D.A. Agricultural Stabilization and Conservation Service and technical assistance is available from the University of California Cooperative Extension Service and the U.S.D.A. Soil Conservation Service.

4.6.4 Sacramento and Feather Rivers Diazinon and Chlorpyrifos Runoff Control Program

The total estimated costs for management practices to meet the diazinon and chlorpyrifos objectives for the Sacramento and Feather Rivers range from $0 to $6.2 million/year (2007 dollars). The estimated costs for discharger monitoring, planning, and evaluation range from $0.3 to $1.5 million/year (2007 dollars).

Potential funding sources include:

(1) Those identified in the San Joaquin River Subsurface Agricultural Drainage Control Program and the Pesticide Control Program.

4.6.5 San Joaquin River Dissolved Oxygen Control Program

The *Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel (DWSC)* requires agricultural and municipal dischargers to perform various studies. The total estimated cost of the studies to be performed as part of this control program is approximately $15.6 million. The preferred alternative also includes a prohibition of discharge if water quality objectives are not achieved by 31 December 2011. The estimated cost to cease discharge of water from irrigated lands ranges from $95 to $133 million per year. The estimated cost to provide minimum flows that would remove the need for the prohibition is approximately $37 million dollars per year to eliminate the impairment through provision of purchased water. The cost of construction of an aeration device of adequate capacity to eliminate the impairment, in conjunction with point source load reductions already required, is estimated to be $10 million, with yearly operation and maintenance costs of $200,000 per year.

Potential funding sources:

(1) Proposition 13 includes $40 million in bond funds to address the dissolved oxygen impairment in the DWSC. Approximately $14.4 million of this $40 million has been identified to fund the oxygen demanding substance and precursor studies. An additional $1.2 million is being provided from various watershed stakeholders. Approximately $24 million of Proposition 13 funds are available to pay for projects such as the design and construction of an aeration device.

(2) The State Water Contractors, Port of Stockton, San Luis and Delta Mendota Water Authority, San Joaquin Valley Drainage Authority, and the San Joaquin River Group Authority have proposed to develop an operating entity for an aeration device and have indicated their commitment to execute a funding agreement among themselves and other interested parties, (subject to ultimate approval of respective governing boards) that would provide the mechanism to support operation of a permanent aerator at a cost expected to be in the annual range of $250,000 to $400,000.

4.6.6 Diazinon and Chlorpyrifos Runoff into the San Joaquin River Control Program

The total estimated costs for management practices to meet the diazinon and chlorpyrifos objectives for the San Joaquin River range from $56,000 to $2.5 million for the dormant season, and from $3.9 million to $5.3 million for the irrigation season. The estimated costs for discharger compliance monitoring, planning and evaluation range from $600,000 to $3.1 million. The estimated total annual costs range from $4.4 million to $10.9 million (2004 dollars).

Potential funding sources include:

(1) Those identified in the San Joaquin River Subsurface Agricultural Drainage Control Program and the Pesticide Control Program.

4.6.7 Diazinon and Chlorpyrifos Runoff into the Sacramento-San Joaquin Delta Waterways

The total estimated costs for management practices to meet the diazinon and chlorpyrifos objectives for the Delta Waterways range from $5.9 to $12.7 million. The estimated costs for

discharger compliance monitoring, planning and evaluation range from $600,000 to $1.8 million. The estimated total annual costs range from $6.5 to $14.4 million (2005 dollars).

Potential funding sources include:

(1) Those identified in the San Joaquin River Subsurface Agricultural Drainage Control Program and the Pesticide Control Program.

4.6.8 Clear Lake Nutrient Control Program

Estimated costs to implement best management practices, if necessary, are $400,000 to $1,800,000 (2006 dollars).

Potential funding sources include:

(1) Those identified in the San Joaquin River Subsurface Agricultural Drainage Control Program and the Pesticide Control Program.

4.6.9 Delta Mercury Control Program

The total estimated costs (2007 dollars) for the agricultural methylmercury control studies to develop management practices to meet the Delta methylmercury allocations range from $290,000 to $1.4 million. The estimated annual costs for agricultural discharger compliance monitoring range from $14,000 to $25,000. The estimated annual costs for Phase 2 implementation of methylmercury management practices range from $590,000 to $1.3 million.

(1) Potential funding sources include those identified in the San Joaquin River Subsurface Agricultural Drainage Control Program and the Pesticide Control Program.

4.6.10 Long-Term Irrigated Lands Regulatory Program

The Central Valley Water Board intends on establishing a long-term irrigated lands regulatory program (Long-Term Program) by adopting one or more general waste discharge requirements and/or conditional waivers of WDRs to regulate the discharge of waste to ground and surface waters from irrigated agricultural operations. The Long-Term Program will be based, in whole or in part, on six alternatives described in the *Irrigated Lands Regulatory Program Final Environmental Impact Report* (Final PEIR; ICF International 2011) certified by resolution R5-2011-0017. The cost estimate below is based upon and encompasses the full range of those alternatives.

The cost estimate for the Long-Term Program accounts for program administration (e.g., Board oversight and third-party activities), monitoring for groundwater and surface water quality, and implementation of management practices throughout the Central Valley. The estimated cost for the annual capital and operational costs to comply with the Long-Term Program range from $216 million to $1,321 million (2007 dollars). This cost estimate is a cumulative total that includes costs from the Sacramento River and San Joaquin River Basins, and the Tulare Lake Basin.

Potential funding sources include:

(1) The Federal Farm Bill, which authorizes funding for conservation programs such as the Environmental Quality Incentives Program (EQIP) and the Conservation Stewardship Program.

(2) Grant and loan programs administered by the State Water Resources Control Board and Department of Water Resources, which are targeted for agricultural drainage management, water use efficiency, and water quality improvement. These programs include:
   (a) Agricultural Drainage Management Program (State Water Resources Control Board)
   (b) Agricultural Drainage Loan Program (State Water Resources Control Board)
   (c) Clean Water Act funds (State Water Resources Control Board)
   (d) Agricultural Water Quality Grant Program (State Water Resources Control Board)
   (e) Clean Water State Revolving Fund (State Water Resources Control Board)
   (f) Integrated Regional Water Management grants (State Water Resources Control Board, Department of Water Resources)

(3) Those identified in the San Joaquin River Subsurface Agricultural Drainage Control Program.

4.6.11 Drinking Water Policy

The total estimated costs to implement management practices, if necessary, range from zero to approximately $6.8 million (2013 dollars).

Potential funding sources include:

(1) Those identified in the San Joaquin River Subsurface Agricultural Drainage Control Program and Pesticide Control Program.

4.6.12 Diazinon and Chlorpyrifos Discharges

The costs estimated in this section were calculated in consideration of the requirements for diazinon and chlorpyrifos discharges only. Most of these compliance costs likely already exist due to other Board Requirements under the Irrigated Lands Regulatory Program, and the requirements for diazinon and chlorpyrifos in the Sacramento and Feather Rivers, the San Joaquin River Basin, and the Sacramento-San Joaquin Delta.

The total estimated costs for management practices to meet the diazinon and chlorpyrifos objectives in the Sacramento and San Joaquin River Basins range from $5 to $21.6 million/year (2010 dollars). The estimated costs for agricultural discharger compliance monitoring, planning, and evaluation range from $1.6 to $6.0 million/year (2010 dollars). The estimated annual costs range from $6.6 to $27.6 million (2010 dollars).

Potential funding sources include:

(1) Those identified in the San Joaquin River Subsurface Agricultural Drainage Control Program and Pesticide Control Program.

4.6.13 Pyrethroid Pesticides Discharges into Sacramento River and San Joaquin River Basin Waters

Estimated costs for implementation of practices to control pyrethroid pesticide discharges are encompassed in the costs of the Long-Term Irrigated Lands Regulatory Program, as described above.

Estimated costs for monitoring and reporting associated with the pyrethroid pesticide control program are 1.4 million dollars per year (2017 dollars). This is a high-end estimate, as similar monitoring and reporting costs would likely be incurred due to other Board Requirements to meet pre-existing Basin Plan requirements under the Long-Term Irrigated Lands Regulatory Program.

Potential funding sources include:

(1) Those identified in the San Joaquin River Subsurface Agricultural Drainage Control Program and the Pesticide Control Program.

5 SURVEILLANCE AND MONITORING

This chapter describes the methods and programs that the Regional Water Board uses to acquire water quality information. Acquisition of data is a basic need of a water quality control program and is required by both the Clean Water Act and the Porter-Cologne Water Quality Control Act.

The Regional Water Board's surveillance and monitoring efforts include different types of sample collection and analysis. Surface water surveillance may involve analyses of water, sediment, or tissue samples and ground water surveillance often includes collection and analysis of soil samples. Soil, water, and sediment samples are analyzed via standard, EPA approved, laboratory methods. The Regional Water Board addresses quality assurance through bid specifications and individual sampling actions such as submittal of split, duplicate, or spiked samples and lab inspections.

Although surveillance and monitoring efforts have traditionally relied upon measurement of key chemical/physical parameters (e.g., metals, organic and inorganic compounds, bacteria, temperature, and dissolved oxygen) as indicators of water quality, there is increasing recognition that close approximation of water quality impacts requires the use of biological indicators. This is particularly true for regulation of toxic compounds in surface waters where standard physical/chemical measurement may be inadequate to indicate the wide range of substances and circumstances able to cause toxicity to aquatic organisms. The use of biological indicators to identify or measure toxic discharges is often referred to as biotoxicity testing. EPA has issued guidelines and technical support materials for biotoxicity testing. A key use of the method is to monitor for compliance with narrative water quality objectives or permit requirements that specify that there is to be no discharge of toxic materials in toxic amounts. The Regional Water Board will continue to use biotoxicity procedures and testing in its surveillance and monitoring program.

As discussed previously, the protection, attainment, and maintenance of beneficial uses occur as part of a continuing cycle of identifying beneficial use impairments, applying control measures, and assessing program effectiveness. The Regional Water Board surveillance and monitoring program provides for the collection, analysis, and distribution of the water quality data needed to sustain its control program. Under ideal circumstances, the Regional Water Board surveillance and monitoring program would produce information on the frequency, duration, source, extent, and severity of beneficial use impairments. In attempting to meet this goal, the Regional Water Board relies upon a variety of measures to obtain information. The current surveillance and monitoring program consists primarily of seven elements:

5.1 DATA COLLECTED BY OTHER AGENCIES

The Regional Water Board currently relies on internal staff coordination and compilation of data collected by a variety of other agencies to augment data collected by internal programs in order to assess ambient water quality conditions and program effectiveness. For example, the Department of Water Resources (DWR) has an ongoing monitoring program in the Delta and the United States Geological Survey (USGS) and DWR conduct monitoring in some upstream rivers. The Department of Fish and Wildlife, Fish and Wildlife Service, USGS, and State Water Board Division of Drinking Water Programs also conduct special studies and collect data, as do local entities such as water purveyors, county health departments and wastewater treatment plants.

The long-term goal is to have a system in place that facilitates consolidation of information gathered from all agencies in a format that can be readily utilized to provide the foundation for regular assessments of ambient surface water quality conditions and program effectiveness including support of updates to the California Integrated Report (Clean Water Act Sections 303(d)/305(b)) which provides a water quality conditions assessment of surface water bodies.

5.2 REGIONAL WATER BOARD AND STATE WATER BOARD MONITORING PROGRAMS

The State Water Board manages its own Toxic Substances Monitoring (TSM) program to collect and analyze fish tissue for the presence of bioaccumulative chemicals. The Regional Water Board participates in the selection of sampling sites for its basins and annually is provided with a report of the testing results.

5.3 SPECIAL STUDIES

Intensive water quality studies provide detailed data to locate and evaluate violations of receiving water standards and to make waste load allocations. They usually involve localized, frequent and/or continuous sampling. These studies are specially designed to evaluate problems in potential water quality limited segments, areas of special biological significance or hydrologic units requiring sampling in addition to the routine collection efforts.

One such study is the *San Joaquin River Subsurface Agricultural Drainage Monitoring Program*. The program includes the following tasks:

(1) The dischargers will monitor discharge points and receiving waters for constituents of concern and flow (discharge points and receiving water points)

(2) The Regional Board will inspect discharge flow monitoring facilities and will continue its cooperative effort with dischargers to ensure the quality of laboratory results.

(3) The Regional Board will, on a regular basis, inspect any facilities constructed to store or treat agricultural subsurface drainage.

(4) The Regional Board will continue to maintain and update its information on agricultural subsurface drainage facilities in the Grassland watershed. Efforts at collecting basic data on all facilities, including flow estimates and water quality will continue.

(5) The Regional Water Board, in cooperation with other agencies, will regularly assess water conservation achievements, cost of such efforts and drainage reduction effectiveness information. In addition, in cooperation with the programs of other agencies and local district managers, the Regional Board will gather information on irrigation practices, i.e., irrigation efficiency, pre-irrigation efficiency, excessive deep percolation and on seepage losses.

Another such study is a surveillance and monitoring program conducted by the El Dorado Irrigation District (EID) on Deer Creek in El Dorado and Sacramento Counties. Regional Board staff will work with EID to ensure adequate temperature, flow and biological monitoring is conducted to evaluate compliance with the site-specific temperature objectives for Deer Creek and their effect on beneficial uses.

5.4 AERIAL SURVEILLANCE

Low-altitude flights are conducted primarily to observe variations in field conditions, gather photographic records of discharges, and document variations in water quality.

5.5 SELF-MONITORING

Self-monitoring reports are normally submitted by the discharger on a monthly or quarterly basis as required by the permit conditions. They are routinely reviewed by Regional Water Board staff.

For point source discharges to Old Alamo Creek that contain detectable concentrations of chlorodibromomethane (DBCM), dichlorobromomethane (DCBM) or chloroform, the discharger's monitoring and reporting program shall include coordinated monitoring of the effluent and Old Alamo Creek at its terminus, immediately prior to Old Alamo Creek's discharge into New Alamo Creek, for DBCM, DCBM or chloroform. It should be noted that the effluent should be sampled prior to sampling at the terminus of Old Alamo Creek. At a minimum, the discharger shall conduct the coordinated monitoring twice-monthly from 1 November through 31 March once during the 5-year term of the NPDES permit.

5.6 COMPLIANCE MONITORING

Compliance monitoring determines permit compliance, validates self-monitoring reports, and provides support for enforcement actions. Discharger compliance monitoring and enforcement actions are the responsibility of the Regional Water Board staff.

5.7 COMPLAINT INVESTIGATION

Complaints from the public or governmental agencies regarding the discharge of pollutants or creation of nuisance conditions are investigated and pertinent information collected.

5.8 MERCURY AND METHYLMERCURY

The Regional Water Board will use the following criteria to determine compliance with the methylmercury fish tissue objectives. Site-specific criteria for various water bodies are described below.

The number of fish collected to determine compliance with the methylmercury objective will be based on the statistical variance within each species. The sample size will be determined by methods described in USEPA's Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories (Third Edition, 2000) or other statistical methods approved by the Executive Officer.

Analysis of fish tissue for total mercury is acceptable for assessing compliance. Compliance with the fish tissue objective is achieved when the average concentrations in local fish are equivalent to the respective objective for three consecutive years.

5.8.1 Clear Lake

Fish from the following species will be collected and analyzed every ten years. The representative fish species for trophic level 4 shall be largemouth bass (total length 300-400 mm), catfish (total length 300 – 400 mm), brown bullhead (total length 300-400 mm), and crappie (total length 200-300 mm). The representative fish species for trophic level 3 shall be carp, hitch, Sacramento blackfish, black bullhead, and bluegill of all sizes; and brown bullhead and catfish of lengths less than the trophic level 4 lengths.

Fish tissue mercury concentrations are not expected to respond quickly to remediation activities at Sulphur Bank Mercury Mine, Clear Lake sediments, or the tributaries. Adult fish integrate methylmercury over a lifetime and load reduction efforts are not expected to be discernable for more than five years after remediation efforts. To assess remedial activities, part of the monitoring at Clear Lake will include indicator species, consisting of inland silversides and largemouth bass less than one year old, to be sampled every five years. Juveniles of these species will reflect recent exposure to methylmercury and can be indicators of mercury reduction efforts.Average concentrations of methylmercury by trophic level should be determined in a combination of the identified species collected throughout Clear Lake.

Total mercury in tributary sediment, lake sediment, and water will be monitored to determine whether loads have decreased. The water and sediment monitoring frequency will be every five years.

5.8.2 Cache Creek, Bear Creek, Harley Gulch, and Sulphur Creek

The Regional Water Board will use the following criteria to determine compliance with the methylmercury fish tissue objectives in Cache and Bear Creeks. Compliance with the respective objectives shall be determined based on fish tissue analysis in Cache Creek from Clear Lake to the Settling Basin, North Fork Cache Creek, and Bear Creek upstream and downstream of Sulphur Creek.

The representative fish species for each trophic level shall be:

- Trophic Level 3: green sunfish, bluegill, and/or Sacramento sucker (rainbow trout also an option for North Fork Cache Creek);
- Trophic Level 4: Sacramento pikeminnow, largemouth bass, smallmouth bass and/or channel catfish.

The sample sets will include at least two species from each trophic level (i.e., bass and Sacramento pikeminnow, for TL4) collected at each compliance point or stream section. The samples will include a range of sizes of fish between 250 and 350 mm, total length, with average length of 300 mm. If green sunfish and bluegill are not available in this size range; those sampled should be greater than 125 mm total length. If two species per trophic level are not available and are unlikely to be present given historical sampling information, one species is acceptable (the only TL4 species typically in North Fork is Sacramento pikeminnow).

Compliance with the Harley Gulch methylmercury water quality objective will be determined using hardhead, California roach, or other small (TL2/3), resident species in the size range of 75-100 mm total length.

Aqueous methylmercury goals are in the form of the annual, average concentration in unfiltered samples. For comparison of methylmercury concentration data with aqueous methylmercury goals, water samples are recommended to be collected periodically throughout the year and during typical flow conditions as they vary by season, rather than targeting extreme low or high flow events. Aqueous methylmercury data may be collected by Regional Water Board staff or required of project proponents.

Monitoring for mine cleanups or other projects that are expected to significantly affect methylmercury or mercury loads are recommended to include the following parameters. The data may be collected by Regional Water Board staff or required of project proponents.

- Monitoring parameters for soil and sediment: concentration of total mercury in soil or sediment in the silt/clay (<63 microns) fraction.
- Monitoring parameters for water: methylmercury (if project is methylmercury source), total mercury, total suspended solids, turbidity, and stream flow. Water sampling in major tributaries is recommended to include high flow events for mercury and total suspended solids. More frequent monitoring (two to four significant storm events for three consecutive years) is recommended after cleanup to evaluate the effectiveness of cleanup actions.
- Monitoring of mercury in suspended sediment: The ratio of concentrations of mercury in suspended sediment (Hg/TSS) is a useful measure of mercury contamination. Effectiveness of cleanup of the mines may be assessed by comparing concentration of mercury in fine-grained sediment discharging from the mines to the average concentration in background (not affected by mining activities) soil or sediment.

5.8.3 Delta

5.8.3.1 Fish Methylmercury Compliance Monitoring

The Regional Water Board will use the following specifications to determine compliance with the methylmercury fish tissue objectives in the Sacramento-San Joaquin Delta. Beginning 2025, Regional Water Board staff will initiate fish tissue monitoring. Thereafter compliance monitoring will ensue every ten years, more frequently as needed where substantial changes in methyl or total mercury concentrations or loading occur, but not to exceed ten years elsewhere.

Initial fish tissue monitoring will take place at the following compliance reaches in each subarea:

- Central Delta subarea: Middle River between Bullfrog Landing and Mildred Island;
- Marsh Creek subarea: Marsh Creek from Highway 4 to Cypress Road;
- Mokelumne/Cosumnes River subarea: Mokelumne River from the Interstate 5 bridge to New Hope Landing;
- Sacramento River subarea: Sacramento River from River Mile 40 to River Mile 44;
- San Joaquin River subarea: San Joaquin River from Vernalis to the Highway 120 bridge;
- West Delta subarea: Sacramento/San Joaquin River confluence near Sherman Island;
- Yolo Bypass-North subarea: Tule Canal downstream of its confluence with Cache Creek; and
- Yolo Bypass-South subarea: Toe Drain between Lisbon and Little Holland Tract.

Compliance fish methylmercury monitoring will include representative fish species for comparison to each of the methylmercury fish tissue objectives:

- Trophic Level 4: bass (largemouth and striped), channel and white catfish, crappie, and Sacramento pikeminnow.

- Trophic Level 3: American shad, black bullhead, bluegill, carp, Chinook salmon, redear sunfish, Sacramento blackfish, Sacramento sucker, and white sturgeon.
- Small (<50 mm) fish: primary prey species consumed by wildlife in the Delta, which may include the species listed above, as well as inland silverside, juvenile bluegill, mosquitofish, red shiner, threadfin shad, or other fish less than 50 mm.

Trophic level 3 and 4 fish sample sets will include three species from each trophic level and will include both anadromous and non-anadromous fish. Trophic level 3 and 4 fish sample sets will include a range of fish sizes between 150 and 500 mm total length. Striped bass, largemouth bass, and sturgeon caught for mercury analysis will be within the CDFW legal catch size limits. Sample sets for fish less than 50 mm will include at least two fish species that are the primary prey species consumed by wildlife at sensitive life stages. In any subarea, if multiple species for a particular trophic level are not available, one species in the sample set is acceptable.

5.8.3.2 Water Methylmercury and Total Mercury Compliance Monitoring

Compliance points for irrigated agriculture and managed wetlands methylmercury allocations shall be developed during the Phase 1 Control Studies.

In conjunction with the Phase 1 Control Studies, nonpoint sources, irrigated agriculture, and managed wetlands shall develop and implement mercury and/or methylmercury monitoring, and submit monitoring reports.

NPDES facilities' compliance points for methylmercury and total mercury monitoring are the effluent monitoring points currently described in individual NPDES permits.

During Phase 1 and Phase 2, facilities listed in Table 4-17 shall conduct effluent total mercury and methylmercury monitoring starting by 20 October 2012. Monitoring frequencies shall be defined in the NPDES permits. Effluent monitoring requirements will be re-evaluated during the Delta Mercury Control Program Reviews.

Facilities that begin discharging to surface water during Phase 1 and facilities for which effluent methylmercury data were not available at the time Table 4-17 was compiled, shall conduct monitoring.

Compliance points and monitoring frequencies for MS4s required to conduct methylmercury and total mercury monitoring are those locations and wet and dry weather sampling periods currently described in the individual MS4 NPDES permits or otherwise determined to be representative of the MS4 service areas and approved by the Executive Officer on an MS4-specific basis.

Annual methylmercury loads in urban runoff in MS4 service areas within the Delta and Yolo Bypass may be calculated by the following method or by an alternate method approved by the Executive Officer. The annual methylmercury load in urban runoff for a given MS4 service area during a given year may be calculated by the sum of wet weather and dry weather methylmercury loads. To estimate wet weather methylmercury loads discharged by MS4 urban areas, the average of wet weather methylmercury concentrations observed at the MS4's compliance locations may be multiplied by the wet weather runoff volume estimated for all urban areas within the MS4 service area within the Delta and Yolo Bypass. To estimate dry weather methylmercury loads, the average of dry weather methylmercury concentrations observed at the MS4's compliance locations may be multiplied by the estimated dry weather urban runoff volume in the MS4 service area within the Delta and Yolo Bypass.

5.9 DIAZINON AND CHLORPYRIFOS RUNOFF INTO THE SACRAMENTO AND FEATHER RIVERS

The Regional Water Board requires a focused monitoring effort of agricultural pesticide runoff into the Sacramento and Feather Rivers.

The monitoring and reporting program for any waste discharge requirements or waiver of waste discharge requirements that addresses agricultural pesticide runoff into the Sacramento and Feather Rivers must be designed to collect the information necessary to:

(1) determine compliance with established water quality objectives and the loading capacity applicable to diazinon and chlorpyrifos in the Sacramento and Feather Rivers;

(2) determine compliance with load allocations for diazinon and chlorpyrifos;

(3) determine the degree of implementation of management practices to reduce off-site migration of diazinon and chlorpyrifos;

(4) determine the effectiveness of management practices and strategies to reduce off-site migration of diazinon and chlorpyrifos;

(5) determine whether alternatives to diazinon or chlorpyrifos are causing surface water quality impacts;

(6) determine whether the discharge causes or contributes to a toxicity impairment due to additive or synergistic effects of multiple pollutants; and

(7) demonstrate that management practices are achieving the lowest pesticide levels technically and economically achievable.

Dischargers are responsible for providing the necessary information. The information may come from the dischargers' monitoring efforts; monitoring programs conducted by State or federal agencies or collaborative watershed efforts; or from special studies that evaluate the effectiveness of management practices.

5.10 DIAZINON AND CHLORPYRIFOS RUNOFF IN THE SAN JOAQUIN RIVER BASIN

The Regional Water Board requires a focused monitoring effort of pesticide runoff from orchards and fields in the San Joaquin Valley.

The monitoring and reporting program for any waste discharge requirements or waiver of waste discharge requirements that addresses pesticide runoff from orchards and fields in the San Joaquin valley must be designed to collect the information necessary to:

(1) determine compliance with established water quality objectives and the loading capacity applicable to diazinon and chlorpyrifos in the San Joaquin River;

(2) determine compliance with established load allocations for diazinon and chlorpyrifos;

(3) determine the degree of implementation of management practices to reduce off-site movement of diazinon and chlorpyrifos;

(4) determine the effectiveness of management practices and strategies to reduce off-site migration of diazinon and chlorpyrifos;

(5) determine whether alternatives to diazinon and chlorpyrifos are causing surface water quality impacts;

(6) determine whether the discharge causes or contributes to a toxicity impairment due to additive or synergistic effects of multiple pollutants; and

(7) demonstrate that management practices are achieving the lowest pesticide levels technically and economically achievable.

Dischargers are responsible for providing the necessary information. The information may come from the dischargers' monitoring efforts; monitoring programs conducted by State or federal agencies or collaborative watershed efforts; or from special studies that evaluate the effectiveness of management practices.

5.11 DIAZINON AND CHLORPYRIFOS RUNOFF INTO THE SACRAMENTO-SAN JOAQUIN DELTA WATERWAYS

The Regional Water Board requires a focused monitoring effort of pesticide runoff from orchards and fields discharging to the Sacramento-San Joaquin Delta Waterways (as identified in Appendix 42).

The monitoring and reporting program for any waste discharge requirements or waiver of waste discharge requirements that addresses pesticide runoff into the Delta Waterways must be designed to collect the information necessary to:

(1) Determine compliance with established water quality objectives and loading capacity, applicable to diazinon and chlorpyrifos in the Delta Waterways.

(2) Determine compliance with the load allocations applicable to discharges of diazinon and chlorpyrifos into the Delta Waterways.

(3) Determine the degree of implementation of management practices to reduce off-site movement of diazinon and chlorpyrifos.

(4) Determine the effectiveness of management practices and strategies to reduce off-site migration of diazinon and chlorpyrifos.

(5) Determine whether alternatives to diazinon and chlorpyrifos are causing surface water quality impacts.

(6) Determine whether the discharge causes or contributes to a toxicity impairment due to additive or synergistic effects of multiple pollutants.

(7) Demonstrate that management practices are achieving the lowest pesticide levels technically and economically achievable.

Dischargers are responsible for providing the necessary information. The information may come from the dischargers' monitoring efforts; monitoring programs conducted by State or federal agencies or collaborative watershed efforts; or from special studies that evaluate the effectiveness of management practices.

With Regional Water Board Executive Officer approval, monitoring can be performed in a subset of the Delta Waterways listed in Appendix 42, and the tributaries of those waterways, to determine compliance with the water quality objectives, loading capacity and load allocations.

5.12 CLEAR LAKE NUTRIENTS

The responsible parties – Lake County, City of Clearlake, City of Lakeport, Caltrans, USBLM, USFS and irrigated agriculture – will work with Regional Water Board staff to estimate nutrient loadings from activities in the watershed. Loading estimates can be conducted using either water quality monitoring or computer modeling or a combination of the two.

5.13 DRINKING WATER POLICY

Monitoring and surveillance for the Drinking Water Policy consists of two elements.

5.13.1 *Cryptosporidium* and *Giardia* Monitoring

It is not the intent of the Drinking Water Policy to require routine effluent monitoring for *Cryptosporidium* and *Giardia*. Rather, the Regional Water Board should work with interested stakeholders to gather data that could be used to help identify potential sources if *Cryptosporidium* levels increase to the trigger level (in Chapter 4) at an existing public water system intake in the future. This one-time *Cryptosporidium* special study could be conducted through the Delta Regional Monitoring Program or through another coordinated effort between dischargers, drinking water suppliers, and state agencies. The study will characterize ambient background conditions and potential sources to be used when and if exceedance of a trigger occurs. The study is envisioned to last two years targeting the period of Long Term 2 Enhanced Surface Water Treatment Rule second round monitoring. The study may consist of the following elements:

- Literature review to identify available source information
- Continued monitoring at existing public water systems intakes
- Monitoring at several ambient locations that will be identified as sites that integrate the pathogen sources where historic pathogen data are unavailable
- Monitoring at several representative discharge locations, if representative pathogen concentrations are not available or if coordinated data are necessary
- Hydrodynamic and particle tracking models to simulate the transport of pathogens from potential sources to public water system intakes
- If needed, focused studies to identify the viability and fate and transport of *Cryptosporidium*.

A report documenting the results of the special study should be prepared.

5.13.2 Organic carbon, salinity, and nutrients

As waste discharge requirements are renewed, the Regional Water Board should consider the necessity for inclusion of monitoring of organic carbon, salinity, and nutrients. This consideration should include a combination of the following:

(1) The location with respect to drinking water intakes.

(2) The importance of the load based on available information.

(3) Whether the information exists that the load has significantly increased.

(4) Importance of data to management decisions to protect drinking water.

For general permits, agriculture and small dischargers (smaller than 5 mgd), careful consideration should be made as to whether monitoring for these constituents is necessary.

Where water quality monitoring is performed to evaluate management practices to control other constituents, the Regional Water Board recommends monitoring of organic carbon, salinity, and nutrients be considered to evaluate the influence on drinking water quality.

5.14 DIAZINON AND CHLORPYRIFOS DISCHARGES

The Central Valley Water Board will ensure that there will be a focused monitoring effort to monitor pesticide discharges in the Sacramento and San Joaquin River Basins.

The Board will require those that discharge diazinon and chlorpyrifos to provide information to the Board. This information may come from the dischargers' monitoring efforts; monitoring programs conducted by state or federal agencies or collaborative watershed efforts; or from special studies that evaluate the effectiveness of management practices. To be used in determining compliance with the water quality objectives, diazinon and chlorpyrifos concentration data must be from analysis with limits of quantification (reporting limits) at or below the water quality objective concentrations.

5.14.1 Agricultural Discharge Monitoring

The monitoring and reporting program for any waste discharge requirements or waiver of waste discharge requirements that address agricultural pesticide discharges to Table 3-4 Applicable Water Bodies must be designed to collect the information necessary to:

(1) Determine compliance with established water quality objectives applicable to diazinon and/or chlorpyrifos;

(2) Determine the extent of implementation of management practices to reduce off-site migration of diazinon and/or chlorpyrifos;

(3) Determine the effectiveness of management practices and strategies to reduce off-site migration of diazinon and/or chlorpyrifos;

(4) Determine whether alternatives to diazinon and/or chlorpyrifos are being discharged at concentrations which have the potential to cause or contribute to exceedances of applicable water quality objectives; and

(5) Determine whether the discharge causes or contributes to a toxicity impairment due to additive or synergistic effects of multiple pollutants.

Representative monitoring may be used to determine compliance with the water quality objectives. Monitoring shall be representative of all Table 3-4 Applicable Water Bodies, either directly or through a representative monitoring program. Changes in monitoring requirements may be required if pesticide use data, management practices, runoff potential, or other information indicates additional or less monitoring, including discontinuation of monitoring for diazinon and/or chlorpyrifos is needed to meet the monitoring requirements.

5.14.2 Municipal Storm Water and Municipal and Domestic Wastewater Monitoring

The monitoring and reporting program for any waste discharge requirements that address discharges to Table 3-4 Applicable Water Bodies from

- municipal storm water
- municipal or domestic wastewater, or
- other non-agricultural sites where diazinon or chlorpyrifos are applied,

must be designed to collect the information necessary to:

(1) Determine whether the discharge causes or contributes to an exceedance of water quality objectives for diazinon and/or chlorpyrifos;

(2) Determine whether alternatives to diazinon and/or chlorpyrifos are being discharged at concentrations with the potential to cause or contribute to exceedances of water quality objectives. In determining if monitoring for alternatives to diazinon and/or chlorpyrifos is necessary, and to identify alternatives for which monitoring might be appropriate, the Board will consult and coordinate with DPR and will consider the commercial availability of analytical methods.

With Executive Officer approval, representative monitoring programs, including coordinated regional monitoring programs, may be used to meet the monitoring requirements listed above. Regular monitoring for diazinon and chlorpyrifos and alternatives to diazinon and chlorpyrifos can be discontinued upon a showing by a discharger that such pesticides are not found in the effluent at concentrations with the potential to cause or contribute to exceedances of water quality objectives.

5.15 SALT AND BORON DISCHARGES INTO THE LOWER SAN JOAQUIN RIVER

The amendments to the Basin Plan that established boron and electrical conductivity WQOs for discharges into the lower San Joaquin River (LSJR) between the mouth of the Merced River and the Airport Way Bridge near Vernalis were approved by the Regional Water Board in Resolution No. 88-195 and Resolution No. 2017-0062, incorporated herein. The Regional Water Board will review data collected at Crows Landing and Maze Road to determine compliance with the LSJR electrical conductivity WQOs and attainment of the Performance Goal. Daily

average electrical conductivity measurement calculations will be utilized to calculate the 30-day running average for WQO compliance and Performance Goal attainment. The Regional Water Board will review boron concentration data collected weekly at Crows Landing to determine if the monthly average or maximum boron WQOs are being exceeded. Should the boron objectives be exceeded at Crows Landing, boron analyses should be expanded to weekly sampling at Maze Road and the Airport Way Bridge near Vernalis. To evaluate changing loads into the system that may result from changing management activities and/or changes in hydrology, continuous flow monitoring is recommended in the river at Crows Landing, Maze Road and the Airport Way Bridge near Vernalis.

5.16 PYRETHROID PESTICIDES DISCHARGES

The Regional Water Board will require pyrethroid pesticides dischargers to provide information to the Board. This information may come from the dischargers' monitoring efforts; monitoring programs conducted by state or federal agencies or collaborative watershed efforts; or from special studies that evaluate the effectiveness of management practices. For dischargers that do not discharge to water bodies listed in Table 4-21 and Table 4-22, the Board will require baseline monitoring to be completed by 19 February 2021 and continued trend monitoring to occur after 19 February 2022, except for municipal and domestic wastewater dischargers, which is set forth below. The baseline and trend monitoring will be designed to meet the goals outlined for each discharger type below. The Regional Water Board will work through existing regulatory programs to ensure that the goals of the monitoring program are met. If the required timelines cannot be met through existing processes, the Executive Officer has the discretion to authorize 13267 and/or 13383 orders, and/or extend the timeline for baseline monitoring. With Executive Officer approval, representative monitoring programs, including coordinated regional or statewide monitoring programs, may be used to meet the monitoring requirements.

Pyrethroid monitoring plans must describe at a minimum the proposed sampling frequency, sampling locations, and toxicity test and analytical methods for baseline and/or trend monitoring and can be provided as part of other monitoring plans as appropriate. Pyrethroid monitoring plans shall be approved by the Executive Officer before the data can be used to meet the monitoring requirements of this section. If reliable commercial analytical methods are available with reporting limits at or below the pyrethroid pesticides numeric trigger concentrations in the matrix being monitored, those methods shall be considered by dischargers for monitoring of pyrethroid pesticides. Methods with reporting limits above the pyrethroid trigger concentrations may be used if methods with reporting limits at or below the pyrethroid trigger concentrations are not available or based on the consideration of other factors, such as cost or the reporting limit needed after the calculation of freely dissolved pyrethroid concentrations. When evaluating the toxicity test and analytical methods, the Executive Officer will consider Environmental Laboratory Accreditation Program (ELAP) accreditation, associated quality assurance and quality control provisions, scientifically peer reviewed methods, results of interlaboratory comparison studies, and/or other factors.

Changes in monitoring frequency may result if information such as pesticide use data, pesticide registration status, allowable pesticide uses, use restrictions, management practices, runoff potential, or other monitoring studies indicates additional or less monitoring is needed to meet the monitoring requirements, which may include discontinuation of pyrethroid pesticides monitoring. Monitoring for pyrethroid pesticides and alternative insecticides can be discontinued upon a discharger showing that the specific pesticide is not found, or is not reasonably expected to be found, in receiving waters at concentrations with the potential to exceed the pyrethroid wasteload allocations and/or Acute and Chronic Pyrethroid Triggers or levels of concern for alternative insecticides.

5.16.1 Municipal Storm Water

Pyrethroid monitoring plans that address municipal storm water discharges to TMDL water bodies (Table 4-21) shall be designed to collect information necessary to:

(1) Determine whether receiving waters are attaining the Pyrethroid Pesticides Water Column Additivity Numeric Targets and whether the wasteload allocations are being attained in discharges as measured at representative receiving water locations by providing pyrethroid and dissolved and particulate organic carbon concentration data;

(2) Determine whether bed sediments are attaining the Sediment Toxicity Numeric Target. In order to link sediment toxicity to pyrethroid pesticides, chemical analysis of the sediment for pyrethroid pesticides shall be performed if the sediment is toxic;

(3) Provide *Hyalella azteca* toxicity test data to determine whether pyrethroid pesticides are causing or contributing to exceedances of the narrative water quality objective for toxicity in surface waters;

(4) Determine whether the implementation of management practices is sufficient to attain the TMDL Allocations and Numeric Targets.

(5) In cooperation with the Regional Water Board, USEPA and DPR, determine if monitoring and reporting programs for alternatives to pyrethroid pesticides are necessary and identify alternative insecticides for which monitoring might be appropriate with consideration of the commercial availability of acceptable analytical methods. If an alternative insecticide is identified as appropriate for monitoring, monitoring shall be performed by the discharger to determine whether alternatives to pyrethroid pesticides are being discharged at concentrations with the potential to cause or contribute to exceedances of applicable water quality objectives.

Pyrethroid monitoring for municipal storm water that does not discharge to TMDL water bodies (Table 4-21) shall include baseline monitoring and, if required, trend monitoring.

Baseline pyrethroids monitoring for municipal storm water discharges shall be designed to collect information necessary to:

(1) Determine through representative receiving water monitoring whether discharges from municipal separate storm sewer systems are exceeding the Acute and Chronic Pyrethroid Triggers (Table 4-2) by providing pyrethroid and dissolved and particulate organic carbon concentration data;

(2) Provide pyrethroid and dissolved and particulate organic carbon concentration data and *Hyalella azteca* toxicity test data to determine whether pyrethroid pesticides are causing or contributing to exceedances of the narrative water quality objective for toxicity in surface waters or bed sediments. With Executive Officer approval, the baseline monitoring requirements may be met by submittal of a report, including a compilation and interpretation of representative monitoring data, demonstrating that the required information has been collected and is sufficient to make the required determinations.

Pyrethroids trend monitoring for municipal storm water discharges shall be designed to collect information necessary to meet the above goals for the baseline monitoring, as well as:

(3) Determine the effectiveness of management practices that are implemented to reduce pyrethroid levels in discharges;

(4) In cooperation with the Regional Water Board, USEPA and DPR, determine if monitoring and reporting programs for alternatives to pyrethroid pesticides are necessary and identify alternative insecticides for which monitoring might be appropriate with consideration of the commercial availability of acceptable analytical methods. If an alternative insecticide is identified as appropriate for monitoring, monitoring shall be performed by the discharger to determine whether alternatives to pyrethroid pesticides are being discharged at concentrations with the potential to cause or contribute to exceedances of applicable water quality objectives.

5.16.2 Discharges from Agricultural Operations

The pyrethroid monitoring plans that address agricultural discharges to water bodies named in Table 4-22 shall be representative of those water bodies and designed to collect information necessary to:

(1) Determine whether receiving waters are attaining the Acute and Chronic Pyrethroid Triggers (Table 4-2) by providing pyrethroid and dissolved and particulate organic carbon concentration data;

(2) Determine whether receiving waters and bed sediments are attaining the narrative water quality objective for toxicity by providing *Hyalella azteca* toxicity test data;

(3) Determine whether the implementation of management practices is sufficient to attain the Acute and Chronic Pyrethroid Triggers (Table 4-2) in receiving waters.

(4) Determine whether alternatives to pyrethroid pesticides are being discharged at concentrations that have the potential to cause or contribute to exceedances of applicable water quality objectives.

Pyrethroid monitoring for agricultural discharges that do not discharge to water bodies named in Table 4-22 shall include baseline monitoring and, if required, trend monitoring.

Baseline pyrethroids monitoring for agricultural discharges shall be designed to collect information necessary to:

(1) Determine through representative receiving water monitoring whether discharges from agricultural operations are exceeding the Acute and Chronic Pyrethroid Triggers (Table 4-2) by providing pyrethroid and dissolved and particulate organic carbon concentration data;

(2) Determine whether pyrethroid pesticides are causing or contributing to exceedances of the narrative water quality objective for toxicity in surface waters or bed sediments by providing *Hyalella azteca* toxicity test data.

Pyrethroids trend monitoring for agricultural discharges shall be designed to collect information necessary to meet the above goals for the baseline monitoring, as well as:

(3) Determine the extent of implementation of management practices to reduce off-site movement of pyrethroid pesticides and whether these practices are sufficient to attain the Acute and Chronic Pyrethroid Triggers;

(4) Determine whether alternatives to pyrethroid pesticides are being discharged at concentrations that have the potential to cause or contribute to exceedances of applicable water quality objectives.

5.16.3 Municipal and Domestic Wastewater

The monitoring requirements discussed in this section do not apply to facilities that discharge <1 million gallons per day unless requested by the Executive Officer. For all other municipal and domestic wastewater dischargers, monitoring for pyrethroid pesticides will be required concurrently with effluent characterization monitoring at least as long as pyrethroid pesticides specified in Table 4-2 are registered for use in the collection service area or at the discretion of the Executive Officer.

Baseline pyrethroids monitoring for municipal or domestic wastewater discharges shall be conducted concurrently with effluent characterization monitoring and shall be designed to collect information necessary to:

(1) Determine whether pyrethroid concentrations in municipal or domestic wastewater discharges are exceeding Acute and Chronic Pyrethroid Triggers (Table 4-2) by providing pyrethroid and dissolved and particulate organic carbon concentration data;

(2) Provide pyrethroid and dissolved and particulate organic carbon concentration data and *Hyalella azteca* toxicity test data to determine whether municipal or domestic wastewater discharges of pyrethroids are causing or contributing to exceedances of the narrative water quality objective for toxicity in receiving waters;

Pyrethroids trend monitoring for municipal or domestic wastewater discharges shall commence after the effluent characterization monitoring has been completed or after being directed to start such monitoring by the Executive Officer. The trend monitoring and reporting program shall be designed to collect information necessary to meet the above goals for the baseline monitoring, as well as:

(3) Determine the effectiveness of management practices that are implemented to reduce pyrethroid levels in discharges;

(4) In cooperation with the Regional Water Board, USEPA, and DPR, determine if monitoring and reporting for alternatives to pyrethroid pesticides is necessary and identify alternative insecticides for which monitoring might be appropriate with consideration of the commercial availability of acceptable analytical methods. If an alternative insecticide is identified as appropriate for monitoring, monitoring shall be performed by the discharger to determine whether alternatives to pyrethroid pesticides are being discharged at concentrations with the potential to cause or contribute to exceedances of applicable water quality objective.

Regional Water Board: California Regional Water Quality Control Board, Central Valley Region (Wat. Code, § 13203)

State Water Board: State Water Resources Control Board

APPENDIX

APPENDIX DIRECTORY

ITEM*	DESCRIPTION
1.	State Water Board Policy for Water Quality Control
2.	State Water Board Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Waters in California
3.	State Water Board Resolution No. 74-43, Water Quality Control Policy for the Enclosed Bays and Estuaries of California
4.	State Water Board Resolution No. 75-58, Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling
5.	State Water Board Resolution No. 77-1, Policy with Respect to Water Reclamation in California
6.	State Water Board Resolution No. 87-22, Policy on the Disposal of Shredder Waste
7.	State Water Board Resolution No. 88-23, Policy Regarding the Underground Storage Tank Pilot Program
8.	State Water Board Resolution No. 88-63, Sources of Drinking Water Policy
9.	State Water Board Resolution No. 92-49, Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304
10.	State Water Board Resolution No. 93-62, Policy for Regulation of Discharges of Municipal Solid Waste
11.	State Water Board Water Quality Control Plan for Temperature in Coastal and Inerstate Waters and Enclosed Bays and Estuaries in California (Thermal Plan)
12.	State Water Board Resolution No. 92-82, exception to the Thermal Plan for Sacramento Regional County Sanitation District
13.	State Water Board MAA with Forest Service, U. S. Department of Agriculture
14.	State Water Board MOA with Department of Health Services (later renamed the Department of Public Health) (implementation of hazardous waste program)
15.	State Water Board MOA with Department of Health Services (later renamed State Water Board Division of Drinking Water Programs) (use of reclaimed water)
16.	State Water Board MAA with the Board of Forestry and California Department of Forestry and Fire Protection

* Appendix items are paginated by: item number/item page/item total pages

APPENDIX DIRECTORY

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APPENDIX DIRECTORY

ITEM* DESCRIPTION

* Appendix items are paginated by: item number/item page/item total pages

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

STATE POLICY FOR WATER QUALITY CONTROL

I. FOREWORD

To assure a comprehensive statewide program of water quality control, the California Legislature by its adoption of the Porter-Cologne Water Quality Control Act in 1969 set forth the following statewide policy:

> The people of the state have a primary interest in the conservation, control, and utilization of the water resources, and the quality of all the waters shall be protected for use and enjoyment.
>
> Activities and factors which may affect the quality of the waters shall be regulated to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible.
>
> The health, safety, and welfare of the people requires that there be a statewide program for the control of the quality of all the waters of the state. The state must be prepared to exercise its full power and jurisdiction to protect the quality of waters from degradation.
>
> The waters of the state are increasingly influenced by interbasin water development projects and other statewide considerations. Factors of precipitation, topography, population, recreation, agriculture, industry, and economic development vary from region to region. The statewide program for water quality control can be most effectively administered regionally, within a framework of statewide coordination and policy.

To carry out this policy, the Legislature established the State Water Resources Control Board and nine California Regional Water Quality Control Boards as the principal state agencies with primary responsibilities for the coordination and control of water quality. The State Board is required pursuant to legislative directives set forth in the California Water Code (Division 7, Chapter 3, Article 3, Sections 13140 Ibid) to formulate and adopt state policy for water quality control consisting of all or any of the following:

Adopted by the State Water Resources Control Board by motion of July 6, 1972.

I. (continued)

Water quality principles and guidelines for long-range resource planning, including groundwater and surface water management programs and control and use of reclaimed water.

Water quality objectives at key locations for planning and operation of water resource development projects and for water quality control activities.

Other principles and guidelines deemed essential by the State Board for water quality control.

II. GENERAL PRINCIPLES

The State Water Resources Control Board hereby finds and declares that protection of the quality of the waters of the State for use and enjoyment by the people of the State requires implementation of water resources management programs which will conform to the following general principles:

1. Water rights and water quality control decisions must assure protection of available fresh water and marine water resources for maximum beneficial use.

2. Municipal, agricultural, and industrial wastewaters must be considered as a potential integral part of the total available fresh water resource.

3. Coordinated management of water supplies and wastewaters on a regional basis must be promoted to achieve efficient utilization of water.

4. Efficient wastewater management is dependent upon a balanced program of source control of environmentally hazardous substances[1/], treatment of wastewaters, reuse of reclaimed water, and proper disposal of effluents and residuals.

5. Substances not amenable to removal by treatment systems presently available or planned for the immediate future must be prevented from entering sewer systems

1/ Those substances which are harmful or potentially harmful even in extremely small concentration to man, animals, or plants because of biological concentration, acute or chronic toxicity, or other phenomenon.

II. 5. (continued)

in quantities which would be harmful to the aquatic environment, adversely affect beneficial uses of water, or affect treatment plant operation. Persons responsible for the management of waste collection, treatment, and disposal systems must actively pursue the implementation of their objective of source control for environmentally hazardous substances. Such substances must be disposed of such that environmental damage does not result.

6. Wastewater treatment systems must provide sufficient removal of environmentally hazardous substances which cannot be controlled at the source to assure against adverse effects on beneficial uses and aquatic communities.

7. Wastewater collection and treatment facilities must be consolidated in all cases where feasible and desirable to implement sound water quality management programs based upon long-range economic and water quality benefits to an entire basin.

8. Institutional and financial programs for implementation of consolidated wastewater management systems must be tailored to serve each particular area in an equitable manner.

9. Wastewater reclamation and reuse systems which assure maximum benefit from available fresh water resources shall be encouraged. Reclamation systems must be an appropriate integral part of the long-range solution to the water resources needs of an area and incorporate provisions for salinity control and disposal of nonreclaimable residues.

10. Wastewater management systems must be designed and operated to achieve maximum long-term benefit from the funds expended.

11. Water quality control must be based upon latest scientific findings. Criteria must be continually refined as additional knowledge becomes available.

12. Monitoring programs must be provided to determine the effects of discharges on all beneficial water uses including effects on aquatic life and its diversity and seasonal fluctuations.

III. PROGRAM OF IMPLEMENTATION

Water quality control plans and waste discharge requirements hereafter adopted by the State and Regional Boards under Division 7 of the California Water Code shall conform to this policy.

This policy and subsequent State plans will guide the regulatory, planning, and financial assistance programs of the State and Regional Boards. Specifically, they will (1) supersede any regional water quality control plans for the same waters to the extent of any conflict, (2) provide a basis for establishing or revising waste discharge requirements when such action is indicated, and (3) provide general guidance for the development of basin plans.

Water quality control plans adopted by the State Board will include minimum requirements for effluent quality and may specifically define the maximum constituent levels acceptable for discharge to various waters of the State. The minimum effluent requirements will allow discretion in the application of the latest available technology in the design and operation of wastewater treatment systems. Any treatment system which provides secondary treatment, as defined by the specific minimum requirements for effluent quality, will be considered as providing the minimum acceptable level of treatment. Advanced treatment systems will be required where necessary to meet water quality objectives.

Departures from this policy and water quality control plans adopted by the State Board may be desirable for certain individual cases. Exceptions to the specific provisions may be permitted within the broad framework of well established goals and water quality objectives.

Appendix 2

State Water Board Resolution No. 68-16
Statement of Policy with Respect to Maintaining High Quality of Waters in California

https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1968/rs68_016.pdf

State of California
The Resources Agency

STATE WATER RESOURCES CONTROL BOARD

WATER QUALITY CONTROL POLICY

FOR THE

ENCLOSED BAYS AND ESTUARIES OF CALIFORNIA

MAY 1974

TABLE OF CONTENTS

* To be furnished upon request.

WATER QUALITY CONTROL POLICY FOR THE ENCLOSED BAYS AND ESTUARIES OF CALIFORNIA[1/]

INTRODUCTION

The purpose of this policy is to provide water quality principles and guidelines to prevent water quality degradation and to protect the beneficial uses of waters of enclosed bays and estuaries. Decisions on water quality control plans, waste discharge requirements, construction grant projects, water rights permits, and other specific water quality control implementing actions of the State and Regional Boards shall be consistent with the provisions of this policy.

The Board declares its intent to determine from time to time the need for revising this policy.

This policy does not apply to wastes from vessels or land runoff except as specifically indicated for siltation (Chapter III 4.) and combined sewer flows (Chapter III 7.).

CHAPTER I.

PRINCIPLES FOR MANAGEMENT OF WATER QUALITY IN ENCLOSED BAYS AND ESTUARIES

A. It is the policy of the State Board that the discharge of municipal wastewaters and industrial process waters[2/] (exclusive of cooling water discharges) to enclosed bays and estuaries, other than the San Francisco Bay-Delta system, shall be phased out at the earliest practicable date. Exceptions to this provision may be granted by a Regional Board only when the Regional Board finds that the wastewater in question would consistently be treated and discharged in such a manner that it would enhance the quality of receiving waters above that which would occur in the absence of the discharge. [3/]

B. With regard to the waters of the San Francisco Bay-Delta system, the State Board finds and directs as follows:

1a. There is a considerable body of scientific evidence and opinion which suggests the existence of biological degradation due to long-term exposure to toxicants which have been discharged to the San Francisco Bay-Delta system. Therefore, implementation of a program which controls toxic effects through a combination of source control for toxic materials, upgraded wastewater treatment, and improved dilution of wastewaters, shall proceed as rapidly as is practicable with the objective of providing full protection to the biota and the beneficial uses of Bay-Delta waters in a cost-effective manner.

1b. A comprehensive understanding of the biological effects of wastewater discharge on San Francisco Bay, as a whole, must await the results of further scientific study. There is, however, sufficient evidence at this time to indicate that the continuation of wastewater discharges to the southern reach of San Francisco Bay, south of the Dumbarton Bridge, is an unacceptable condition. The State Board and the San Francisco Regional Board shall take such action as is necessary to assure the elimination of wastewater discharges to waters of the San Francisco Bay, south of Dumbarton Bridge, at the earliest practicable date.

1c. In order to prevent excessive investment which would unduly impact the limited funds available to California for construction of publicly owned treatment works, construction of such works shall proceed in a staged fashion, and each stage shall be fully evaluated by the State and Regional Boards to determine the necessity for additional expenditures. Monitoring requirements shall be established to evaluate any effects on water quality, particularly changes in species diversity and abundance, which may result from the operation of each stage of planned facilities

and source control programs. Such a staged construction program, in combination with an increased monitoring effort, will result in the most cost-effective and rapid progress toward a goal of maintaining and enhancing water quality in the San Francisco Bay-Delta system.

2. Where a waste discharger has an alternative of in-bay or ocean disposal and where both alternatives offer a similar degree of environmental and public health protection, prime consideration shall be given to the alternative which offers the greater degree of flexibility for the implementation of economically feasible wastewater reclamation options.

. The following policies apply to all of California's enclosed bays and estuaries:

1. Persistent or cumulative toxic substances shall be removed from the waste to the maximum extent practicable through source control or adequate treatment prior to discharge.
2. Bay or estuarine outfall and diffuser systems shall be designed to achieve the most rapid initial dilution[4/] practicable to minimize concentrations of substances not removed by source control or treatment.
3. Wastes shall not be discharged into or adjacent to areas where the protection of beneficial uses requires spatial separation from waste fields.
4. Waste discharges shall not cause a blockage of zones of passage required for the migration of anadromous fish.
5. Nonpoint sources of pollutants shall be controlled to the maximum practicable extent.

CHAPTER II.

QUALITY REQUIREMENTS FOR WASTE DISCHARGES

1. In addition to any requirements of this policy, effluent limitations shall be as specified pursuant to Chapter 5.5 of the Porter-Cologne Water Quality Control Act, and Regional Boards shall limit the mass emissions of substances as necessary to meet such limitations. Regional Boards may set more restrictive mass emission rates and concentration standards than those which are referenced in this policy to reflect dissimilar tolerances to wastewater constituents among different receiving water bodies.

2. All dischargers of thermal wastes or elevated temperature wastes to enclosed bays and estuaries which are permitted pursuant to this policy shall comply with the "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of Califonia", State Water Resources Control Board, 1972, and with amendments and supplements thereto.

3. Radiological limits for waste discharges (for which regulatory responsibility is not preempted by the Federal Government) shall be at least as restrictive as limitations indicated in Section 30269, and Section 30355, Appendix A, Table II, of the California Administrative Code.

4. Dredge spoils to be disposed of in bay and estuarine waters must comply with federal criteria for determining the acceptability of dredged spoils to marine waters, and must be certified by the State Board or Regional Boards as in compliance with State Plans and Policies.

CHAPTER III.

DISCHARGE PROHIBITIONS

1. New discharges[5] of municipal wastewaters and industrial process waters[2] (exclusive of cooling water discharges) to enclosed bays and estuaries, other than the San Francisco Bay-Delta system, which are not consistently treated and discharged in a manner that would enhance the quality of receiving waters above that which would occur in the absence of the discharge, shall be prohibited.
2. The discharge of municipal and industrial waste sludge and untreated sludge digester supernatant, centrate, or filtrate to enclosed bays and estuaries shall be prohibited.
3. The deposition of rubbish or refuse into surface waters or at any place where they would be eventually transported to enclosed bays or estuaries shall be prohibited.[6]
4. The direct or indirect discharge of silt, sand, soil clay, or other earthen materials from onshore operations including mining, construction, agriculture, and lumbering, in quantities which unreasonably affect or threaten to affect beneficial uses shall be prohibited.
5. The discharge of materials of petroleum origin in sufficient quantities to be visible or in violation of waste discharge requirements shall be prohibited, except when such discharges are conducted for scientific purposes. Such testing must be approved by the Executive Officer of the Regional Board and the Department of Fish and Game.
6. The discharge of any radiological, chemical, or biological warfare agent or high-level radioactive waste shall be prohibited.
7. The discharge or by-passing of untreated waste to bays and estuaries shall be prohibited.[7]

CHAPTER IV.

GENERAL PROVISIONS

A. Effective Date

This policy is in effect as of the date of adoption by the State Water Resources Control Board.

B. Review and Revision of Plans, Policies and Waste Discharge Requirements

Provisions of existing or proposed policies or water quality control plans adopted by the State or Regional Boards for enclosed bays or estuaries shall be amended to conform with the applicable provisions of this policy.

Each appropriate Regional Board shall review and revise the waste discharge requirements with appropriate time schedules for existing discharges to achieve compliance with this policy and applicable water quality objectives. Each Regional Board affected by this policy shall set forth for each discharge allowable mass emission rates for each applicable effluent characteristic included in waste discharge requirements.

Regional Boards shall finalize waste discharge requirements as rapidly as is consistent with the National Pollutant Discharge Elimination System Permit Program.

C. Administration of Clean Water Grants Program

The Clean Water Grants Program shall require that the environmental impact report for any existing or proposed wastewater discharge to enclosed bays and estuaries, other than the San Francisco Bay-Delta system, shall evaluate whether or not the discharge would enhance the quality of receiving waters above that which would occur in the absence of the discharge.

The Clean Water Grants Program shall require that each study plan and project report (beginning with F. Y. 1974-75 projects) for a proposed wastewater treatment or conveyance facility within the San Francisco Bay-Delta system shall contain an evaluation of the degree to which the proposed project represents a necessary and cost-effective stage in a program leading to compliance with an objective of full protection of the biota and beneficial uses of Bay-Delta waters.

D. Administration of Water Rights

Any applicant for a permit to appropriate from a water-course which is tributary to an enclosed bay or estuary may be required to present to the State Board an analysis of the anticipated effects of the proposed appropriation on water quality and beneficial uses of the effected bay or estuary.

E. Monitoring Program

The Regional Board shall require dischargers to conduct self-monitoring programs and submit reports as necessary to determine compliance with waste discharge requirements and to evaluate the effectiveness of wastewater control programs. Such monitoring programs shall comply with applicable sections of the State Board's Administrative Procedures, and any additional guidelines which may be issued by the Executive Officer of the State Board.

FOOTNOTES

1/ Enclosed bays are indentations along the coast which enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between headlands or outer most harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. This definition includes, but is not limited to: Humboldt Bay, Bodega Harbor, Tomales Bay, Drakes Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay.

Estuaries, including coastal lagoons, are waters at the mouths of streams which serve as mixing zones for fresh and ocean waters.
Mouths of streams which are temporarily separated from the ocean by sandbars shall be considered as estuaries.
Estuarine waters will generally be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters shall be considered to extend seaward if significant mixing of fresh and saltwater occurs in the open coastal waters. Estuarine waters include, but are not limited to, the Sacramento-San Joaquin Delta, as defined by Section 12220 of the California Water Code, Suisun Bay, Carquinez Strait downstream to Carquinez Bridge, and appropriate areas of the Smith, Klamath, Mad, Eel, Noyo, and Russian Rivers.

2/ For the purpose of this policy, treated ballast waters and innocuous nonmunicipal wastewater such as clear brines, wash-water, and pool drains are not necessarily considered industrial process wastes, and may be allowed by Regional Boards under discharge requirements that provide protection to the beneficial uses of the receiving water.

3/ Undiluted wastewaters covered under this exception provision shall not produce less than 90 percent survival, 50 percent of the time, and not less than 70 percent survival, 10 percent of the time of a standard test species in a 96-hour static or continuous flow bioassay test using undiluted waste. Maintenance of these levels of survival shall not by themselves constitute sufficient evidence that the discharge satisfies the criteria of enhancing the quality of the receiving water above that which occur in the absence of the discharge. Full and uninterrupted protection for the beneficial uses of the receiving water must be maintained. A Regional Board may require physical, chemical, bioassay, and bacteriological assessment of treated wastewater quality prior to authorizing release to the bay or estuary of concern.

4/ Initial dilution zone is defined as the volume of water near the point of discharge within which the waste immediately mixes with the bay or estuarine water due to the momentum of the waste discharge and the difference in density between the waste and receiving water.

5/ A new discharge is a discharge for which a Regional Board has not received a report of waste discharge prior to the date of adoption of this policy, and which was not in existence prior to the date of adoption of this policy.

6/ Rubbish and refuse include any cans, bottles, paper, plastic, vegetable matter, or dead animals or dead fish deposited or caused to be deposited by man.

7/ The prohibition does not apply to cooling water streams which comply with the "Water Quality Control Plan for the Control of Temperature in Coastal and Interstate Waters and Enclosed Bays and Estuaries of California" - State Water Resources Control Board.

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 74-43

WATER QUALITY CONTROL POLICY FOR THE
ENCLOSED BAYS AND ESTUARIES OF CALIFORNIA

WHEREAS:

1. The Board finds it necessary to promulgate water quality principles, guidelines, effluent quality requirements, and prohibitions to govern the disposal of waste into the enclosed bays and estuaries of California;

2. The Board, after review and analysis of testimony received at public hearings, has determined that it is both feasible and desirable to require that the discharge of municipal wastewaters and industrial process waters to enclosed bays and estuaries (other than the San Francisco Bay-Delta system) should only be allowed when a discharge enhances the quality of the receiving water above that which would occur in the absence of the discharge;

3. The Board has previously promulgated requirements for the discharge of thermal and elevated temperature wastes to enclosed bays and estuaries (Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California - SWRCB, 1972);

4. The Board, after review and analysis of testimony received at public hearings, has determined that implementation of a program which controls toxic effects through a combination of source control for toxic materials, upgraded waste treatment, and improved dilution of wastewaters, will result in timely and cost-effective progress toward an objective of providing full protection to the biota and beneficial uses of San Francisco Bay-Delta waters;

5. The Board intends to implement monitoring programs to determine the effects of source control programs, upgraded treatment, and improved dispersion of wastewaters on the condition of the biota and beneficial uses of San Francisco Bay-Delta waters.

THEREFORE, BE IT RESOLVED, that

1. The Board hereby adopts the "Water Quality Control Policy for the Enclosed Bays and Estuaries of California".

2. The Board hereby directs all affected California Regional Water Quality Control Boards to implement the provisions of the policy.

3. The Board hereby declares its intent to determine from time to time the need for revising the policy to assure that it reflects current knowledge of water quality objectives necessary to protect beneficial uses of bay and estuarine waters and that it is based on latest technological improvements.

CERTIFICATION

The undersigned, Executive Officer of the State Water Resources Control Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 16, 1974.

Bill B. Dendy
Executive Officer

Appendix 4

State Water Board Resolution No. 75-58
Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling

https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1975/rs75_058.pdf

Appendix 5

State Water Board Resolution No. 77-1
Policy with Respect to Water Reclamation in California

https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1977/rs77_001.pdf

Appendix 6

State Water Board Resolution No. 87-22
Policy on the Disposal of Shredder Waste

https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1987/rs1987_0022.pdf

Appendix 7

State Water Board Resolution No. 88-23
Policy Regarding the Underground Storage Tank Pilot Program

https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1988/rs1988_0023.pdf

Appendix 8

State Water Board Resolution No. 88-63
Sources of Drinking Water Policy

https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2006/rs2006_0008_rev_rs88_63.pdf

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 92-49
(As Amended on April 21, 1994)

POLICIES AND PROCEDURES FOR INVESTIGATION AND CLEANUP AND ABATEMENT OF DISCHARGES UNDER WATER CODE SECTION 13304

WHEREAS:

1. California Water Code (WC) Section 13001 provides that it is the intent of the Legislature that the State Water Resources Control Board (**State Water Board**) and each Regional Water Quality Control Board (**Regional Water Board**) shall be the principal state agencies with primary responsibility for the coordination and control of water quality. The State and Regional Water Boards shall conform to and implement the policies of the Porter-Cologne Water Quality Control Act (Division 7, commencing with WC Section 13000) and shall coordinate their respective activities so as to achieve a unified and effective water quality control program in the state;

2. WC Section 13140 provides that the State Water Board shall formulate and adopt State Policy for Water Quality Control;

3. WC Section 13240 provides that Water Quality Control Plans shall conform to any State Policy for Water Quality Control;

4. WC Section 13304 requires that any person who has discharged or discharges waste into waters of the state in violation of any waste discharge requirement or other order or prohibition issued by a Regional Water Board or the State Water Board, or who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance may be required to clean up the discharge and abate the effects thereof. This section authorizes Regional Water Boards to require complete cleanup of all waste discharged and restoration of affected water to background conditions (i.e., the water quality that existed before the discharge). The term waste discharge requirements includes those which implement the National Pollutant Discharge Elimination System;

5. WC Section 13307 provides that the State Water Board shall establish policies and procedures that its representatives and the representatives of the Regional Water Boards shall follow for the oversight of investigations and cleanup and abatement activities resulting from discharges of hazardous substances, including:

   a. The procedures the State Water Board and the Regional Water Boards will follow in making decisions as to when a person may be required to undertake an investigation to determine if an unauthorized hazardous substance discharge has occurred;

   b. Policies for carrying out a phased, step-by-step investigation to determine the nature and extent of possible soil and ground water contamination or pollution at a site;

   c. Procedures for identifying and utilizing the most cost-effective methods for detecting contamination or pollution and cleaning up or abating the effects of contamination or pollution;

   d. Policies for determining reasonable schedules for investigation and cleanup, abatement, or other remedial action at a site. The policies shall recognize the danger to public health and the waters of the state posed by an unauthorized discharge and the need to mitigate those dangers while at the same time taking into account, to the extent possible, the resources, both financial and technical, available to the person responsible for the discharge;

6. "Waters of the state" include both ground water and surface water;

7. Regardless of the type of discharge, procedures and policies applicable to investigations, and cleanup and abatement activities are similar. It is in the best interest of the people of the state for the State Water Board to provide consistent guidance for Regional Water Boards to apply to investigation, and cleanup and abatement;

8. WC Section 13260 requires any person discharging or proposing to discharge waste that could affect waters of the state, or proposing to change the character, location, or volume of a discharge to file a report with and receive requirements from the Regional Water Board;

9. WC Section 13267 provides that the Regional Water Board may require dischargers, past dischargers, or suspected dischargers to furnish those technical or monitoring reports as the Regional Water Board may specify, provided that the burden, including costs, of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports;

10. WC Section 13300 states that the Regional Water Board may require a discharger to submit a time schedule of specific actions the discharger shall take in order to correct or prevent a violation of requirements prescribed by the Regional Water Board or the State Water Board;

11. California Health and Safety Code (**HSC**) Section 25356.1 requires the Department of Toxic Substances Control (**DTSC**) or, if appropriate, the Regional Water Board to prepare or approve remedial action plans for sites where hazardous substances were released to the environment if the sites have been listed pursuant to HSC Section 25356 (state "Superfund" priority list for cleanup of sites);

12. Coordination with the U.S. Environmental Protection Agency (**USEPA**), state agencies within the California Environmental Protection Agency (**Cal/EPA**) (e.g., DTSC, Air Resources Control Board), air pollution control districts, local environmental health agencies, and other responsible federal, state, and local agencies: (1) promotes effective protection of water quality, human health, and the environment and (2) is in the best interest of the people of the state. The principles of coordination are embodied in many statutes, regulations, and interagency memoranda of understanding (**MOU**) or agreement which affect the State and Regional Water Boards and these agencies;

13. In order to clean up and abate the effects of a discharge or threat of a discharge, a discharger may be required to perform an investigation to define the nature and extent of the discharge or threatened discharge and to develop appropriate cleanup and abatement measures;

14. Investigations that were not properly planned have resulted in increases in overall costs and, in some cases, environmental damage. Overall costs have increased when original corrective actions were later found to have had no positive effect or to have exacerbated the pollution. Environmental damage may increase when a poorly conceived investigation or cleanup and abatement program allows pollutants to spread to previously unaffected waters of the state;

15. A phased approach to site investigation should facilitate adequate delineation of the nature and extent of the pollution, and may reduce overall costs and environmental damage, because: (1) investigations inherently build on information previously gained; (2) often data are dependent on seasonal and other temporal variations; and (3) adverse consequences of greater cost or increased environmental damage can result from improperly planned investigations and the lack of consultation and coordination with the Regional Water Board. However, there are circumstances under which a phased, iterative approach may not be necessary to protect water quality, and there are other circumstances under which phases may need to be compressed or combined to expedite cleanup and abatement;

16. Preparation of written workplans prior to initiation of significant elements or phases of investigation, and cleanup and abatement generally saves Regional Water Board and discharger resources. Results are superior, and the overall cost-effectiveness is enhanced;

17. Discharger reliance on qualified professionals promotes proper planning, implementation, and long-term cost-effectiveness of investigation, and cleanup and abatement activities. Professionals should be qualified, licensed where applicable, and competent and proficient in the fields pertinent to the required activities. California Business and Professions Code Sections 6735, 7835, and 7835.1 require that engineering and geologic evaluations and judgements be performed by or under the direction of registered professionals;

18. WC Section 13360 prohibits the Regional Water Boards from specifying, but not from suggesting, methods that a discharger may use to achieve compliance with requirements or orders. It is the responsibility of the discharger to propose methods for Regional Water Board review and concurrence to achieve compliance with requirements or orders;

19. The USEPA, California state agencies, the American Society for Testing and Materials, and similar organizations have developed or identified methods successful in particular applications. Reliance on established, appropriate methods can reduce costs of investigation, and cleanup and abatement;

20. The basis for Regional Water Board decisions regarding investigation, and cleanup and abatement includes: (1) site-specific characteristics; (2) applicable state and federal statutes and regulations; (3) applicable water quality control plans adopted by the State Water Board and Regional Water Boards, including beneficial uses, water quality objectives, and implementation plans; (4) State Water Board and Regional Water Board policies, including State Water Board Resolutions No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California) and No. 88-63 (Sources of Drinking Water); and (5) relevant standards, criteria, and advisories adopted by other state and federal agencies;

21. Discharges subject to WC Section 13304 may include discharges of waste to land; such discharges may cause, or threaten to cause, conditions of soil or water pollution or nuisance that are analogous to conditions associated with migration of waste or fluid from a waste management unit;

22. The State Water Board has adopted regulations governing discharges of waste to land (California

Code of Regulations (CCR), Title 23, Division 3, Chapter 15);

23. State Water Board regulations governing site investigation and corrective action at underground storage tank unauthorized release sites are found in 23 CCR Division 3, Chapter 16, in particular Article 11 commencing with Section 2720;

24. It is the responsibility of the Regional Water Board to make decisions regarding cleanup and abatement goals and objectives for the protection of water quality and the beneficial uses of waters of the state within each Region;

25. Cleanup and abatement alternatives that entail discharge of residual wastes to waters of the state, discharges to regulated waste management units, or leaving wastes in place, create additional regulatory constraints and long-term liability, which must be considered in any evaluation of cost-effectiveness;

26. The Porter-Cologne Water Quality Control Act allows Regional Water Boards to impose more stringent requirements on discharges of waste than any statewide requirements promulgated by the State Water Board (e.g., in this Policy) or than water quality objectives established in statewide or regional water quality control plans as needed to protect water quality and to reflect regional and site-specific conditions.

THEREFORE BE IT RESOLVED:

These policies and procedures apply to all investigations, and cleanup and abatement activities, for all types of discharges subject to Section 13304 of the Water Code.

I. The Regional Water Board shall apply the following procedures in determining whether a person shall be required to investigate a discharge under WC Section 13267, or to clean up waste and abate the effects of a discharge or a threat of a discharge under WC Section 13304. The Regional Water Board shall:

A. Use any relevant evidence, whether direct or circumstantial, including, but not limited to, evidence in the following categories:

1. Documentation of historical or current activities, waste characteristics, chemical use, storage or disposal information, as documented by public records, responses to questionnaires, or other sources of information;

2. Site characteristics and location in relation to other potential sources of a discharge;

3. Hydrologic and hydrogeologic information, such as differences in upgradient and downgradient water quality;

4. Industry-wide operational practices that historically have led to discharges, such as leakage of pollutants from wastewater collection and conveyance systems, sumps, storage tanks, landfills, and clarifiers;

5. Evidence of poor management of materials or wastes, such as improper storage practices or inability to reconcile inventories;

6. Lack of documentation of responsible management of materials or wastes, such as lack of manifests or lack of documentation of proper disposal;

7. Physical evidence, such as analytical data, soil or pavement staining, distressed vegetation, or unusual odor or appearance;

8. Reports and complaints;

9. Other agencies' records of possible or known discharge; and

10. Refusal or failure to respond to Regional Water Board inquiries;

B. Make a reasonable effort to identify the dischargers associated with the discharge. It is not necessary to identify all dischargers for the Regional Water Board to proceed with requirements for a discharger to investigate and clean up;

C. Require one or more persons identified as a discharger associated with a discharge or threatened discharge subject to WC Section 13304 to undertake an investigation, based on findings of I.A and I.B above;

D. Notify appropriate federal, state, and local agencies regarding discharges subject to WC Section 13304 and coordinate with these agencies on investigation, and cleanup and abatement activities.

II. The Regional Water Board shall apply the following policies in overseeing: (a) investigations to determine the nature and horizontal and vertical extent of a discharge and (b) appropriate cleanup and abatement measures.

A. The Regional Water Board shall:

1. Require the discharger to conduct investigation, and cleanup and abatement, in a progressive sequence ordinarily consisting of the following phases, provided that the sequence shall be adjusted to accommodate site-specific circumstances, if necessary:

a. Preliminary site assessment (to confirm the discharge and the identity of the dischargers; to identify affected or threatened waters of the state and their beneficial uses; and to develop preliminary information on the nature, and vertical and horizontal extent, of the discharge);

b. Soil and water investigation (to determine the source, nature and extent of the discharge with sufficient detail to provide the basis for decisions regarding subsequent cleanup and abatement actions, if any are determined by the Regional Water Board to be necessary);

c. Proposal and selection of cleanup and abatement action (to evaluate feasible and effective cleanup and abatement actions, and to develop preferred cleanup and abatement alternatives);

d. Implementation of cleanup and abatement action (to implement the selected alternative, and to monitor in order to verify progress);

e. Monitoring (to confirm short- and long-term effectiveness of cleanup and abatement);

2. Consider, where necessary to protect water quality, approval of plans for investigation, or cleanup and abatement, that proceed concurrently rather than sequentially, provided that overall cleanup and abatement goals and objectives are not compromised, under the following conditions:

   a. Emergency situations involving acute pollution or contamination affecting present uses of waters of the state;

   b. Imminent threat of pollution;

   c. Protracted investigations resulting in unreasonable delay of cleanup and abatement; or

   d. Discharges of limited extent which can be effectively investigated and cleaned up within a short time;

3. Require the discharger to extend the investigation, and cleanup and abatement, to any location affected by the discharge or threatened discharge.

4. Where necessary to protect water quality, name other persons as dischargers, to the extent permitted by law;

5. Require the discharger to submit written workplans for elements and phases of the investigation, and cleanup and abatement, whenever practicable;

6. Review and concur with adequate workplans prior to initiation of investigations, to the extent practicable. The Regional Water Board may give verbal concurrence for investigations to proceed, with written follow-up. An adequate workplan should include or reference, at least, a comprehensive description of proposed investigative, cleanup, and abatement activities, a sampling and analysis plan, a quality assurance project plan, a health and safety plan, and a commitment to implement the workplan;

7. Require the discharger to submit reports on results of all phases of investigations, and cleanup and abatement actions, regardless of degree of oversight by the Regional Water Board;

8. Require the discharger to provide documentation that plans and reports are prepared by professionals qualified to prepare such reports, and that each component of investigative and cleanup and abatement actions is conducted under the direction of appropriately qualified professionals. A statement of qualifications of the responsible lead professionals shall be included in all plans and reports submitted by the discharger;

9. Prescribe cleanup levels which are consistent with appropriate levels set by the Regional Water Board for analogous discharges that involve similar wastes, site characteristics, and water quality considerations;

B. The Regional Water Board may identify ... investigative and cleanup and abatement activities that the discharger could undertake without Regional Water Board oversight, provided that these investigations and cleanup and abatement activities shall be consistent with the policies and procedures established herein;

III. The Regional Water Board shall implement the following procedures to ensure that dischargers shall have the opportunity to select cost-effective methods for detecting discharges or threatened discharges and methods for cleaning up or abating the effects thereof. The Regional Water Board shall:

A. Concur with any investigative and cleanup and abatement proposal which the discharger demonstrates and the Regional Water Board finds to have a substantial likelihood to achieve compliance, within a reasonable time frame, with cleanup goals and objectives that implement the applicable Water Quality Control Plans and Policies adopted by the State Water Board and Regional Water Boards, and which implement permanent cleanup and abatement solutions which do not require ongoing maintenance, wherever feasible;

B. Consider whether the burden, including costs, of reports required of the discharger during the investigation and cleanup and abatement of a discharge bears a reasonable relationship to the need for the reports and the benefits to be obtained from the reports;

C. Require the discharger to consider the effectiveness, feasibility, and relative costs of applicable alternative methods for investigation, and cleanup and abatement. Such comparison may rely on previous analysis of analogous sites, and shall include supporting rationale for the selected methods;

D. Ensure that the discharger is aware of and considers techniques which provide a cost-effective basis for initial assessment of a discharge.

1. The following techniques may be applicable:
   a. Use of available current and historical photographs and site records to focus investigative activities on locations and wastes or materials handled at the site;
   b. Soil gas surveys;
   c. Shallow geophysical surveys;
   d. Remote sensing techniques;
2. The above techniques are in addition to the standard site assessment techniques, which include:
   a. Inventory and sampling and analysis of materials or wastes;
   b. Sampling and analysis of surface water;
   c. Sampling and analysis of sediment and aquatic biota;
   d. Sampling and analysis of ground water;
   e. Sampling and analysis of soil and soil pore moisture;
   f. Hydrogeologic investigation;

E. Ensure that the discharger is aware of and considers the following cleanup and abatement methods or combinations thereof, to the extent that they may be applicable to the discharge or threat thereof:

1. Source removal and/or isolation;
2. In-place treatment of soil or water:
   a. Bioremediation;
   b. Aeration;
   c. Fixation;
3. Excavation or extraction of soil, water, or gas for on-site or off-site treatment by the following techniques:
   a. Bioremediation;
   b. Thermal destruction;
   c. Aeration;
   d. Sorption;
   e. Precipitation, flocculation, and sedimentation;
   f. Filtration;
   g. Fixation;
   h. Evaporation;
4. Excavation or extraction of soil. water, or gas for appropriate recycling, re-use, or disposal;

F. Require actions for cleanup and abatement to:

1. Conform to the provisions of Resolution No. 68-16 of the State Water Board, and the Water Quality Control Plans of the State and Regional Water Boards, provided that under no circumstances shall these provisions be interpreted to require cleanup and abatement which achieves water quality conditions that are better than background conditions;
2. Implement the provisions of Chapter 15 that are applicable to cleanup and abatement, as follows:
   a. If cleanup and abatement involves corrective action at a waste management unit regulated by waste discharge requirements issued under Chapter 15, the Regional Water Board shall implement the provisions of that chapter;
   b. If cleanup and abatement involves removal of waste from the immediate place of release and discharge of the waste to land for treatment, storage, or disposal, the Regional Water Board

shall regulate the discharge of the waste through waste discharge requirements issued under Chapter 15, provided that the Regional Water Board may waive waste discharge requirements under WC Section 13269 if the waiver is not against the public interest (e.g., if the discharge is for short-term treatment or storage, and if the temporary waste management unit is equipped with features that will ensure full and complete containment of the waste for the treatment or storage period); and

c. If cleanup and abatement involves actions other than removal of the waste, such as containment of waste in soil or ground water by physical or hydrological barriers to migration (natural or engineered), or in-situ treatment (e.g., chemical or thermal fixation, or bioremediation), the Regional Water Board shall apply the applicable provisions of Chapter 15, to the extent that it is technologically and economically feasible to do so; and

3. Implement the applicable provisions of Chapter 16 for investigations and cleanup and abatement of discharges of hazardous substances from underground storage tanks; and

G. Ensure that dischargers are required to clean up and abate the effects of discharges in a manner that promotes attainment of either background water quality, or the best water quality which is reasonable if background levels of water quality cannot be restored, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible; in approving any alternative cleanup levels less stringent than background, apply Section 2550.4 of Chapter 15, or, for cleanup and abatement associated with underground storage tanks, apply Section 2725 of Chapter 16, provided that the Regional Water Board considers the conditions set forth in Section 2550.4 of Chapter 15 in setting alternative cleanup levels pursuant to Section 2725 of Chapter 16; any such alternative cleanup level shall:

1. Be consistent with maximum benefit to the people of the state;
2. Not unreasonably affect present and anticipated beneficial use of such water; and
3. Not result in water quality less than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards.

IV. The Regional Water Board shall determine schedules for investigation, and cleanup and abatement, taking into account the following factors:

A. The degree of threat or impact of the discharge on water quality and beneficial uses;

B. The obligation to achieve timely compliance with cleanup and abatement goals and objectives that implement the applicable Water Quality Control Plans and Policies adopted by the State Water Board and Regional Water Boards;

C. The financial and technical resources available to the discharger; and

D. Minimizing the likelihood of imposing a burden on the people of the state with the expense of cleanup and abatement, where feasible.

V. The State and Regional Water Boards shall develop an expedited technical conflict resolution process so when disagreements occur, a prompt appeal and resolution of the conflict is accomplished.

CERTIFICATION

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on June 18, 1992, and amended at a meeting of the State Water Resources Control Board held on April 21, 1994.

Maureen Marché

Administrative Assistant to the Board

9/6/6

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 93-62

POLICY FOR REGULATION OF DISCHARGES OF MUNICIPAL SOLID WASTE

WHEREAS:

1. **Water quality protection**–The State Water Resources Control Board (**State Water Board**) and each Regional Water Quality Control Board (**Regional Water Board**) are the state agencies with primary responsibility for the coordination and control of water quality (California Water Code Section 13001, "WC §13001");

2. **State Policy for Water Quality Control**–The State Water Board is authorized to adopt State Policy For Water Quality Control which may consist of or contain "...principles and guidelines deemed essential by the state board for water quality control" (Authority: WC §§1058, 13140, 13142);

3. **State agency compliance**–All State agencies shall comply with State Policy For Water Quality Control regarding any activities that could affect water quality (WC §13146);

4. **Waste Discharge Requirements**–Regional Water Boards regulate discharges of waste that could affect the quality of waters of the state, including discharges of solid waste to land, through the issuance of waste discharge requirements (WC §13263);

5. **Solid waste disposal**–The State Water Board is directed to classify wastes according to threat to water quality and to classify waste disposal sites according to ability to protect water quality (WC §13172);

6. **Chapter 15**–The State Water Board promulgated regulations, codified in Chapter 15 of Division 3 of Title 23 of the California Code of Regulations (23 CCR §§2510-2601, "**Chapter 15**"), governing discharges of waste to land. These regulations:

   a. Contain classification criteria for wastes and for disposal sites;

   b. Prescribe minimum standards for the siting, design, construction, monitoring, and closure of waste management units;

7. **Federal authority**–The federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (42 USC §6901, *et seq*, "SWDA"), authorizes development of nationwide standards for disposal sites for municipal solid waste [MSW], including criteria for sanitary landfills (SWDA §§1007, 4004, 42 USC §§6907, 6944);

8. **Federal MSW regulations**–On October 9, 1991, the United States Environmental Protection Agency (USEPA) promulgated regulations that apply, in California, to dischargers who own or operate landfills which accept municipal solid waste on or after October 9, 1991, (**MSW landfills**), regardless of whether or not a permit is issued (Title 40, Code of Federal Regulations [CFR], Parts 257 and 258, "**federal MSW regulations**"). The majority of the federal MSW regulations become effective on what is hereinafter referred to as the "**Federal Deadline**" [40 CFR §258.1(e)], currently October 9, 1993;

9. **States required to apply federal MSW regulations**–Each state must "...adopt and implement a permit program or other system of prior approval and conditions to assure that each...[MSW landfill]...within such state...will comply with the...[federal MSW landfill regulations]." State regulations promulgated to satisfy this requirement are subject to approval by USEPA. (SWDA §§4003, 4005, 42 USC §§6943, 6945);

10. **Approved state's authority**–The permitting authority in an "approved state" may approve engineered alternatives to certain prescriptive standards contained in the federal MSW regulations, provided that the alternative meets specified conditions and performance standards (40 CFR 256.21);

11. **State application**–The State Water Board and the Integrated Waste Management Board submitted an application for program approval to the USEPA on February 1, 1993;

12. **Chapter 15 deficiencies**–The State Water Board's Chapter 15 regulations are comparable to the federal MSW regulations. Nevertheless, the USEPA has identified several areas of Chapter 15 which are not adequate to ensure compliance with

certain provisions of the federal MSW regulations, as summarized in Attachment I;

13. **Rulemaking to amend Chapter 15**–There is insufficient time, prior to October 9, 1993, for the State Water Board to amend Chapter 15 to ensure complete consistency with the federal MSW regulations and subsequently for the USEPA to carry out a review of the revised chapter and to render a decision approving California's permit program;

14. **Composite liner(s) needed**–Solid Waste Assessment Test Reports, submitted to Regional Water Boards pursuant to WC §13273, have shown that releases of leachate and gas from MSW landfills that are unlined are likely to degrade the quality of underlying ground water. Research on liner systems for landfills indicates that (a) single clay liners will only delay, rather than preclude, the onset of leachate leakage, and (b) the use of composite liners represents the most effective approach for reliably containing leachate and landfill gas;

15. **Lack of compliance with Chapter 15**–WDRs for many MSW landfills have not been revised to meet the most recent Chapter 15 amendments;

16. **CEQA**–Adoption of this policy is categorically exempt from the provisions of the California Environmental Quality Act (Division 13, commencing with §21000, of the Public Resources Code, "CEQA") because it is an action by a regulatory agency for the protection of natural resources, within the meaning of §15307 of the *Guidelines For Implementation of California Environmental Quality Act* in Title 14 of the California Code of Regulations;

17. **Public notice**–Notice of the State Water Board's proposal to adopt a State Policy for Water Quality Control regarding Regulation of Discharges of Municipal Solid Waste was published on March 31, 1993, and a public hearing on the matter was held on June 1, 1993; and

18. **Reference**—This Policy implements, interprets, or makes specific the following Water Code Sections: §13142, §13160, §13163, and §13172.

THEREFORE BE IT RESOLVED:

I. Implementation of the Chapter 15 and federal MSW regulations:

A. **WDR revision**—In order to insure compliance with SWDA §§4003, 4005 (42 USC §§6943, 6945), each Regional Water Board shall henceforth implement in waste discharge requirements for discharges at MSW landfills, both the Chapter 15 regulations and those applicable provisions of the federal MSW regulations that are necessary to protect water quality, particularly the containment provisions stipulated in Section III of this Policy and the provisions identified in Attachment I to this Policy, and shall revise existing waste discharge requirements to accomplish this according to the schedule provided in Section II of this Policy;

B. **Alternatives limited**—The Regional Water Board shall not rely upon any exemption or alternative allowed by Chapter 15 if such an exemption or alternative would not be allowed under the federal MSW regulations, nor shall the Regional Water Board waive waste discharge requirements for the discharge of municipal solid waste at landfills;

C. **Applicability in the absence of useable waters**—Although all other provisions of this Policy would continue to apply, the Regional Water Board shall have the discretion to prescribe requirements for containment systems and water quality monitoring systems that are less stringent than the design and construction standards in this Policy, in the federal MSW regulations, and in Chapter 15 if the Regional Water Board finds that the containment systems satisfy the performance standard for liners in the federal MSW regulations [40 CFR §§258.40(a)(1) and (c)], that the prerequisite for an exemption from ground water monitoring in the federal MSW regulations is satisfied [40 CFR §258.50(b)], and that either of the following two conditions is satisfied:

1. A hydrogeologic investigation shows that:

   a. There is no aquifer (i.e., a geological formation, group of formations, or portion of a formation capable of yielding significant quantities of ground water to wells or springs) underlying the facility property; and

   b. It is not reasonably foreseeable that fluids—including leachate and landfill gas—migrating from the landfill could reach any aquifer or surface water body in the ground water basin within which the landfill is located; or

2. The ground water in the basin underlying the facility has no beneficial uses and a hydrogeologic investigation shows that it is not reasonably foreseeable that fluids—including leachate and landfill gas—migrating from the landfill could reach any aquifer or surface water body having beneficial uses.

II. Implementation schedule:

A. **MSW landfills**–By the Federal Deadline (e.g., October 9, 1993), each Regional Water Board shall amend the waste discharge requirements for discharges of waste at all MSW landfills in its region (including discharges to any area outside the actual waste boundaries of an MSW landfill as they exist on that date ["**lateral expansion**" hereinafter]), to require persons who own or operate such landfills to:

1. Except for the ground water monitoring and corrective action requirements under 40 CFR §§258.50-258.58, comply with all applicable portions of the federal MSW regulations by the Federal Deadline; and

2. Achieve full compliance with Chapter 15 and with the federal ground water monitoring and corrective action requirements under 40 CFR §§258.50-258.58 as follows:

   a. For all MSW landfills that are less than one mile from a drinking water intake (surface or subsurface), by no later than October 9, 1994; and

   b. For all other MSW landfills that have accepted waste prior to the effective date of this Policy, by no later than October 9, 1995;

B. **Proposed MSW landfills**–As of the date of the Federal Deadline, waste discharge requirements for the discharge of waste at all MSW landfills that have not accepted waste as of that date shall ensure full compliance both with Chapter 15 and with the federal MSW regulations prior to the discharge of waste to that landfill.

III. Containment–As of the Federal Deadline, discharges of waste to either an MSW landfill that has not received waste as of that date or to a lateral expansion of an MSW landfill unit are prohibited unless the discharge is to an area equipped with a containment system which is constructed in accordance with the standard of the industry and which meets the following additional requirements for both liners and leachate collection systems:

A. **Standards for liners**

1. **Post-Federal Deadline construction**–Except as provided in either §III.A.3. (for steep sideslopes) or §III.A.2. (for new discharges to pre-existing liners), after the Federal Deadline, all containment systems shall include a composite liner that consists of an upper synthetic flexible membrane component (**Synthetic Liner**) and a lower component of soil, and that either:

   a. **Prescriptive Design**:

      i. **Upper component**–Has a Synthetic Liner at least 40-mils thick (or at least 60-mils thick if of high density polyethylene) that is installed in direct and uniform contact with the underlying compacted soil component described in paragraph III.A.1.a.ii.; and

      ii. **Lower component**–Has a layer of compacted soil that is at least two feet thick and that has an hydraulic conductivity of no more than 1×10^{-7} cm/sec (0.1 feet/year); or

   b. **Alternative design**–Satisfies the performance criteria contained in 40 CFR §§258.40(a)(1) and (c), and satisfies the criteria for an engineered alternative to the above Prescriptive Design [as provided by 23 CCR §2510(b)], where the performance of the alternative composite liner's components, in combination, equal or exceed the waste containment capability of the Prescriptive Design;

2. **New discharges to liners constructed prior to the Federal Deadline**–Except as provided in §III.A.3. (for steep sideslopes), containment systems that will begin to accept municipal solid waste after the Federal Deadline, but which have been constructed prior to the Federal Deadline, are not required to meet the provisions of §III.A.1. if the containment system includes a composite liner that:

   a. **Prescriptive Design**–Features as its uppermost component a Synthetic Liner at least 40-mils thick (or at least 60-mils if high density polyethylene) that is installed in direct and uniform contact with the underlying materials; and

   b. **Performance**–Meets the performance criteria contained in 40 CFR §§258.40(a)(1) and (c);

3. **Steep sideslopes**–Containment systems installed in those portions of an MSW landfill where an engineering analysis shows, and the Regional Water Board finds, that sideslopes are too steep to permit construction of a stable composite liner that meets the prescriptive standards contained in §§III.A.1 or 2. shall include an alternative liner that meets the performance criteria

contained in 40 CFR §§258.40(a)(1) and (c) and that either:

a. Is a composite system and includes as its uppermost component a Synthetic Liner at least 40-mils thick (or at least 60-mils if high density polyethylene) that is installed in direct and uniform contact with the underlying materials; or

b. Is not a composite system, but includes a Synthetic Liner at least 60-mils thick (or at least 80-mils if of high density polyethylene) that is installed in direct and uniform contact with the underlying materials; and

B. **Standards for leachate collection**–Include a leachate collection and removal system which conveys to a sump (or other appropriate collection area lined in accordance with §III.A.) all leachate which reaches the liner, and which does not rely upon unlined or clay-lined areas for such conveyance.

CERTIFICATION

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on June 17, 1993.

Maureen Marchè
Administrative Assistant to the Board

ATTACHMENT I

To Resolution No. 93-62

Pursuant to §I.A., in writing or revising the waste discharge requirements for MSW landfills, Regional Water Boards shall implement those portions of the following sections of the federal MSW regulations that either are more stringent than, or do not exist within, Chapter 15.

- **Floodplains**–40 CFR §§258.11 and 258.16
- **Wetlands**–40 CFR §258.12
- **Unstable areas**–40 CFR §§258.15 and 258.16
- **Run-on/Run-off control systems**—40 CFR §258.26
- **Liquids acceptance**–40 CFR §§258.28 [esp. §(a)(2)]
- **Design Criteria**—40 CFR §258.40, according to the provisions of Section III
- **Well/piezometer performance**–40 CFR §258.51
- **Ground-water sampling/analysis**—40 CFR §258.53
- **Monitoring Parameters**–40 CFR §258.54 and Appendix I to Part 258
- **Constituents of Concern**–40 CFR §258.55 and Appendix II to Part 258
- **Response to a release**–40 CFR §§258.55 [esp. §(g)(1)(ii, iii)]
- **Establishing corrective action measures**–40 CFR §§258.56 [esp. §§(c and d)] and 258.57
- **Ending corrective action program**–40 CFR §258.58 [esp. §(e)]
- **Closure/post-closure**–40 CFR §§258.60-258.61 [esp. §§258.60(a-g)]
- **Deed notation**–40 CFR §258.60(i)
- **Ending post-closure**–40 CFR §258.61 [esp. §§(a and b)]
- **Corrective action financial assurance**—40 CFR §258.73

Appendix 11

State Water Board Water Quality Control Plan for Temperature in Coastal and Interstate Waters and Enclosed Bays and Estuaries in California (Thermal Plan)

https://www.waterboards.ca.gov/water_issues/programs/ocean/docs/wqplans/thermpln.pdf

Appendix 12

State Water Board Resolution No. 92-82
Exception to the Thermal Plan for Sacramento Regional County Sanitation District

https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1992/rs1992_0082.pdf

MANAGEMENT AGENCY AGREEMENT BETWEEN THE
STATE WATER RESOURCES CONTROL BOARD, STATE OF CALIFORNIA
AND THE FOREST SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE

This Management Agency Agreement is entered into by and between the State Water Resources Control Board, State of California (State Board), and the Forest Service, United States Department of Agriculture (Forest Service), acting through the Regional Forester of the Pacific Southwest Region, for the purpose of carrying out portions of the State's Water Quality Management Plan related to activities on National Forest System (NFS) lands.

WHEREAS:

1. The Forest Service and the State Board mutually desire:

   (a) To achieve the goals in the Federal Water Pollution Control Act, as amended;

   (b) To minimize duplication of effort and accomplish complementary pollution control programs;

   (c) To implement Forest Service legislative mandates for multiple use and sustained yield to meet both long- and short-term local, state, regional, and national needs consistent with the requirement for environmental protection and/or enhancement; and

   (d) To assure control of water pollution through implementation of Best Management Practices (BMPs).

2. The State Board and the Regional Water Quality Control Boards are responsible for promulgating a Water Quality Management Plan pursuant to the Federal Water Pollution Control Act, Section 208, and for approving water quality control plans promulgated by the Regional Water Quality Control Boards pursuant to state law. Both types of plans provide for attainment of water quality objectives and for protection of beneficial uses.

3. The State Board and the Regional Water Quality Control Boards are responsible for protecting water quality and for ensuring that land management activities do not adversely affect beneficial water uses.

4. Under Section 208 of the Federal Water Pollution Control Act, the State Board is required to designate management agencies to implement provisions of water quality management plans.

5. The Forest Service has the authority and responsibility to manage and protect the lands which it administers, including protection of water quality thereon.

6. The Forest Service has prepared a document entitled "Water Quality Management for National Forest System Lands in California" (hereafter referred to as the Forest Service 208 Report), which describes current Forest Service practices and procedures for protection of water quality.

7. On August 16, 1979, the State Board designated the Forest Service as the management agency for all activities on NFS lands effective upon execution of a management agency agreement.

NOW, THEREFORE, the parties hereto agree as follows:

1. The Forest Service agrees:

   (a) To accept responsibility of the Water Quality Management Agency designation for NFS lands in the State of California.

   (b) To implement on NFS lands statewide the practices and procedures in the Forest Service 208 Report.

   (c) To facilitate early State involvement in the project planning process by developing a procedure which will provide the State with notification of and communications concerning scheduled, in-process, and completed project Environmental Assessments (EAs) for projects that have potential to impact water quality.

   (d) To provide periodic project site reviews to ascertain implementation of management practices and environmental constraints identified in the EA and/or contract and permit documents.

   (e) To review annually and update the Forest Service documents as necessary to reflect changes in institutional direction, laws and implementation accomplishment as described in Section IV of the Forest Service 208 Report. A prioritization and schedule for this updating is provided in Attachment A to this Agreement.

   (f) That in cases where two or more BMPs are conflicting, the responsible Forest Service official shall assure that the practice selected meets water quality standards and protects beneficial uses.

   (g) That those issues in Attachment B to this agreement have been identified by the State and/or Regional Boards as needing further refinement before they are mutually acceptable to the Forest Service and the State Board as BMPs.

2. The State Board agrees:

   (a) The practices and procedures set forth in the Forest Service 208 Report constitute sound water quality protection and improvement on NFS lands, except with respect to those issues in Attachment B. The State and Regional Boards will work with the Forest Service to resolve those issues according to the time schedule in Attachment B.

   (b) That Section 313 of the Federal Water Pollution Control Act mandates federal agency compliance with the substantive and procedural requirements of state and local water pollution control law. It is contemplated by this agreement that Forest Service reasonable implementation of those practices and procedures and of this agreement will

2. (b) (cont.)

constitute compliance with Section 13260, subdivision (a) of Section 13263, and subdivision (b) of Section 13264, Water Code. It is further contemplated that these provisions requiring a report of proposed discharge and issuance of waste discharge requirements for nonpoint source discharges will be waived by the Regional Board pursuant to Section 13269, Water Code provided that the Forest Service reasonably implements those practices and procedures and the provisions of this agreement. However, waste discharges from land management activities resulting in point source discharges, as defined by the Federal Water Pollution Control Act, will be subject to NPDES permit requirements, since neither the State Board nor the Regional Board has authority to waive such permits.

(c) That implementation will constitute following the Implementation Statement, Section I of the Forest Service 208 Report.

3. It is mutually agreed:

(a) To meet no less than annually to maintain coordination/communication, report on water quality management progress, review proceedings under this agreement, and to consider revisions as requested by either party.

(b) To authorize the respective Regional Boards and National Forests to meet periodically, as necessary, to discuss water quality policy, goals, progress, and to resolve conflicts/concerns.

(c) That the development and improvement of BMPs will be through a coordinated effort with federal and state agencies for adjacent lands and areas of comparable concern.

(d) To meet periodically, as necessary, to resolve conflicts or concerns that arise from and are not resolved at the Forest and Regional Board meetings. Meetings may be initiated at the request of either party, a National Forest, or a Regional Board.

(e) To coordinate present and proposed water quality monitoring activities within or adjacent to the National Forests and to routinely make available to the other party any unrestricted water quality data and information; and to coordinate and involve one another in subsequent/continuing water quality management planning and standard development where appropriate.

(f) That nothing herein shall be construed in any way as limiting the authority of the State Board or the Regional Boards in carrying out their legal responsibilities for management or regulation of water quality.

3. (cont.)

(g) That nothing herein shall be construed as limiting or affecting in any way the legal authority of the Forest Service in connection with the proper administration and protection of National Forest System lands in accordance with federal laws and regulations.

(h) That this Agreement shall become effective as soon as it is signed by the parties hereto and shall continue in force unless terminated by either party upon ninety (90) days notice in writing to the other of intention to terminate upon a date indicated.

IN WITNESS WHEREOF, the parties hereto, by their respective duly authorized officers, have executed this Agreement in duplicate on the respective dates indicated below.

FOREST SERVICE,
U. S. DEPARTMENT OF AGRICULTURE

By _____
Regional Forester
Pacific-Southwest Region

Date: 3/17/81

By _____
Regional Forester
Intermountain Region

Date: 4-1-81

By _____
Regional Forester
Pacific Northwest Region

Date: 5-26-81

STATE WATER RESOURCES CONTROL BOARD
STATE OF CALIFORNIA

By _____
Executive Director

Date: FEB 26 1981

ATTACHMENT A

Schedule for Completing the BMPs

Priority	Best Management Practice	Completion Date (F.Y.)
1	Cumulative Watershed Impacts	'81
2	Closure or Obliteration of Temporary Roads (2.26)	'81
3	Minimization of Sidecasting (2.11)	'81
4	Stabilization of Road Prisms and of Spoil Disposal Areas	'82
5	Control of Road Maintenance Chemicals	'83-'86*
6	Tractor Windrowing on the Contour (5.5)	'83-'86*
7	Sanitary and Erosion Control for Temporary Camps	'84-'86*
8	Administering Terms of the U. S. Mining Laws (3.1)	'84-'86*

* To be firmed up to a specific fiscal year two years in advance at the annual meeting called for in Section 3(a) of this Agreement.

ATTACHMENT B

Schedule for Resolving Regional Board Issues

Region	Issue	Completion Date (F.Y.)
1	Herbicide Use (Resolution 80-5)	'81
1	Protection of Wild and Scenic Rivers	'82

MEMORANDUM OF AGREEMENT
BETWEEN
THE DEPARTMENT OF HEALTH SERVICES
AND
THE STATE WATER RESOURCES CONTROL BOARD
ON IMPLEMENTATION OF THE HAZARDOUS WASTE PROGRAM

This Memorandum of Agreement (hereinafter "MOA") sets forth those principles and procedures to which the Department of Health Services (hereinafter "Department") and the State Water Resources Control Board [hereinafter "Board", which also includes and represents the nine Regional Water Quality Control Boards (RWQCBs)] commit themselves to implement the State's Hazardous Waste Program, including support of the State's implementation of Subtitle C of the Resource Conservation and Recovery Act (RCRA, 42 USC 6921 et seq.). Specifically, the MOA covers surveillance and enforcement related to water quality at landfills, surface impoundments, waste piles, and land treatment facilities which treat, store, or dispose of hazardous waste (all hereinafter referred to as "hazardous waste management facilities"). This MOA also covers the issuance, modification, or denial of permits to facilities, including the revision of the water quality aspects of hazardous waste management facility siting, design, closure and post-closure, and surface and ground water monitoring and protection. This MOA hereby includes by reference Exhibit A, entitled "General Procedures for Permit Development for Hazardous Waste Management Facilities". This MOA and subsequent amendments shall be effective as of the date of signature by both the Director of the Department and the Chairperson of the Board. It shall be considered binding on both agencies, to the fullest extent allowed by law. No provision of this memorandum is intended to nor shall be interpreted as amending in any way the provisions of any statute, regulation, order, or permit.

BACKGROUND

The United States Environmental Protection Agency (hereinafter "EPA") may authorize states to administer and enforce a hazardous waste program pursuant to Subtitle C of RCRA, provided that the states can demonstrate to EPA that their state hazardous waste laws, regulations, and program procedures are equivalent to and consistent with the federal counterparts. The first phase of EPA's RCRA regulations were promulgated on May 19, 1980. They included hazardous waste criteria, standards for generators and transporters, and interim status standards for treatment, storage, and disposal facilities.

The remaining regulations were issued in three components, with standards for storage and treatment promulgated on January 12, 1981, standards for incinerators promulgated on January 26, 1981, and standards for land disposal promulgated on July 26, 1982. These regulations have undergone subsequent revisions and amendments to reflect changes in EPA policy and to provide for more effective environmental protection.

The Department has been designated under State law as the agency to administer and enforce the State's hazardous waste management program authorized under Section 3006(c) of RCRA. The State was granted interim RCRA Phase I authorization on June 4, 1981 and Phase IIA authorization on January 11, 1983. Interim authorization was dependent upon the existence of a state program that is "substantially equivalent" to the federal RCRA program.

Substantial equivalency was demonstrated by using existing California laws governing hazardous waste control and water quality protection, and the administrative regulations of the Department and the Board.

The Department applied for final authorization, with full input from the Board on all water quality areas, for all phases of RCRA on November 7, 1985. Final authorization of the State program depends upon the State's ability to demonstrate equivalency to and consistency with the federal program. Any inconsistencies which would make the State program less stringent must be resolved.

The Department and the Board have promulgated and will maintain regulations which make the State program equivalent to or more stringent than federal laws and regulations.

AUTHORITY

The RCRA regulations are codified in Title 40 of the Code of Federal Regulations (40 CFR) in Parts 124 and 260 through 271, inclusive.

Unless otherwise stated, all references to "federal law" shall refer to RCRA and references to federal regulations shall refer to 40 CFR, parts 124 and 260 through 271, inclusive. Because EPA may continue to amend their hazardous waste regulations, it may be necessary to revise the aforementioned list of federal regulations from time to time. Such revisions may be proposed by either party and, if agreed to by both parties, may be appended to this MOA, provided such revisions do not change the meaning of the Agreement or otherwise alter its intent.

With the exception of Article 9.5 ("Toxic Pits Cleanup Act of 1984") the Department has the authority to implement and enforce the State's Hazardous Waste Control Law, Health and Safety Code (HSC), Divison 20, Chapter 6.5. The Department also has the authority, pursuant to Sections 25159.5 and 25159.7 of the HSC, to enforce federal law until such time as the Department adopts regulations corresponding to and equivalent to, or more stringent or extensive than, federal regulations. The Department has promulgated regulations which establish, in detail, standards for the handling, processing, use, storage, and disposal of wastes, California Administrative Code, Title 22, Division 4, Chapter 30.

The Board has the authority to implement and enforce the Porter-Cologne Water Quality Control Act, Water Code, Division 7; Article 9.5 of Chapter 6.5 of Division 20 of the HSC; and to develop standards for local implementation and enforcement of Chapter 6.7 (Underground Storage of Hazardous Substances) of Division 20 of the HSC. The Board has promulgated regulations which

establish, in detail, water quality protection standards for discharges of waste to land: California Administrative Code, Title 23, Chapter 3, Subchapter 15. The Board also has regulations governing other discharges of waste which could affect the quality of waters of the State, and regulations implementing Chapter 6.7 of the HSC. The Board also is the lead agency for implementation of the Federal Clean Water Act in California.

Nothing in this MOA shall be construed as a waiver of the Department's authority to administer and enforce the State hazardous waste management program authorized under Section 3006(c) of RCRA.

PRINCIPLES OF AGREEMENT

For the purpose of this MOA, the Department and the Board agree to the following principles:

1. Only one Hazardous Waste Facility Permit, encompassing all Department and Board standards, shall be issued. It is the intent of the Department and Board to hold a joint public hearing prior to the issuance of a Hazardous Waste Facility Permit and in accordance with Exhibit A. The Department shall be responsible for issuing the Hazardous Waste Facility Permit.

   The Board will adopt necessary waste discharge requirements and agrees to ensure that such requirements are consistent with and no less stringent than 40 CFR 264, Subpart F. Further, in other regulatory areas of this program where the Board's Waste Discharge Requirements may contain water quality requirements or standards which parallel RCRA, the Board agrees to ensure, subject to the availability of supporting resources, that such requirements and standards are consistent with and no less stringent than counterpart Federal regulations at 40 CFR 264.

   The Department shall be responsible for providing assurance to EPA that all applicable RCRA standards are incorporated into the Hazardous Waste Facility Permit issued by the Department.

   The Hazardous Waste Facility Permit shall incorporate as a condition of the permit any applicable waste discharge requirements issued by the State Water Resources Control Board or a California Regional Water Quality Control Board, and shall be consistent with all applicable water quality control plans adopted pursuant to Section 13170 of the Water Code and Article 3 (commencing with Section 13240) of Chapter 4 of Division 7 of the Water Code and state policies for water quality control adopted pursuant to Article 3 (commencing with Section 13140) of Chapter 3 of Division 7 of the Water Code, and any amendments made to these plans, policies or requirements. The Hazardous Waste Facility Permit shall also include such additional provisions as may be required by the Federal RCRA program. The Board may also issue and enforce additional requirements and orders authorized by state law.

The Board shall notify and provide two copies to the Department of any proposed revision of waste discharge requirements for hazardous waste management facilities at least 30 days before such requirements are issued except where such requirements are issued to correct a deficiency of interim status or permit requirements, in which case the Board shall promptly notify the Department of such action.

The Department shall notify and provide two copies to the Board of any proposed change in a Hazardous Waste Facility Permit or Interim Status Document. Such notice shall occur at least 30 days before modification of an Interim Status Document or public notice of a permit modification except when such a modification is issued to correct a deficiency of interim status documents or permit requirements, in which case the Department shall promptly notify the Board of such action.

The Department and the Board shall develop detailed procedures for permit processing as necessary to ensure an effective and efficient hazardous waste permit program and shall forward draft and final versions and modifications to each other in a timely manner. When finalized, such procedures are included and made part of this MOA.

As a condition of final RCRA authorization, EPA has requested assurance that the Department has the authority to impose RCRA-equivalent water quality standards as hazardous waste facility permit conditions in the unlikely event that the Board's waste discharge requirements for a facility are not RCRA-equivalent. The Department has given EPA the requested assurances with recognition of the Board's primary role in adopting water quality control plans (Basin Plans) and waste discharge requirements for all hazardous waste management facilities.

If EPA or the Department identify a lack of RCRA equivalency in water quality control plans or waste discharge requirements applicable to a Hazardous Waste Facility Permit, the Department will notify the appropriate Regional Board in writing requesting necessary corrections or additions to the applicable water quality control plans or waste discharge requirements. If the Regional Board fails to act on the Department's notice, or if the response is inadequate to correct the deficiency, the Department agrees to petition the matter to the State Board for a final ruling. In the interim, the Department may impose the necessary water quality requirements in the permit in order to assure RCRA equivalency. Even if the appeal to the State Board is resolved in favor of the Regional Board, the Department may impose any additional water quality requirements on Hazardous Waste Facility Permits that are necessary to assure RCRA equivalency.

2. The Board shall be responsible for conducting the RCRA surveillance activities for hazardous waste management facilities in accordance with the annually negotiated Interagency Agreement and with the terms and conditions of this MOA.

3. The Department and the Board recognize the separate, but parallel, enforcement authorities of each agency. It is the intent of the Department and Board to strive to eliminate duplicative enforcement action.

   The Department agrees that in instances where the Board's authorities are similar to those of the Department's and where the Board uses, subject to the availability of supporting resources, those activities in a timely and appropriate manner, the Department may decide that a particular Board action is sufficient for purposes of RCRA and the authorized State hazardous waste management program, and that further or separate action by the Department is not necessary.

   The Department also agrees to provide the Board with notice of any hazardous waste management facility compliance inspection which indicates the violation of water quality protection requirements. If the Board does not act in a timely manner to bring the facility into compliance or demonstrate that the indicated violation does not exist, to the satisfaction of the Department, the Department will take separate action to bring the facility into compliance and shall notify the Board prior to taking such action. The Board shall notify the Department of any enforcement action taken relating to hazardous waste land disposal prior to such action.

   If EPA advises the Department of a violation of RCRA water quality standards needing corrections, EPA will also send a copy of the letter to the appropriate Regional Board. If the Board has taken or intends to take action in response to EPA's letter, the Board agrees to notify, in a timely manner, the appropriate DHS regional office that an action has been, or will be, taken. If EPA or the Department is not satisfied with the timeliness or appropriateness, with respect to RCRA, of the Board's action, the Department or EPA will take separate action to bring the facility into compliance. The Department will contact the Board prior to taking such action.

   The Department and the Board shall develop detailed surveillance and enforcement procedures to ensure an effective and efficient hazardous waste compliance program and shall forward draft and final versions and modifications to each other in a timely manner. The Department and the Board shall prepare jointly and incorporate into this MOA "General Procedures for Surveillance and Enforcement Activities for Hazardous Waste Land Disposal".

4. The Board shall be responsible for providing the Department with water quality protection requirements consistent with and no less stringent than 40 CFR 264 and 265, Subpart F for facilities operating under interim status or Hazardous Waste Facility Permit.

The Department shall be responsible for all aspects outside of 40 CFR 264 and 265, Subpart F for hazardous waste management facilities operating under interim status or Hazardous Waste Facility Permit.

The Department and Board recognize that the Board also has separate regulatory authority that parallels RCRA regulations at Subparts in addition to 40 CFR 264 and 265, Subpart F. For this area of parallel authority, subject to the availability of supporting resources, the Board's responsibilities shall include:

a. the review and evaluation of the water quality aspects of facility siting and design, ground water (including that found in the unsaturated zone) and surface water monitoring and protection programs, the water quality aspects of facility closure plans and post-closure monitoring programs; and

b. the development of appropriate water quality protection requirements and permit conditions to prevent water quality degradation.

These responsibilities shall be carried out in a manner that is sufficient to assure compliance with applicable RCRA regulations. The specific commitments and responsibilities will be negotiated annually through the Interagency Agreement.

5. The Department and the Board agree to develop jointly and sign an interagency agreement, prior to the beginning of each fiscal year, which clearly defines the tasks, work products, time of performance, and associated costs for the Board's performance of the responsibilities described in this MOA. The Department, contingent upon availability of funding, agrees to reimburse the Board in fulfillment of their responsibilities under the interagency agreement.

6. As the State does not allow intervention as a right in any civil action by any citizen having an interest which may be or is adversely affected, the Board agrees, at a minimum, to provide public participation, relative to enforcement actions taken on behalf of the Department at hazardous waste management facilities, in a manner that is not less stringent than RCRA statute or regulations.

7. The Board agrees that any information obtained or used in the administration of those portions of Subchapter 15 and the Porter-Cologne Act that relate to the terms and conditions of this MOA or the annually negotiated Interagency Agreement shall be available to the Department without restriction. If the information has been submitted to the Board under a claim of confidentiality, the Board agrees to submit that claim to the Department when providing the information. The Department shall acknowledge and respond to such claims of confidentiality as required by state law.

8. On or before September 30 of each year, the Board shall submit to the Department a final accounting of all costs incurred by the Board for all work performed in compliance with this MOA during the previous fiscal year.

9. This MOA may be amended by mutual agreement as necessary to assure effective and timely implementation and operation of the State's hazardous waste program.

10. The Secretary for Environmental Affairs and the Secretary for the Department of Health Services shall make the final determination in any jurisdictional dispute between the Department and the Board concerning the implementation of this memorandum, to the extent such dispute resolution does not render the State's authorization program inconsistent with, or less stringent then, the Federal RCRA program.

Kenneth W. Kizer, M.D., M.P.H.
Director
Department of Health Services

Date

Raymond R. Stone, Chairperson
State Water Resources Control Board

11/27/86
Date

EXHIBIT A

General Procedures for Permit Review Process for Hazardous Waste Land Disposal Facilities*

1. The Department Requests Permit Application (Part B)

The Department will request Board [State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs)] recommendations when selecting facilities for Part B call-in. All recommendations by the Board for Part B call-ins will be considered by the Department. The Department will issue a formal written request for the Part B of the application for a Hazardous Waste Facility Permit. The Department's request will also state the authority under which the request is made, set a due date, describe the consequences of a failure to submit a Part B application, and give the number of copies to be submitted.

2. Orientation Meetings for Permit Applicants

Orientation or pre-application meetings for permit applicants will be provided to each applicant upon request by representatives from the Department. The Board (RWQCB and SWRCB, where appropriate) will attend these meetings to discuss the permitting process and application requirements. Subsequent meetings with individual applicants will be part of the technical assistance portion of the Program.

3. Technical Assistance for Permit Applicants

During preparation of the application (Part B), the Department and the Board (RWQCB and SWRCB, where appropriate) will provide technical assistance to permit applicants and track the progress of application development. This assistance will include reviews of preliminary materials prepared for the application package (including documents required under Interim Status), attendance at technical and progress meetings, and inspection of facilities. Areas of technical assistance will include, but not be limited to, design features, ground water monitoring, closure/post-closure plans, and the amount of detail required in general throughout the Part B application.

4. Part B Received by the Department

The Department will request at least five copies of the Part B application. The Department will forward one copy to the SWRCB, one copy to the appropriate RWQCB, and two copies to the appropriate Department regional office. The Department headquarters will retain one copy and maintain records of transmittal.

* After program authorization by EPA

5. Review of Application

The Department (regional office or headquarters, where appropriate) and the Board (RWQCB and SWRCB, where appropriate) will review the Part B for completeness and for compliance with RCRA in the respective areas in which these groups will be working. As part of the review, one or more hazardous waste management facility inspections may be needed. The Department and the RWQCB's will strive to make joint inspections of the facilities whenever feasible. The Department and the Board (RWQCB and SWRCB, where appropriate) will complete their review using applicable state and federal guidance documents. Cost estimates submitted by the applicant for closure/post-closure will be "verified" by Department staff and used during the review for financial responsibility. The Department will track the progress of the application reviews. The RWQCB (and SWRCB, where appropriate) will submit comments to the Department in accordance with guidance documents and checklists provided by the Department.

6. The Department Prepares Responses to Permit Applicant

The Department will consolidate all comments. The Department will incorporate all comments from the Board (RWQCB and SWRCB, where appropriate) relevant to the Board's responsibilities outlined in the interagency agreement. The Department will prepare a Notice of Deficiency (NOD) to the permit applicant regarding the completeness and compliance of the applicant. The Department will seek the Board's input and concurrence prior to sending the NOD to the applicant.

7. Permit Applicant Responds to NOD or Prepares and re-Submits Application, when Required

If more information is needed to complete the Part B application, the applicant will submit such information as directed. At least five copies shall again be submitted to the Department for distribution as previously discussed. Once the application is judged by the Department (with input from the appropriate RWQCB and SWRCB, where appropriate) to be complete, the Department will notify the applicant in writing and the permitting process begins. If the application is judged incomplete, the Department will inform the applicant in writing and a resubmittal will be necessary.

8. RWQCB Prepares Draft Waste Discharge Requirements

The appropriate Department Regional Office shall coordinate a permitting schedule with the appropriate RWQCB. The appropriate RWQCB will prepare draft waste discharge requirements (WDR) or a draft revision of existing WDR and forward these to the Department.

NOTE: The Department will notify and give to the Air Resources Board (ARB) a copy of the complete Part B application whenever air quality could be affected by the facility. ARB comments on the application will be submitted to the Department.

9. The Department Prepares Preliminary Draft Hazardous Waste Facility Permit

The Department will prepare a preliminary draft Hazardous Waste Facility Permit which incorporates the draft WDR and other appropriate input from the SWRCB and RWQCB. The Department will transmit a copy of the draft Hazardous Waste Facility Permit to the RWQCB, SWRCB, and ARB (when appropriate) for concurrence.

10. The Department prepares final draft Hazardous Waste Facility Permit incorporating requirements and input from the SWRCB and RWQCB.

11. The Department gives notice of the proposed permit and public hearing to be held by the Department, as lead agency, and jointly with the RWQCB. The Department shall give notice to the public and all interested parties. With the concurrence of the Department and the appropriate RWQCB, the joint hearing may be held by the RWQCB provided that such a hearing is conducted in a manner that is not less stringent than RCRA statute or regulations.

12. Joint public hearing by the Department and the RWQCB.

13. The RWQCB (and SWRCB, where appropriate) shall provide comments to the Department within 30 days after the hearing. The Department will prepare a joint response to comments from the hearing.

14. RWQCB Adopts the WDR

The adoption of the WDR will occur concurrently with the processing of the permit application. The WDR adoption may also occur following the joint public hearing. A copy of the WDR, as adopted, will be forwarded to the Department and incorporated into the permit.

15. The Department will adopt and issue the final Hazardous Waste Facility Permit.

MEMORANDUM OF AGREEMENT
BETWEEN
THE DEPARTMENT OF HEALTH SERVICES
AND
THE STATE WATER RESOURCES CONTROL BOARD
ON USE OF RECLAIMED WATER

This Memorandum of Agreement (hereafter MOA) is made between the Department of Health Services (hereafter the Department) and the State Water Resources Control Board (hereafter the State Board). This MOA sets forth principles, procedures and agreements to which these agencies commit themselves relative to use of reclaimed water in California.

I. PURPOSE AND SCOPE OF MOA.

This MOA is intended to assure that the respective authority of the Department, the State Board and the nine California Regional Water Quality Control Boards (hereafter the State Board and the Regional Boards) relative to use of reclaimed water will be exercised in a coordinated and cohesive manner designed to eliminate overlap of activities, duplication of effort, and inconsistency of action. To that end, this MOA establishes basic principles relative to activities of the agencies hereto and the Regional Boards, allocates primary areas of responsibility and authority between these agencies, and provides for methods and mechanisms necessary to assure ongoing, continuous future coordination of activities relative to use of reclaimed water in this State.

The initial MOA is intended to serve as an umbrella agreement between the agencies hereto. It will be supplemented, as appropriate, by addenda which will reflect any additional agreements, commitments and understandings arrived at by the agencies hereto.

II. GENERAL BACKGROUND.

In order to supplement existing surface and underground water supplies to help meet water needs in the State, it is state policy that use of reclaimed water in the State be promoted to the maximum extent commensurate with protection of public health. (See Chapter 7, Div. 7, California Water Code.)

So long as its use is compatible with public health and water quality objectives, reclaimed water can be used in a variety of ways to assist in meeting the water needs of this State. Uses of reclaimed water include use for crop and landscape irrigation, supply for recreation impoundments, industrial cooling, and groundwater recharge including protection against saltwater intrusion.

The Department is the primary state agency responsible for protection of public health. To assure protection of public health where reclaimed water use is involved, the Department has been statutorily directed to establish statewide reclamation criteria for the various uses of reclaimed water. (Water Code Section 13521.) The Department has promulgated regulatory criteria, which are currently set forth in the California Code of Regulations, Title 22, Division 4, Section 60301 et seq. The Department's regulatory criteria include numerical limitations and requirements, treatment method requirements, and provisions and requirements related to sampling and analysis, engineering

reports, and design, operation, maintenance and reliability of facilities. The Department's regulations also permit the granting of exceptions to reclaimed water quality requirements in some cases, call for a case-by-case review of groundwater recharge projects, and allow use of alternative methods of treatment so long as the alternative methods used are determined by the Department to assure equivalent treatment and reliability. Many of the regulatory requirements related to sampling, analysis, engineering reports, personnel, operation and design are narrative in nature and leave room for discretionary decisions based on the individual situation in each case.

The Department has also developed Guidelines For Use of Reclaimed Water (hereafter Guidelines). The Guidelines, except insofar as they may incorporate provisions of the Department's regulatory criteria, are not considered binding or mandatory upon permit issuing agencies, such as the Regional Boards.

The State Board and the Regional Boards are the primary state agencies charged with protection, coordination and control of water quality in the State. Where regulatory reclamation criteria have been adopted by the Department, all persons who reclaim or propose to reclaim water, or who use or propose to use reclaimed water, must file a report with the appropriate Regional Board. (Water Code Section 13522.5.) Where regulatory reclamation criteria have been adopted, no person may either reclaim water or use reclaimed water until the appropriate Regional Board has either issued reclamation requirements or waived the necessity for such requirements. (Water Code Section 13524.) In the process of issuing reclamation requirements, the Regional Boards must consult with and consider recommendations of the Department. (Water Code Section 13523.) Any reclamation requirements which are issued by the Regional Boards, whether applicable to the reclaimer or to the user of reclaimed water, must include or be in conformance with any regulatory reclamation criteria adopted by the Department.

Where reclaimed water use is involved or proposed, both the Department and the Regional Boards have authority to require construction reports and such other reports as may be necessary to assure protection of both public health and water quality.

Where use of reclaimed water is involved, both the Department and the Regional Boards have enforcement authority. The Department may take steps to abate any contamination which may result from use of reclaimed water. The Regional Boards may undertake various actions, both of a civil nature and relative to criminal sanctions, for failure to file necessary reports, for reclamation or use of reclaimed water without reclamation requirements, or for violation of any reclamation requirements imposed by a Regional Board.

There are other specific areas involving or associated with use of reclaimed water where interaction between the Department, the State Board and the Regional Boards is required. These areas include direct injection of reclaimed water into groundwater which is suitable for domestic water supply and use of reclaimed water for irrigation of greenbelt areas.

In addition to the authority vested in the Department, the State Board and the Regional Boards relative to use of reclaimed water, various local health authorities have an independent and autonomous role and authority in assuring protection of public health and water quality in areas subject to their jurisdiction.

III. GENERAL PRINCIPLES.

The general principles agreed to by the Department and the State Board are as follows:

(A) Reclamation requirements issued by the Regional Boards will impose all absolute reclamation criteria established by the Department's regulations.

(B) All recommendations of the Department which involve areas of critical or essential health concern shall be included in any reclamation requirements issued by a Regional Board or by the State Board, unless variation therefrom is adequately documented and justified by the Regional Board. This principle encompasses all absolute criteria contained in the Department's Guidelines.

(C) Each agency hereto and the Regional Boards shall, to the maximum extent compatible with fulfillment of its primary responsibility to protect and preserve public health or water quality, promote and facilitate use of reclaimed water in this State.

IV. PROGRAM PROVISIONS AND COMMITMENTS.

To assure fulfillment of the purposes and principles set forth in the MOA, the agencies hereto commit themselves to the following programmatic approaches:

(A) Issuance and Enforcement of Reclamation Requirements:

1. The Regional Boards will consult with and seek recommendations from the Department prior to the issuance of any reclamation requirements. The Department will be provided with a copy of any reclamation requirements which a Regional Board proposes to issue as a part of the consultation process, and shall have reasonable opportunity to comment thereon prior to any adoption thereof. Any comments or recommendations which the Department intends to make on proposed reclamation requirements will be expeditiously provided. As a part of the consultation process, the Regional Boards will notify the Department of any intended departure from any absolute criteria contained in the Department's Guidelines.

2. Any Department recommendations to the Regional Boards relative to proposed reclamation requirements will identify those nonregulatory recommendations which the Department believes are critical and essential for protection of public health. In the event that the staff of any Regional Board does not intend to recommend inclusion of any such recommendation in the proposed reclamation requirements which will be submitted to the Regional Board, the Department will be notified at the Branch Chief level. The Regional Board Executive Officer and the appropriate Department Branch Chief will attempt to resolve any differences over the terms of the proposed reclamation requirements. If the differences cannot be resolved at this level, the matter will be brought to the attention of the Chief of the Department's Environmental Health Division. If the differences are not resolved at this level, the Regional Board staff will proceed toward presentation of the proposed reclamation requirements to

the Regional Board. The Department will be given adequate notice of any meeting or hearing relative to adoption of the proposed reclamation requirements, and a reasonable opportunity to present its perspectives, arguments and rationale to the Regional Board prior to adoption of the reclamation requirements.

In the event that a Regional Board determines not to impose any nonregulatory recommendations which have been identified by the Department as critical and essential for the protection of public health, the Regional Board will expeditiously provide the Department with a full and detailed written explanation of the basis and rationale for its decision.

3. Other recommendations of the Department, not identified by the Department as critical or essential for the protection of public health, will be included by the Regional Boards in their reclamation requirements in the manner and to the extent determined to be appropriate by the Regional Boards after full consideration of the Department's recommendations. In each case where there is any significant variation from any such recommendation given by the Department to which the Department has not agreed, the Regional Boards will notify the Department in writing that changes have been made to the Department's recommendations. Such notice will clearly identify the changes that have been made and provide a statement of the reasons and rationale for variation from the Department's recommendations.

4. If a Regional Board accepts and imposes any recommendation made by the Department and the requirement so imposed is challenged by any person, the Department will supply justification for, and otherwise reasonably support and defend, such recommendation.

5. The provisions of Paragraphs 2 and 3 above are intended to apply, as appropriate, to all recommendations of the Department, including but not limited to, recommendations related to treatment requirements, treatment methods, necessary facilities, monitoring, sampling requirements and analyses thereof, reporting requirements, reliability features, operation and maintenance requirements, alarm and warning systems, cross connection protections, set back and buffer zones, and pipeline separation.

6. The Regional Boards will not waive the necessity of reclamation requirements for any proposed use of reclaimed water without consultation with the Department.

7. The Regional Boards shall be primarily responsible for reasonable surveillance and monitoring of all activities subject to reclamation requirements. The Regional Boards will expeditiously notify the Department of all significant violations of reclamation requirements or improper reclamation uses within their jurisdictions. The Department will expeditiously notify the appropriate Regional Board of improper reclamation uses or violation of reclamation requirements which become known to the Department.

8. As between the agencies hereto, it is understood that the Regional Boards shall have primary responsibility for enforcement of reclamation requirements and prevention of improper reclamation uses in their respective jurisdictions. The Regional Boards and the State Board will commit sufficient staff resources to assure adequate enforcement of reclamation requirements and reclamation uses within their regions. It is recognized, however, that enforcement action may be undertaken by the Department and by local health authorities for violation of reclamation requirements or improper reclamation use where action by the Department or local health authorities is deemed essential for adequate protection of public health.

9 The Department will take reasonable steps to assure consistency of action between its various regions and offices.

10. The State Board will take reasonable steps to assure consistency of action between the Regional Boards.

(B) Revision of Department Guidelines For Use of Reclaimed Water. The agencies hereto recognize that the current Department Guidelines need to be reviewed and revised as appropriate. The Department will undertake to develop updated, mutually acceptable Guidelines, in the following manner:

1. The Department will forward a copy of the current Guidelines and relevant and related material to the Regional Boards, the State Board, the California Conference of Local Health Officers (CCLHO) and the California Conference of Directors of Environmental Health (CCDEH) soliciting comments regarding the Guidelines including any changes or revisions desired.

2. The recipients will expeditiously, and in any event not later than November 10, 1988, provide any comments which they intend to make.

3. The Department will prepare and distribute the first draft of proposed revised Guidelines by January 1, 1989.

4. The agencies hereto will form a Joint Task Force to provide advice to the Department on development of Guidelines. It is anticipated that this Task Force will be comprised of three representatives from the Department, two Regional Board Executive Officers, two representatives from the State Board, one representative from Tri-TAC, and two representatives on behalf of local health authorities, presumably from CCLHO and/or CCDEH.

5. It is anticipated that final revised Guidelines will be concurred in by the agencies hereto and that, in addition, the revised Guidelines will be endorsed and concurred in by both CCDEH and CCLHO.

6. In addition to advising the Department on development of revised Guidelines, the Task Force will also make recommendations to the Department concerning what portions of the revised Guidelines should be promulgated in the formally adopted regulations of the Department.

(C) Review of the Department's Regulatory Reclamation Criteria. The agencies hereto recognize that the Department's regulatory reclamation criteria, presently set forth in the California Code of Regulations, Title 22, Division 4, Section 60301 et seq., should be reviewed. In addition, concerns have been periodically expressed over the adequacy of the Department's justification for its current Title 22 reclamation criteria. In the light of these circumstances, the agencies hereto agree as follows:

1. The Department will undertake and expeditiously complete a review of its Title 22 reclamation criteria. The Joint Task Force which is to be formed under Part IV, (B) 4 above will review the current regulatory criteria and provide its comments and recommendations to the Department. Dependent upon the recommendations of the Task Force, the Department may reestablish and reconstitute its Health Effects Advisory Committee to provide additional assistance in the development of revised regulatory criteria. The State Board will supply reasonable support and resources to the Department toward the effort of revision of the regulatory criteria upon request of the Department. The Department anticipates that, by July 1, 1989, it will be able to determine whether the Title 22 regulations do require modification. If modification is determined to be appropriate, the Department will expeditiously undertake the necessary revision.

2. The Department will develop and make available an issue paper which explains and sets forth the justification and rationale for the Current Title 22 reclamation criteria. It is anticipated that the necessary document will be developed by January 1, 1989.

(D) Groundwater Recharge. The State Board and the Department, in conjunction with the Department of Water Resources, are in the process of development of an interagency policy and guidelines relative to use of reclaimed water for groundwater recharge. It is anticipated that the policy and guidelines will be developed in two phases, will address planned, unplanned, and incidental recharge, and will also address mutual goals, objectives, principles and coordination of activities of the agencies hereto relative to groundwater recharge. The State Board and the Department will continue their efforts to develop the necessary interagency policy and guidelines in accordance with the following schedule:

Completion of final draft of Phase I	January 15, 1989
Completion of final draft of Phase II	January 15, 1990

It is anticipated that the final policy/guidelines will be approved and adopted jointly by the Department and the State Board, and that, upon concurrence of the Regional Boards, the final approved policy/guidelines will be incorporated by addendum into this MOA.

(E) Inconsistencies Between Regulation of Use of Reclaimed Water and Nonregulation of Reuse of Treated Wastewater (Incidental Reuse); Development of Programs and Strategies. The agencies hereto recognize that, unlike the strict regulation that occurs where use of

reclaimed water is involved, there are instances where somewhat similar uses of treated wastewater are presently unregulated. It is also recognized that some instances of nonregulation of reuse of treated wastewater may result in cases which involve significant health concerns, and that additional work needs to be done to develop those programs and strategies necessary to assure protection of public health and water quality in such situations. The agencies hereto, however, also recognize that the issues involved are complex. As the other requirements of this MOA are fulfilled and as staff and resources become available, the agencies hereto commit themselves to resolve the problems and issues noted in this paragraph.

As an interim measure, pending further action pursuant to the foregoing paragraph, if the Department notifies a Regional Board of any instance of unregulated reuse of treated wastewater which the Department believes involves critical or essential health concerns, the Regional Board which is involved shall take whatever action is appropriate to protect public health. If the Regional Board declines to take any action, or if the Regional Board in taking action decides not to impose any recommendation of the Department, the Regional Board will expeditiously provide the Department with a full and detailed written explanation of the basis and rationale for its decision.

(F) Coordination with Local Health Authorities. The agencies hereto acknowledge the need to and desirability of working with and cooperating with local health authorities to assure coordination of activities relative to use of reclaimed water, to reduce conflicts, and to promptly and effectly resolve any conflict which may arise. The Task Force formed under Part IV, B 4 above will undertake to ~~attempt~~ develop appropriate mechanisms to promote cooperation and coordination between state agencies and local health authorities in the reclamation area and to resolve any disputes that may arise. Proposed mechanisms when developed will be presented to the agencies hereto for consideration of appropriate action.

SC 12/5/88

V. DISPUTE AND CONFLICT RESOLUTION.

(A) It is the desire of the agencies hereto to establish a speedy, efficient, informal method for resolution of interagency problems, disputes or conflicts. To that end, except as otherwise provided in this MOA, and to the extent not inconsistent with any formal administrative appeals which may be pending:

1. Department concerns with Regional Board action or inaction, which cannot otherwise be informally resolved, will be brought to the attention of the State Board Executive Director who will attempt to resolve the same with the appropriate Regional Board or Boards. In the event that such concerns still cannot be resolved to the satisfaction of the Department, the matter shall be referred to the Director of the Department and the Chairman of the State Board for consideration and appropriate action toward resolution.

2. Regional Board concerns with Department action or inaction, which cannot otherwise be informally resolved, will be referred to the

State Board Executive Director who will attempt to resolve the same with the Department's Deputy Director for Public Health. In the event that the concerns still cannot be resolved to the satisfaction of the Regional Board or Boards involved, the matter shall be referred to the Director of the Department and the Chairman of the State Board for consideration and appropriate action for resolution.

3. Concerns between the Department and the State Board which cannot otherwise be informally resolved will be referred to the State Board Executive Director and the Department's Deputy Director for Public Health. In the event that the concerns still cannot be resolved to the mutual satisfaction of the State Board and the Department, the matters in issue shall be referred to the Director of the Department and the Chairman of the State Board for appropriate action.

4. Nothing contained herein shall be construed to deprive the Department of formal appeal rights relative to any alleged Regional Board action or inaction. In the event of such an appeal, the State Board will expedite any review process.

VI. MODIFICATION AND PERIODIC REVIEW.

This MOA may be modified in writing at any time by mutual agreement of the agencies hereto. Proposed modifications may be suggested by any agency hereto at any time.

The agencies hereto will meet periodically, not less than once each year, to discuss the actions of each agency relative to this agreement, to devise and agree to appropriate activities for the forthcoming fiscal year, and to consider additional actions and activities which each agency can take to better coordinate their activities and further promote use of reclaimed water in the State.

Director
Department of Health Services

12-5-88

Chairman
State Water Resources Control Board

11-15-88

MANAGEMENT AGENCY AGREEMENT BETWEEN
THE WATER RESOURCES CONTROL BOARD,
THE BOARD OF FORESTRY, AND THE
DEPARTMENT OF FORESTRY AND FIRE PROTECTION,
STATE OF CALIFORNIA

This Management Agency Agreement (Agreement) is entered into by and between the State Water Resources Control Board (Water Board), the State Board of Forestry (BOF), and the State Department of Forestry and Fire Protection (Department, CDF), State of California, for the purpose of carrying out, pursuant to Section 208 of the Federal Clean Water Act, those portions of the State's Water Quality Management Plan related to silvicultural activities on nonfederal lands in the State of California.

WHEREAS:

1. The Board of Forestry has the authority and responsibility, pursuant to the State's Z'berg-Nejedly Forest Practice Act, to promulgate Forest Practice Rules (Rules) and policies to specify practices related to timber operations on non-federal lands in order to restore, enhance and maintain the maximum sustained production of high-quality timber while giving consideration to other natural resources, including the quality and beneficial uses of water.

2. The Department has the authority and responsibility to administer these Rules and policies.

3. The Water Board and the Regional Water Quality Control Boards (Regional Boards) have the authority and responsibility, pursuant to the State Porter-Cologne Act and the Federal Clean Water Act (as amended), to promulgate Water Quality Management (WQM) plans and water quality control plans (Basin Plans) which set forth objectives for restoring, enhancing, and maintaining the quality and beneficial uses of the State's waters, to promulgate regulations and policies to attain these objectives, and to administer these regulations and policies to ensure that waste discharges, including those from silvicultural activities, do not degrade the quality and beneficial uses of the State's waters.

4. The Water Board has the authority and responsibility, pursuant to Section 208 of the Federal Clean Water Act and Title 40, Part 35, Subchapter G, of the Code of Federal Regulations, to designate appropriate management agencies for implementing certain provisions of 208 WQM plans and to certify 208 WQM plans which incorporate Best Management Practices (BMPs) for control of nonpoint sources of pollution, including silvicultural land uses.

5. The Board of Forestry, the Department and the Water Board mutually desire:

   a. To achieve the goals of the Federal Clean Water Act (as amended), of the State Porter-Cologne Act, and of the State Z'berg-Nejedly Forest Practice Act by restoring, enhancing, and maintaining the quality and beneficial uses of the State's waters;

   b. To achieve the water quality objectives set forth in applicable Basin Plans of the State;

   c. To minimize duplication of effort and to establish complementary resource protection programs; and

   d. To assure protection of the quality and beneficial uses of the State's waters through development and implementation of BMPs.

6. The Board of Forestry has promulgated, and the Department administers, Rules which are intended to be BMPs for protection of the quality and beneficial uses of the State's waters from waste discharges due to timber operations on nonfederal lands. The BOF has requested certification of these Rules and the procedures (Process) by which they are promulgated and implemented.

7. On January 21, 1988 and effective upon execution of this Agreement, the Water Board designated the Board of Forestry and the Department as joint management agencies for timber operations on nonfederal lands in the State and certified a 208 WQM plan consisting of: (a) the water quality-related Rules effective through December 31, 1986 (See Item C. 1.), (b) the Process by which they are promulgated and implemented, and (c) this Agreement.

NOW, THEREFORE, the parties hereto agree as follows:

A. The Board of Forestry agrees:

   1. To refine, continue to develop, and adopt BMPs based on consideration of the potential for protecting the quality and beneficial uses of water, technical soundness, and economic and institutional feasibility, in accordance with the Forest Practice Act and with the issues and anticipated schedules set forth in the following attachments:

Attachment A - ITEMS FOR DEVELOPMENT
Attachment B - ITEMS FOR REFINEMENT
Attachment C - ITEMS FOR FURTHER CONSIDERATION

2. That BOF in consultation with the interagency liaison committee (as described in Item D. 8. et. seq.) and others, will approach each issue in Attachments A and B by defining the problem, stating suggested solutions, drafting Rule language and presenting any alternative non-rule approaches which would implement such solutions. Recommendations will be referred through the BOF chairman to the appropriate BOF committee and then, as appropriate, to the BOF District Technical Advisory Committees (DTACs). The DTACs will then review issues and make recommendations after hearing from the public, industry, and concerned agencies. The DTACs' recommendations will be reported to the BOF.

   Following receipt of recommendations from DTACs and/or other appropriate committees, BOF will, as part of its regular agenda (including public hearings), do the following in accordance with the anticipated schedules in Attachments A and B:

   a. Evaluate any recommended Rule language and adopt that found to be appropriate;

   b. Evaluate any recommended non-Rule approaches, and in cooperation with other appropriate parties, affect implementation of those found to be appropriate; and

   c. Report results to the Water Board in accordance with Items B.4 and B.5 below.

B. The Board of Forestry and the Department jointly agree:

   1. To each accept designation as, and the responsibilities of, a water quality management agency for timber operations on nonfederal lands in the State of California.

   2. To consider, in consultation with the interagency liaison committee (as described in Item D. 7. et. seq.) and others, the best means of resolving issues regarding improvement of BMPs and their implementation which are set forth in Attachment C and to develop and implement appropriate improvements.

   3. To develop and carry out improved auditing of agency performance in implementing BMPs.

4. To jointly provide progress reports at Water Board workshops regarding resolution of the issues specified herein:

   a. Semi-annually for the first two years following the date of certification; and

   b. As mutually deemed necessary thereafter, but not more frequently than semi-annually.

5. To submit, with the annual BOF report to the Legislature, a concurrent written report to the Water Board which:

   a. Summarizes the following:

      (1) Progress in resolving issues in accordance with any attachment hereto,

      (2) Any significant additions, deletions, or amendments of the laws, Rules and Process which have or will become effective after January 1, 1987 and which may affect protection of the quality and beneficial uses of water, with explanation for each such change, and

      (3) The results of any agency studies or audits of the performance of foresters, timber operators, and agency personnel, and of the Rules and implementation Process; and

   b. Presents any suggestions for needed studies and for changes in the Rules, the Process, or in this Agreement.

C. The Water Board agrees:

1. That those provisions of the Rules which were in effect before January 1, 1987, and which are set forth in the following Subchapters and Articles of the California Administrative Code, Title 14, Division 1.5, Chapter 4 constitute BMPs:

   Subchapter 1 (Abbreviations and Definitions)

   Article 1

Subchapters 4, 5, and 6 (Coast, Northern, and Southern Forest Districts, respectively)

Article 2 (Definitions, Ratings, and Standards),
Article 3 (Silvicultural Methods),
Article 4 (Harvesting Practices and Erosion Control), and
Article 6 (Watercourse and Lake Protection)

Subchapter 4 (Coast Forest District)

Article 11 (Coastal Commission Special Treatment Areas), and

Article 12 (Logging Roads and Landings)

Subchapters 5 and 6 (Northern and Southern Forest Districts, Respectively)

Article 11 (Logging Roads and Landings)

2. That this Agreement, together with the Rules referenced in Item C.1 above, and the Process (including interagency Review Teams) constitute a 208 WQM plan for control of nonpoint source pollution from timber operations on nonfederal lands which:

   a. Is consistent with relevant provisions of the State/EPA Agreement and Work Program, Federal regulations, and the Federal Clean Water Act;

   b. Is technically sound and economically feasible;

   c. Is consistent with other relevant and approved WQM plans; and

   d. Represents substantial progress toward achievement of water quality goals.

3. To review the annual written report specified in Item B.5, and to identify any concerns regarding protection of water quality due to changes in the Rules or Process made or proposed by BOF and/or CDF.

4. To direct Regional Boards, upon EPA approval of the 208 WQM plan, to cease issuance of Waste Discharge Requirements for timber operations on nonfederal lands except as provided in Section 4514.3 of the Public Resources Code.

D. The Water Board, the Board of Forestry, and the Department agree:

1. That Rule modifications or other means to resolve, in a manner acceptable to the parties hereto, the issues set forth in Attachments A and B will be pursued through normal BOF procedures.

2. That resolution of the issues in Attachment C will be pursued in a manner acceptable to the parties hereto, after further study.

3. That improved methods for implementing BMPs shall be developed and carried out as follows:

   a. Implementation of guidance documents developed in accordance with Attachment D shall begin within 2 years after the effective date of certification or as soon thereafter as feasible;

   b. Training and education programs, and participation therein, shall be pursued on a continuing basis in accordance with Attachment E; and

   c. State agency procedures which are acceptable to the parties hereto and which are developed in accordance with Attachment F shall be incorporated into appropriate Memoranda of Understanding (MOUs) within one year after the effective date of certification.

4. That improved private sector procedures for implementing BMPs shall be encouraged on a continuing basis in accordance with Attachment G.

5. That additional studies to further assess the effects of timber operations on water quality and to provide for continued evaluation, development, and improvement of BMPs and their implementation shall be developed in accordance with Attachment H. Study workplans will be submitted to the parties no more than 2 years after the effective date of certification or as soon thereafter as feasible.

6. That the development and implementation of BMPs and the additional studies conducted by the parties hereto shall be coordinated with concerned state agencies, especially the Department of Fish and Game (DFG) and Regional Boards, with Federal agencies, with BOF DTACS, and with the private sector.

7. That activities needed to carry out Items D.1 through D.5 above shall begin within 30 days after the effective date of certification.

8. That the Chairpersons of BOF and the Water Board (or another Board member) and the Director of CDF shall serve as an interagency liaison committee, and the Director of DFG shall be invited to serve with them.

9. That each agency liaison shall:

   a. Designate an alternate liaison member, if necessary; and

   b. Coordinate the activities of the designating agency as set forth herein with the activities of the other parties hereto, as well as with DFG, Regional Boards, and Federal agencies.

10. That the liaison committee shall seek mutually acceptable technical support, as needed.

11. That the liaison committee members shall meet no less than annually to maintain coordination and communication, to review and discuss the BOF/CDF annual report, to review activities under this agreement, and to consider any revisions to this Agreement, including anticipated target dates and schedules, which are requested by any party hereto. The Director of DFG, or an authorized representative, shall be invited to participate in such meetings.

12. That the parties hereto shall work together to resolve any conflicts which may arise.

13. That representatives of Regional Boards and CDF Regions shall meet with each other, and with DFG representatives, as needed to resolve conflicts and concerns, and shall submit brief written summaries of the reasons for and results of such meetings to the designated liaison in each agency.

14. That the liaison committee shall meet as necessary to resolve conflicts or concerns which arise from and are not resolved by other meetings or reports. Meetings may be initiated at the request of the Executive Director of BOF and the Water Board, the Director of CDF and DFG, or the Executive Officer of a Regional Board.

15. That this Agreement may be terminated upon a 90 day notice by either board.

16. That another multidisciplinary assessment, in a mutually accepted format, of the adequacy of the Rules and the Process shall be conducted by the parties hereto not more than 5 years after certification. DFG shall be invited to participate in such assessment.

17. That, based on the results of said assessment, certification of the Rules and Process as part of a 208 WQM plan shall be formally reviewed no more than 6 years from the date of certification.

18. That future assessments and related review of certification may again be carried out at such time thereafter as may be mutually agreed upon among the parties.

19. That 208 WQM plan certification or management agency designation shall be reviewed in one or more Water Board hearings under any of the following conditions:

    a. If, for other than financial reasons, the assessments specified herein cannot be implemented;

    b. If, at any time, there is substantial evidence that BOF or CDF have failed to maintain a water quality regulatory program consistent with certification or have failed to satisfy terms of this Agreement; or

    c. If BOF requests such a review.

20. That, except for the provisions of Item C.4 above, nothing herein shall be construed in any way as limiting the legal authority or responsibility of the Water Board or Regional Boards in carrying out their mandates for control of water pollution and protection of the quality and beneficial uses of the State's waters.

21. That nothing herein shall be construed in any way as limiting the legal authority or responsibility of the Board of Forestry or of the Department in carrying out their mandates for regulation of timber and other natural resources on nonfederal lands.

IN WITNESS WHEREOF, the parties hereto, by their respective duly authorized officers, have executed this Agreement in triplicate, on the respective dates indicated below.

STATE BOARD OF FORESTRY,
STATE OF CALIFORNIA

By Harold R. Walt
Harold R. Walt,
Chairman

Date: 2/3/88

STATE WATER RESOURCES CONTROL BOARD
STATE OF CALIFORNIA

By W. Don Maughan
W. Don Maughan,
Chairman

Date: FEB 1 1988

DEPARTMENT OF FORESTRY AND FIRE PROTECTION
STATE OF CALIFORNIA

By Jerry Partain
Jerry Partain,
Director

Date: Feb 3, 1988

ATTACHMENT A

ITEMS FOR DEVELOPMENT

(These issues are not covered by current Rules. Consistent with the process set forth in Item A.2, language for new Rules will be proposed, evaluated and, if appropriate, adopted by BOF. Non-Rule resolutions will also be evaluated and, if appropriate, implemented.)

	Issue		Suggested Resolution		Target Date
1.	Practices for site preparation after timber harvesting	1.	Regulation of site preparation activities pursuant to AB 1629 (Statute 87; Chapter 987).	1.	11/88
2.	Long-term maintenance of erosion control facilities	2.	Regulation of long-term maintenance of erosion control facilities in logging area pursuant to AB 1629 (Statute 87; Chapter 987).	2.	11/88
3.	Evaluation of cumulative watershed effects	3.	Improved requirements and procedures for evaluating cumulative effects.	3.	12/88
4.	Notification of startup date of operations	4.	Requirement that licensed timber operator (LTO) or landowner notify CDF of actual date logging starts.	4.	12/89
5.	Timber operator licensing requirements	5.	Requirements for mandatory training for timber operator's license.	5.	12/89

ATTACHMENT B

ITEMS FOR REFINEMENT

(These issues are at least partially covered by existing Rules. Consistent with the process set forth in Item A.2, Rule language to refine and supplement the existing Rules will be proposed, evaluated and, if appropriate, adopted by BOF. Non-Rule resolutions will also be evaluated and, if appropriate, implemented.)

	Issue		Suggested Resolution		Target Date
1.	Transfer of Timber Harvesting Plan (THP) information from preparer to LTO	1.	Pre-operation meeting between THP preparer and timber operator, and operator's signature on any THP or amendment.	1.	9/88
2.	Extra protection measures where tractor operations, or roads or landings are near or within standard watercourse and lake protection zone (WLPZ) widths or on very highly erodible slopes	2.	THP specification of extra protective measures.	2.	12/88
3.	Performance standard for planning, locating, constructing, and maintaining all roads to protect water-related values	3.	Improved language in 14 CAC 923, 943, 963 to provide enforceable protection performance standards.	3.	12/88
4.	Road and landing construction standards	4.	Additional specifications for road and landing construction standards.	4.	12/89
5.	Temporary road crossing removal	5.	Improved specifications for appropriate removal procedures.	5.	12/88
6.	Disposal of landing debris over edge of landing above water courses	6.	Improved requirements for disposal of landing debris.	6.	12/88

Issue	Suggested Resolution	Target Date
7. Alternative protection practices	7. Clarification of Section 916.2(c), 936.2(c), 956.2(c) regarding "feasible practices" and "adequate protection".	7. 12/88
8. Vegetative canopy and structure in WLPZ	8. Improved criteria and methods for retaining vegetative canopy within WLPZ and for retaining riparian vegetation.	8. 12/88
9. Ground cover retention in WLPZ	9. Improved language in 14 CAC 916.5e, 936.5e, 956.5e, to require retention of adequate ground cover.	9. 12/88
10. Terms used in determination of WLPZ width	10. Rule definitions for "bank" and "change in slope".	10. 12/88
11. Flood prone area protection	11. Inclusion of flood prone areas in WLPZ and/or extra protection to prevent erosion or debris flotation.	11. 12/88
12. Determination of WLPZ width and protection measures	12. Inclusion of geological, hydrological and biological factors in determining appropriate WLPZ width and protection measures.	12. 12/88
13. Standards for existing roads	13. Application of new-road standards for drainage facilities, ditch drains, soil stabilization, etc., to existing roads.	13. 12/88

	Issue		Suggested Resolution		Target Date
14.	Domestic water supply protection	14.	Requirements for: (a) protection for water supply springs and pipelines, and identification in THP; (b) identification of potable water supplies within an appropriate distance downstream from operation; (c) notification of THP filing to the owners of such water supplies; and (d) protection for likely potential and restorable human uses.	14.	12/88
15.	Clear, enforceable performance standards for water quality protection	15.	Clarification of intent Sections 914, 916, 934, 936, 954, and 956, to provide clear, enforceable performance standards.	15.	12/89
16.	Skid trail erosion control requirements	16.	Requirements for: (a) extra protective measures where skid trails are close to other skid trails, roads and landings; (b) temporary road maintenance and abandonment provisions when skid trails are equivalent to a temporary road; and (c) application of temporary road crossing, drainage stabilization and removal provisions to temporary skid trail crossings.	16.	12/89

Issue	Suggested Resolution	Target Date
17. Winter operations procedures	17. THP justification for using 914.7c, 934.7c, 954.7c, in lieu of a winter operating plan.	17. 12/89
18. Sensitive area operations	18. THP specification of methods and equipment for road and landing construction, disposal, drainage, stabilization, maintenance, and abandonment.	18. 12/89
19. Erosion control on roads	19. Requirements for: (a) THP specification of erosion and drainage control on road crossings; (b) THP specification measures to prevent or reduce future failure of road areas being reconstructed; and (c) improved seasonal abandonment of temporary roads.	19. 12/89

ATTACHMENT C

ITEMS FOR FURTHER CONSIDERATION

(These issues need further study to determine the most appropriate resolutions. Both Rule and non-Rule approaches will be considered. Evaluation of Rule language will occur consistent with the process set forth in Item A.2.)

	Issue		Suggested Resolution		Target Date
1.	Erosion hazard rating	1.	Improved use of erosion hazard rating system and minor adjustments to rating system.	1.	12/89
2.	Retention of riparian hardwood and non-commercial trees	2.	Improved treatment of riparian hardwoods and noncommercial trees, especially after conifer harvest.	2.	12/89
3.	Registered Professional Forester (RPF) responsibility	3.	Evaluation of: (a) increased RPF accountability for THP adequacy; (b) addition of RPF supervision and (c) reevaluation of present rules for suspension or revocation of RPF and LTO licenses for serious violations of the Rules.	3.	12/89
4.	Repeal of 14 CAC 898.2e	4.	Consider reinstatement 14 CAC 898.2e which required denial of THPs if implementation would violate state or federal standards.	4.	12/89
5.	Culvert sizing	5.	THP specification of culvert sizing method used.	5.	12/89
6.	Agency disagreement over approval of plan	6.	Provide dispute resolution procedure through MOU or consider head-of-agency appeal.	6.	12/88

	Issue		Suggest Resolution		Target Date
7.	Confusion over meaning of "in lieu" practice	7.	Evaluate use of "in lieu" concept in Rules.	7.	12/88
8.	Agency consultation prior to approving in-stream cleanup	8.	Provide for such consultation through MOU	8.	12/88
9.	Improved participation by public and nonreview agencies in review process	9.	Improved procedures for participation	9.	12/88
10.	Reevaluation by review team after response by RPF	10.	Provide for such re-evaluation through MOU	10.	12/88
11.	Point of RPF transfer of responsibility to LTO	11.	Study need for Rule.	11.	12/89
12.	Recognition of and protection against mass wasting hazard	12.	Improved criteria and methods for evaluating and protecting against mass wasting hazard.	12.	12/89
13.	Use of guidance documents	13.	Requirements for use of guidance documents (if necessary) after development of documents.	13.	12/89

ATTACHMENT D

DEVELOPMENT AND IMPLEMENTATION OF GUIDANCE DOCUMENTS TO COMMUNICATE INFORMATION TO PRACTITIONERS

A. Develop or improve guidance documents on the following topics:

1. Criteria and methods for identifying and evaluating (or rating) the following types of sensitive areas or conditions:

   a. Erodible and unstable slopes;
   b. Near-stream geological and hydrological conditions;
   c. Near-stream biological conditions, including riparian zone, canopy cover, and windthrow potential;
   d. Instream structure, habitat, and wildlife value; and
   e. Offsite beneficial uses of water.

2. Criteria and methods for evaluating potential adverse effects and for selecting measures to protect any of the above from adverse effects of:

   a. Felling, yarding, and stream clearing activities;
   b. Road and landing location, construction, and maintenance; and
   c. Site preparation activities; and
   d. Cumulative watershed effects.

3. Criteria and methods for road and landing construction, maintenance and abandonment.

4. THP content needed to:

   a. Describe the following:

      (1) site environmental conditions,
      (2) proposed practices, especially if non-standard, and
      (3) probable environmental effects of practices;

   b. Describe and justify proposed protection measures; and

   c. Set forth the above in a manner which provides for:

      (1) thorough disclosure and environmental review,
      (2) clear and comprehensive guidance to LTOs and other responsible parties, and
      (3) specific and enforceable standards.

B. Determine the most effective and appropriate methods of assuring use of the guidance documents, considering the following:

1. Incorporation into training and education programs;
2. Promotion through professional meetings and publications;
3. Implementation by THP review teams;
4. Amendment of THP forms to demonstrate use where appropriate;
5. Amendment of Rules to require use; and
6. Adoption as Technical Rule Addendum.

C. In carrying out the above, perform the following tasks:

1. Compile and review available reference material to determine whether, for each subject area, available material is adequate, can be readily supplemented, or whether new guidance documents are needed.

2. Determine the need for additional financial and administrative assistance, for scientific or technical assistance, and/or for additional studies in order to carry out the foregoing tasks.

ATTACHMENT E

IMPROVEMENT AND DEVELOPMENT OF TRAINING AND EDUCATION PROGRAMS

A. Continue to develop and upgrade training and education programs on the topics set forth in Attachment D and on any other topics deemed appropriate by the liaison committee.

B. In carrying out the above, the following tasks are recommended:

1. Review existing programs and training materials to determine whether, for each topic, existing programs are adequate, could be adequately supplemented, and/or whether new programs are needed.

2. Determine the most important training and education needs of:

   a. Foresters involved in planning, supervising, or monitoring timber operations;

   b. Non-foresters (agency personnel) involved in planning, reviewing, inspecting, and monitoring timber operations;

   c. Timber operators, timber owners, and other parties responsible for operations and environmental protection.

3. Determine the most appropriate program formats and materials (e.g., guidelines, handouts, video cassettes, seminars, workshops, tailgate sessions, etc.).

4. Determine the most appropriate parties (including review team agency representatives) to develop and present program materials.

5. Determine any administrative and financial needs and feasible methods for satisfying these needs.

6. Determine the most appropriate methods of encouraging participation (e.g., credits toward education requirements, payment or waiver of fees, etc.).

C. Continue to update training programs to meet changing needs.

ATTACHMENT F

INTERAGENCY PROCEDURES FOR BMP IMPLEMENTATION

A. Determine appropriate interagency procedures for each of the following:

1. Improved training programs in forestry and protection of water-related values for Review Team agencies and assuring adequate agency participation.

2. Procedures by which Review Team agencies shall more consistently seek and provide consultation before, during, and after timber operations, giving special consideration in the following:

   a. Appropriate use of watercourse classification system, especially for Class II and III watercourses;

   b. Sensitivity of onsite geological, hydrological, and biological conditions which may affect water-related values;

   c. Probable effects of timber operations on sensitive conditions and water-related values, especially where:

      (1) Yarding, roads, or landings will be, are or were within or close to standard WLPZ widths, reducing density of ground cover or canopy cover,

      (2) Sensitive geological, hydrological, or biological conditions exist onsite which are likely to be disturbed by operations,

      (3) Non-standard practices will be, are, or were used, and

      (4) Special concerns have been raised;

   d. Appropriateness of practices and protection measures which may be, are, or were used.

3. Procedures to provide for cooperative monitoring studies to better determine the effects of forest practices, especially under the conditions listed in Item A.2.

4. Access by DFG and Regional Board representatives onto nonfederal timberlands.

5. Improved procedures for assuring the adequacy of THP content.

6. Improved procedures for THP review, including the following:

   a. Increased review agency attendance at Review Team meetings and preharvest inspections;

   b. Increased participation by public and non-Review Team agencies in Timber Harvesting Plan review;

   c. Increased review times if needed;

   d. Review Team re-evaluation of any post-review changes made to THP between review and approval of THP; and

   e. Improved resolution of conflicts between representatives of Review Team agencies, including a stepwise time-certain process for negotiating or appealing disagreements to higher levels of authority within each agency.

7. Procedures to improve operator compliance with Rule and THP requirements, including the following:

   a. Increased use of unannounced inspections;
   b. Increased use of inspections focused on operations in sensitive areas which may threaten water-related values;
   c. Increased participation in compliance inspections by other Review Team representatives;
   d. Increased and improved inspection of road construction practices; and
   e. Increased use of DFG and Regional Boards in support of CDF enforcement actions.

B. Incorporate appropriate improvements in agency procedures into any needed and mutually acceptable MOUs (or other agreements) which specify:

   1. The authority and responsibility (including decision-making and advisory roles) given to each agency for implementing such improvements; and

   2. The levels of adequately trained staff and other resources to be maintained by each agency in order to implement these improvements.

ATTACHMENT G

DEVELOPMENT AND IMPROVEMENT OF VOLUNTARY PROCEDURES FOR PRIVATE SECTOR BMP IMPLEMENTATION

A. Encourage adoption of clear comprehensive policy statements by landowners, companies and/or professional associations by doing the following:

1. Working with representatives of the timber industry and related professional associations to assist in development of policy statements regarding environmental protection for use by the private sector.

2. Where feasible, developing key concepts and suggested language for incorporation into policy statements.

B. Encourage private sector implementation of BMPs by suggesting feasible procedures, such as the following:

1. Encouraging foresters to more frequently consult with other subject matter experts when warranted.

2. Training employees using appropriate techniques.

3. Improving communication between foresters and operators regarding desired site-specific environmental results of operations.

4. Improving and standardizing flagging and marking codes used in site layout to assist operator.

5. Improving supervision of operations by foresters.

6. Improving inhouse monitoring of effects of operations to ensure that desired results are being achieved.

7. Improving auditing of operator performance.

8. Improving self-policing within industry and professional associations of persons who repeatedly violate environmental protection policies.

ATTACHMENT H

DEVELOPMENT AND IMPLEMENTATION OF PROGRAMS FOR ADDITIONAL STUDIES

A. Study appropriate criteria and methods for evaluating or rating sensitive conditions listed in Attachment D, Item A.

B. Develop and conduct studies of the best feasible methods for the following:

1. Establishing natural resource databases which are:

   a. Located in state agencies (including DFG, CDMG, CDF, Water Board, and Regional Boards) and Federal agencies involved with natural resource management.

   b. Mutually compatible in structure and format in order to facilitate interagency use;

   c. Capable of using the existing files, databases, and unorganized information currently in the State agencies, and, to the degree feasible, in Federal agencies, educational institutions, and the private sector;

   d. Capable of expanding to incorporate new information developed by additional studies of natural resources;

   e. Accessible to users in the private sector, educational institutions, and Federal agencies;

   f. Descriptive of the characteristics and geographical distribution of geologic, topographic and climatic features, soils, vegetation, animals, wildlife habitats, land uses (past, present, and potential), water quality, and beneficial uses.

2. Establishing watershed planning programs which are:

   a. Capable of facilitating evaluation of the location and sensitivity of unstable or erodible slopes, near-stream geological, hydrological, and biological conditions, instream or lacustrine aquatic habitats, and human uses of water; and

   b. Capable of facilitating evaluation of the probable effects of alternative courses of action or combinations of activities within a watershed.

C. Study criteria and methods for evaluating actual and potential cumulative watershed effects. The methods shall be:

1. Feasible and reasonably accurate.

2. Mutually acceptable to State and Federal agencies and capable of being used in areas of mixed Federal and nonfederal ownership of land.

3. Capable of evaluating contributions to cumulative effects from every significant land use or activity within a watershed.

4. Capable of evaluating the variability of individual cumulative effects with time and location.

D. Study long-term effects on mass wasting and water-related values caused by timber harvesting and related activities, especially in sensitive near-stream locations.

MEMORANDUM OF AGREEMENT
BETWEEN THE
STATE WATER RESOURCES CONTROL BOARD
AND THE
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

Purpose

The purpose of this Memorandum of Agreement (MOA) is to outline the procedures for reporting proposed oil, gas, and geothermal field discharges and for prescribing permit requirements. These procedures are intended to provide a coordinated approach resulting in a single permit satisfying the statutory obligations of both parties to this MOA. These procedures will ensure that construction or operation of oil, gas, and geothermal injection wells and surface disposal of waste water from oil and gas and geothermal production does not cause degradation of waters of the State of California.

General

Responsibilities of the Agencies

The Department of Conservation, Division of Oil and Gas (CDOG) has the statutory responsibility to prevent, as far as possible, damage to underground and surface waters suitable for irrigation or domestic purposes resulting from the drilling, operation, maintenance, or abandonment of oil, gas, and geothermal wells (Public Resources Code Sections 3106 and 3714). In March 1983, CDOG received primacy from the Environmental Protection Agency (EPA) pursuant to the provisions of Section 1425(a) of the federal Safe Drinking Water Act that gives CDOG additional authority and responsibility to regulate Class II wells in the State. Class II wells are used to inject fluids into the subsurface that are related to oil and gas production.

The State Water Resources Control Board (SWRCB) and the nine California Regional Water Quality Control Boards (collectively RWQCB) have statutory responsibility to protect the waters of the State and to preserve all present and anticipated beneficial uses of those waters (Water Code, Division 7, Chapters 1 through 7).

Scope of Agreement

The following procedures have been formulated and adopted by the CDOG and SWRCB to: (1) simplify reporting of proposed waste discharges by the oil, gas, and geothermal operators; (2) achieve coordination of activity; and, (3) eliminate duplication of effort among the State agencies. As far as these agencies are concerned, the method of reporting proposed oil, gas, and geothermal underground injection and surface discharges will be uniform throughout the State. The attached maps show district and regional boundaries and office addresses.

The following procedures will not generally be applicable to injection wells or surface disposal methods used by operators to dispose of wastes other than produced water and fluids defined by the EPA as Class II. Other discharges (e.g., refinery wastes) must be issued waste discharge requirements or waivers through the appropriate Regional Water Quality Control Board (Water Code, Division 7, Chapter 4). Such discharges will not be subject to regulation by CDOG unless the subject disposal well is within the administrative limits of an oil, gas, or geothermal field. In such case, the CDOG must also issue a permit for the well construction (Public Resources Code Sections 3008 and 3203). The conditions of this permit should be in agreement with the waste discharge requirements for this well.

The CDOG personnel shall report all pollution problems, including spills to the ground surface or surface streams, to the appropriate Regional Board.

Procedures

Underground Injection

1. Application: Oil, gas, or geothermal operators must file an application for all proposed injection projects with the appropriate CDOG District office. The District office will forward a copy of the application to the appropriate Regional Board for its review and comment. Data to be included with the application shall include: (1) a chemical analysis, as appropriate, to characterize the proposed injection fluid considering the source of the fluid and/or the exposures the fluid has or will undergo before disposal; (2) a chemical analysis, as appropriate, from the proposed zone of injection considering the characteristics of the zone (to include name, location, depth and formation for well from which zone fluid was sampled); and, (3) depth, location, and injection formation of the proposed well. If the Regional Board wishes to comment prior to the issuance of a draft permit for review, comments shall be received by CDOG within 14 days.

2. Review and Consultation: During the review of the application, the CDOG, the Regional Board and the State Board shall consult with one another and local agencies, as necessary, and may require the applicant to submit additional data, as necessary, to demonstrate that the proposed injection will not cause a water quality problem. Additional data required by the RWQCB, if reasonably available, shall be forwarded upon request. Data regarded as confidential by CDOG, or the applicant, will be identified and kept confidential by the RWQCB.

3. Permit Preparation and Issuance:

a. CDOG will prepare a draft permit, including monitoring requirements, for the injection in accordance with statutory obligations, furnishing a copy of the draft document to the appropriate Regional Board.

b. The Regional Board will have the opportunity to comment on the draft requirements during the public review period established pursuant to the Memorandum of Agreement (MOA) between the CDOG and the Environmental Protection Agency (EPA).

c. The Regional Board shall determine whether or not the draft requirements provide protection to ground and surface waters having present or anticipated beneficial uses. If the draft requirements are not adequate, the Regional Board shall, within 30 days, propose conditions or revisions which would satisfy Regional Board concerns. CDOG will not issue final requirements until Regional Board concerns have been satisfied.

If no response is received from the Regional Board by the end of the public comment period, the requirements will be presumed to be acceptable to the Regional Board.

CDOG will furnish a copy of the final requirements to the Regional Board.

Surface Discharge

1. Application: The oil, gas, or geothermal operator shall file a Report of Waste Discharge with the appropriate Regional Board. The Regional Board will review the Report of Waste Discharge in accordance with applicable state and federal requirements, including 40 CFR Part 435. No report need be filed when such a requirement is waived by the Regional Board pursuant to Water Code Section 13269.

When a Report of Waste Discharge is not adequate in the judgment of the Regional Board, the Board may require the applicant to supply additional information as it deems necessary. If a surface disposal site is within the administrative limits of an oil, gas, or geothermal field, the Regional Board shall send a copy of the Report of Waste Discharge to the CDOG for review and comment when the report is complete. If CDOG wishes to comment, the Regional Board should receive comments within 14 days to ensure consideration of these comments during the drafting of waste discharge requirements.

2. Preparation and Adoption of Waste Discharge Requirements:

a. The Regional Board will prepare draft waste discharge requirements for the disposal of production waters by surface discharge. If a surface disposal site is within the administrative limits of an oil, gas, or geothermal field, a copy of the draft document shall be furnished to the appropriate CDOG District office.

b. The CDOG shall determine whether or not the draft requirements fulfill CDOG's statutory obligations related to water quality. If the draft requirements are not adequate, the CDOG shall, within 30 days, propose conditions to the Regional Board which would meet these statutory obligations. The Regional Board will not issue final requirements until CDOG concerns have been satisfied.

If no response is received from CDOG by the end of the public comment period, the requirements will be presumed to be acceptable to CDOG. The Regional Board will furnish a copy of the final requirements to CDOG.

Enforcement Coordination

After construction, CDOG will notify the appropriate Regional Board of any pollution problems noticed during its inspection activities. The Regional Boards will notify CDOG of any suspected violations of CDOG requirements uncovered during the Regional Boards' inspection activities.

If a determination is made by CDOG, or by the Regional Board, or the SWRCB, that an injection or surface disposal operation is violating the terms of its permit or is causing an unacceptable water quality problem, the permitting agency shall take any necessary actions to assure that compliance is achieved, or that the practice causing water pollution is abated forthwith. If necessary, the permitting agency shall order work to be done and/or order operation to be halted. Enforcement actions involving both statutory authorities should be coordinated among the parties involved in this MOA, but neither agency is precluded from taking independent enforcement action.

Modification of this Agreement

This agreement will be effective upon signature by the designated parties. The agreement may be modified upon the initiative of either party for the purpose of ensuring consistency with State or Federal statutes or regulations, or for any other purpose mutually agreed upon. Any such modifications must be in writing and must be signed by the Director of the Department of Conservation, the State Oil and Gas Supervisor, and the Chairman of the SWRCB.

Kenneth N. Ward — 3-9-88
State Department of Conservation — Date

W. F. McNeil — 3-4-1988
State Oil and Gas Supervisor — Date

W. Don Maughan — MAY 19 1988
Chairman, State Water Resources Control Board — Date

Raymond L. Hilton — MAY 19 1988
Executive Director, State Water Resources Control Board — Date

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION 88- 61

APPROVAL OF AMENDMENTS TO THE MEMORANDUM OF AGREEMENT BETWEEN THE STATE WATER RESOURCES CONTROL BOARD AND THE DEPARTMENT OF CONSERVATION, DIVISION OF OIL AND GAS REGARDING CLASS II INJECTION WELLS

WHEREAS:

1. The State Water Resources Control Board (State Board) and the Department of Conservation, Division of Oil and Gas executed a Memorandum of Agreement (MOA) in August 1982 that outlined the procedures for reporting proposed oil, gas, and geothermal field discharges and the procedures for prescribing permit requirements for said discharges.

2. The CDOG received primacy to administer the federal Underground Injection Control Program for Class II wells in California from the U.S. Environmental Protection Agency (EPA) in March 1983.

3. The EPA revised its classification of materials that are considered Class II fluids in July 1987.

4. The EPA revised classification requires revisions to the MOA for consistency.

5. Additional revisions to the MOA are necessary to clarify procedures.

THEREFORE BE IT RESOLVED:

That the State Board approves the revised MOA with CDOG and directs the Chairman and Executive Director to sign said agreement.

CERTIFICATION

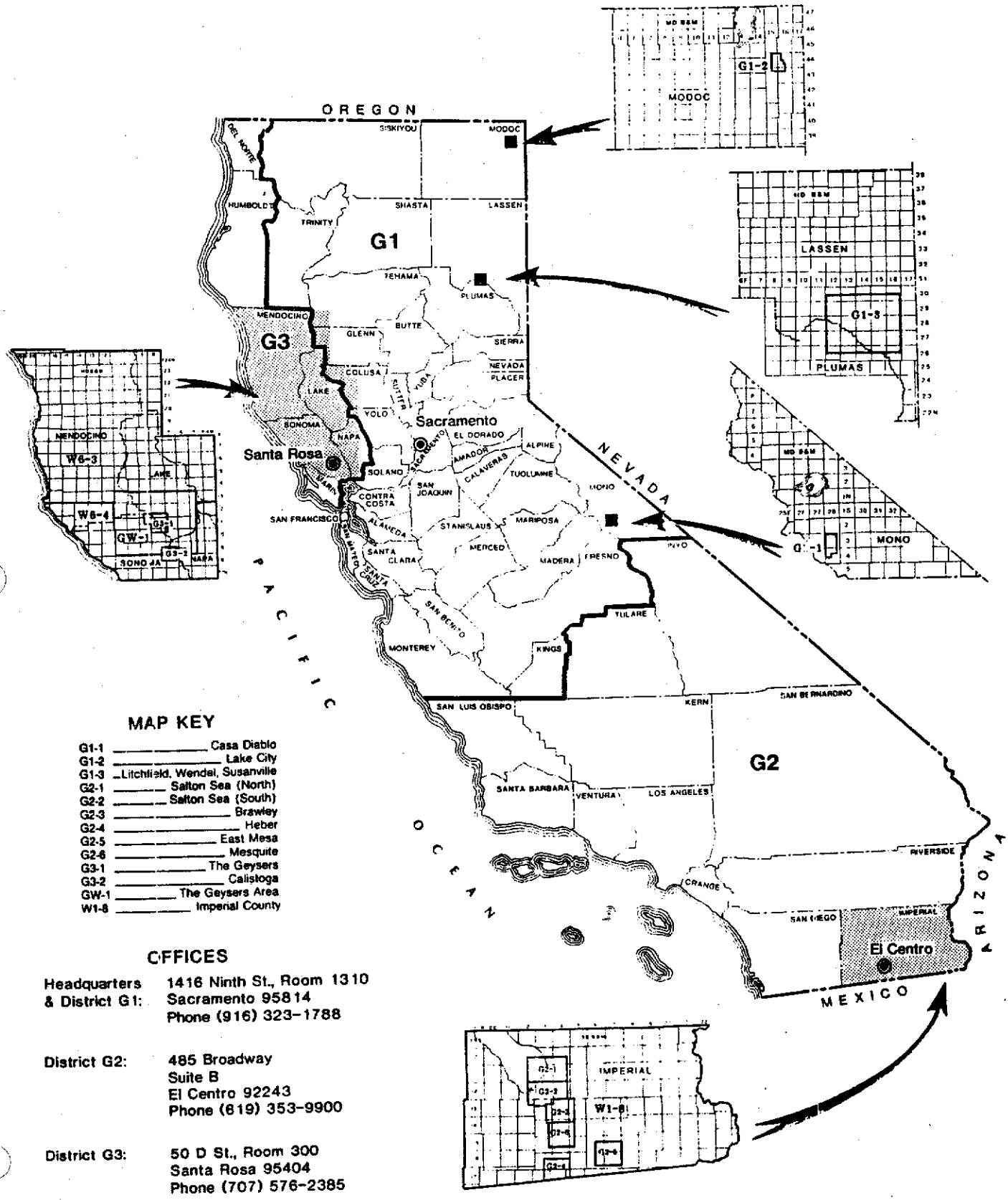
The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on

MAY 19 1988

Maureen Marche'
Administrative Assistant to the Board

17/6/8

GEOTHERMAL DISTRICT AND FIELD MAPS



MAP KEY

G1-1	Casa Diablo
G1-2	Lake City
G1-3	Litchfield, Wendel, Susanville
G2-1	Salton Sea (North)
G2-2	Salton Sea (South)
G2-3	Brawley
G2-4	Heber
G2-5	East Mesa
G2-6	Mesquite
G3-1	The Geysers
G3-2	Calistoga
GW-1	The Geysers Area
W1-8	Imperial County

OFFICES

Headquarters & District G1: 1416 Ninth St., Room 1310
Sacramento 95814
Phone (916) 323-1788

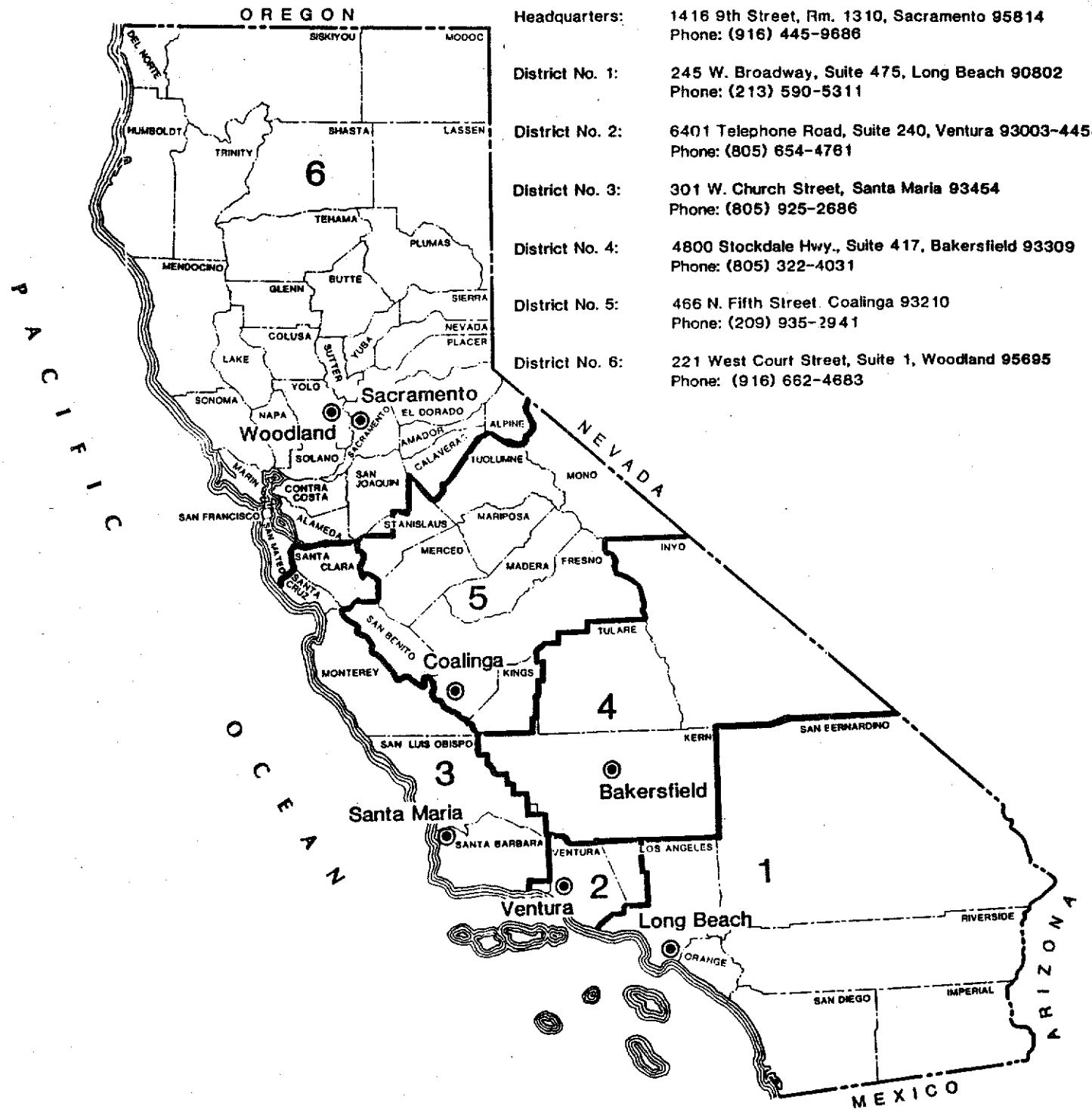
District G2: 485 Broadway
Suite B
El Centro 92243
Phone (619) 353-9900

District G3: 50 D St., Room 300
Santa Rosa 95404
Phone (707) 576-2385

OIL AND GAS DISTRICT BOUNDARIES

Offices

Headquarters:	1416 9th Street, Rm. 1310, Sacramento 95814 Phone: (916) 445-9686
District No. 1:	245 W. Broadway, Suite 475, Long Beach 90802 Phone: (213) 590-5311
District No. 2:	6401 Telephone Road, Suite 240, Ventura 93003-4458 Phone: (805) 654-4761
District No. 3:	301 W. Church Street, Santa Maria 93454 Phone: (805) 925-2686
District No. 4:	4800 Stockdale Hwy., Suite 417, Bakersfield 93309 Phone: (805) 322-4031
District No. 5:	466 N. Fifth Street, Coalinga 93210 Phone: (209) 935-2941
District No. 6:	221 West Court Street, Suite 1, Woodland 95695 Phone: (916) 662-4683



MEMORANDUM OF UNDERSTANDING
BETWEEN
THE DEPARTMENT OF HEALTH SERVICES
AND
THE STATE WATER RESOURCES CONTROL BOARD
THE REGIONAL WATER QUALITY CONTROL BOARDS
FOR THE CLEANUP OF HAZARDOUS WASTE SITES

August 1, 1990

INTRODUCTION

This Memorandum of Understanding (MOU) consists of general and specific provisions for the cleanup of hazardous waste sites. General provisions include the scope of the agreement, which defines the parties and the type of sites to which the MOU applies; the principles, not found in law or regulation, which govern the conduct of the parties; and the methods for implementation, which explain the manner by which the parties will execute, and perform according to, this MOU.

Specific provisions, which address the protocol the parties will follow for the cleanup of hazardous waste sites, include: the method by which the lead agency and, consequently, the support agency are determined; the responsibilities of the lead and support agencies, which are defined in terms of tasks to be accomplished; procedures to be followed to ensure coordination; outputs to be produced to ensure that minimum technical requirements are satisfied; the manner by which the parties will enforce their respective authorities and settle their claims against hazardous waste site owners, operators, or dischargers; and the manner by which the parties will settle their disputes.

BACKGROUND

Based on a recommendation of the Governor's Task Force on Toxics, Waste, and Technology, Governor Deukmejian issued Executive Order D-55-86, which states, in part, that the Department of Health Services (DHS), the State Water Resources Control Board (SWRCB), and the Regional Water Quality Control Boards (RWQCB) shall enter into an MOU that specifies each agency's responsibilities in hazardous waste site cleanup, defines standards and criteria for use in Remedial Action Plan (RAP) development, and identifies a conflict resolution process to resolve interagency disputes. Subsequently, the Legislature included a provision in the Supplemental Report of the 1988 Budget Act requiring the development of this MOU.

Statutes of the State of California, embodied in the state codes, authorize certain actions or express fundamental principles which must govern the intent and goals of the MOU. Relevant code sections include, but are not limited to, the following:

A. DHS is mandated to carry out all hazardous waste management responsibilities imposed or authorized by the Resources Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and any regulations promulgated pursuant to these federal acts (Health and Safety Code [HSC] 25159.7).

B. DHS shall prepare a plan for the expeditious implementation of the Hazardous Substance Cleanup Bond Act of 1984 which shall include procedures required for the development and adoption of final RAPs by DHS and RWQCB (HSC 25351.6 and 25334.5).

C. DHS, or if appropriate, the RWQCB shall prepare or approve RAPs for all sites listed by DHS for Remedial Action (RA) (HSC 25356.1 and 25356).

D. DHS or the RWQCB shall review and consider any public comments, revise the draft plan if appropriate, and then issue the final RAP. (HSC 25356).

E. DHS shall implement procedures for the abatement of an imminent and substantial endangerment (HSC 25358.3).

F. DHS is authorized to spend funds from the Hazardous Substance Account or the Hazardous Substance Cleanup Fund for removal or remedial actions on any site included on the list established pursuant to HSC 25356 only if DHS enters into an enforceable agreement or issues an order and determines in writing that the potential responsible party(s) is not in compliance with the order or agreement. (HSC 25355.5)

G. The SWRCB and each RWQCB shall be the principal state agencies with primary responsibility for the coordination and control of water quality (Water Code [WC] 13001).

H. Each RWQCB shall obtain coordinated action in water quality control, including the prevention and abatement of water pollution and nuisance (WC 13225).

Under direction from the Governor, DHS signed a Defense (Department)-State Memorandum of Agreement (DSMOA) in May 1990, which allows for funding state oversight of remedial actions at military facilities in California. Although both DHS and the State and Regional Boards are eligible to receive payment for their oversight costs, federal funding is limited and qualified. Separate agreements between DHS regional offices and the RWQCBs for specific sites will be required in order to allocate available funding. This MOU provides a basis for DHS and the Boards to agree on funding and performance at military facilities.

DHS, also, has recently signed an Agreement in Principle (AIP) with the U.S. Department of Energy (DOE). The AIP will provide reimbursement of state costs for oversight of specified environmental compliance activities at DOE facilities. An Interagency Agreement between the DHS Environmental Health Division and the SWRCB will specify water quality oversight tasks which the State and Regional Boards will perform.

THE DHS AND THE SWRCB AND THE RWQCBS AGREE TO THE FOLLOWING:

I. SCOPE

This MOU is effective immediately and is binding upon DHS, the SWRCB, and the nine RWQCBs. It covers the cleanup of hazardous substances at all sites or facilities where such substances must be cleaned up in order to protect public health or the environment. The cleanup of other substances is not covered under this agreement. Sites include, but are not limited to, sites listed on the National Priorities List (NPL) and in the DHS Site Mitigation annual work plan. This MOU shall be used to determine the relationship of the parties and to guide the site-specific communications between them on activities at the sites. The provisions of this MOU are applicable both at sites where a state agency is the lead agency as well as at sites where the U.S. Environmental Protection Agency, Region 9 (EPA) is the lead agency. In the latter case, the provisions of this MOU shall be utilized to determine which state agency will act as the liaison between the State and EPA and how the state agencies will coordinate their review and comment on site-specific documents submitted by EPA.

Contracts and agreements also exist which involve DHS, SWRCB, RWQCB, and local agencies in the cleanup of leaking underground storage tanks. There are also other specific agreements between state and/or federal agencies. This MOU is not intended to conflict with the provisions of those contracts and agreements nor is it intended to add procedure and requirements which the agencies agree are not necessary for the satisfactory cleanup of leaking underground storage tanks.

A Memorandum of Agreement (MOA) exists between DHS and the SWRCB regarding coordination of activities at facilities subject to regulation pursuant to RCRA. For coordination of cleanup activities at these facilities, the agencies should refer to both this MOU and the RCRA MOA.

II. PRINCIPLES

The parties recognize that certain principles, not found in law or regulation, should govern their conduct. One principle is that the participation of both agencies acting within their respective authorities, jurisdiction, and expertise, whether acting as lead agency or support agency, is essential for the successful cleanup of hazardous waste sites and is in the best interest of the State.

In the cleanup of hazardous waste sites, mutual trust, confidence, cooperation, and communication between the parties are to be expected. It is a basic aim of this MOU and the policy of the parties that duplication of effort in the site cleanup program be avoided. Public health and the environment are best served by each party minimizing duplication of effort on the greatest number of sites possible. Both parties do, however, recognize that there are certain situations where one or the other will have the necessary technical resources, expertise, or authority. To the extent staff and other resources allow, and in a manner set forth in this MOU, the parties agree to assist each other. This cooperative approach is in the best interest of public health and the environment.

Finally, the parties recognize that cleanup of hazardous waste sites throughout California can best be achieved if the state agencies act with consistency and predictability. Both the public and the responsible parties expect that state government will apply rational methodologies and standards to site cleanup. Compliance with the terms of this MOU will eliminate or significantly reduce any apparent inconsistencies between the agencies. Consistency will be achieved by agreement on minimum technical and procedural requirements, coordination of enforcement actions, close and constant communication between project staff, and exchange of Applicable or Relevant and Appropriate Requirements (ARARs) or state standards for site cleanup. If either agency is developing such standards, that agency will involve the other agency in the development at an early stage so that consistency in technical issues can be maintained.

III. IMPLEMENTATION

In order to facilitate implementation of this MOU, the parties will establish an "MOU Technical Advisory Commitee" (TAC) within four months of the effective date of this MOU. The TAC will serve to provide guidance and advice to management and staff on technical issues that develop during performance under this agreement and will assist, if called upon, in the settlement of technical disputes. The TAC will also evaluate the achievement of the goals of the Executive Order and the compliance principles of this MOU and will provide an annual report to management. This report will be submitted by March 1 of each year, will cover the prior calendar year and will, if appropriate, include recommendations for modifications to this MOU to improve attainment of the principles of the parties. The TAC will consist of a total of six members, each at a level equivalent to Supervising Engineer, Supervising Hazardous Materials Specialist, or above, as follows: one member from DHS Headquarters, two members from DHS Regional Sections, one member from SWRCB, and two members from RWQCBs. Annually the TAC will elect one of its members as chairman who will be responsible for coordinating the activities of the TAC.

IV. LEAD AGENCY DETERMINATION

DHS Regional Offices and RWQCBs will meet to determine the lead agency as appropriate under this section.

A. The agency which first discovers a potential or actual hazardous waste site shall serve as the lead agency until the criteria of this MOU are utilized to determine a lead agency.

B. Within 180 days after the effective date of this MOU, the agencies shall determine the lead and support agencies for each hazardous waste site on which either agency plans to work in Fiscal Year 1990-91. Each Regional Board Executive Officer (EO) and Department Regional Administrator (RA) shall compile an inventory of hazardous waste sites within their respective regions and shall determine whether resources are or will be available to perform the tasks required by this MOU. The EO and RA shall then agree on which agency shall be lead and which shall be support for sites of common jurisdiction. Sites for which neither agency has resources shall be listed in a holding pool until resources become available or priorities change. This process shall be repeated for each subsequent fiscal year as necessary to implement this MOU. The designation of lead agency may be changed at any time by agreement of the agencies.

C. The determination of a lead agency shall be made by considering the factors listed in Paragraph D of this section. It is probable that more than one factor may be applicable to a site. In these situations, more weight should be given to those factors listed first.

D. The lead agency as between DHS and SWRCB/RWQCB, for the cleanup of hazardous waste sites shall be determined using the following guidance:

1. DHS should be the lead agency at sites where there is no responsible party.

2. If the site does not meet the criteria in number 1 above, then the following conditions apply:

   a. If after reasonable enforcement actions are implemented, the responsible party is unwilling or is financially unable to perform cleanup and the expenditure of state Superfund monies is deemed appropriate to perform actual site cleanup, then DHS should be the lead agency.

   b. If the site is on the NPL, then DHS should be the lead agency.

   c. If one agency has a significantly longer history of involvement working to clean up the site, then it should be the lead agency.

   d. If the source of the contamination is a leaking underground storage tank, then the RWQCB or a local agency, upon delegation by a Regional Board, or by contracting with the state Board, should be the lead agency.

   e. If the contamination is primarily airborne, then DHS should be the lead agency in consultation with the Air Resources Board and the appropriate Air Quality Management District.

   f. If the site is primarily a result of agricultural activities, then the RWQCB should be the lead agency.

   g. If the source of the contamination is an inactive mine, then the RWQCB should be the lead agency.

   h. If the contamination is confined to soils, then DHS should be the lead agency.

   i. If the contamination is primarily impacting surface waters, then the RWQCB should be the lead agency.

j If the source of the contamination is a RCRA regulated disposal facility, then DHS should be the lead.

k. If the source of the contamination is a non-RCRA surface impoundment, then the RWQCB should be the lead agency.

l. If the source of the contamination is a landfill which would not normally be regulated by DHS, then the RWQCB should be the lead agency in consultation with the California Integrated Waste Management Board.

E. Notwithstanding a determination under Paragraph D of this section, DHS Regional Offices and the RWQCB may otherwise agree which agency shall be lead agency at a particular site. Specific examples of situations where this provision may be used are where multiple sources are contributing to the same problem or where resource availability affects the determination; however, other situations may warrant a decision using this provision.

F. The agency determined to be the lead agency for purposes of site cleanup under this MOU is not necessarily the lead agency for implementing programs or tasks that are applicable to the site but not within its authority or jurisdiction. Where the support agency happens to have sole or primary responsibility or exclusive capability for a program or task related to cleanup activities, then that agency shall perform those required tasks pursuant to its exclusive lead authority in a manner consistent with its role under this MOU. Examples of such tasks and programs include, but are not limited to, issuance of a National Pollutant Discharge Elimination System permit, approval of a transportation plan, regulation of nonhazardous wastes, enforcement of the Toxic Pits Control Act, approval of a solid waste water quality assessment test report, performance of a public health evaluation, or the imposition of restrictions for land use. The support agency will coordinate all activities described in this paragraph with the lead agency.

G. Any dispute regarding the determination of the lead agency shall be resolved pursuant to Section VII.

V. RESPONSIBILITIES OF LEAD AND SUPPORT AGENCIES

A. Coordination Procedures

1. General

a. The lead agency is responsible for coordinating and communicating with the support agency in a timely manner. This includes, but is not limited to, providing schedules, technical reports, correspondence, and enforcement papers; soliciting and responding to comment, analysis, evaluation, and advice; and meeting, conferring and discussing the project.

b. The support agency is responsible for coordinating and communicating with the lead agency in a timely manner. This includes, but is not limited to, providing notification that selected sites are of particular interest; providing comment, analysis, evaluation, and advice, especially that within the unique expertise of the agency; and meeting, conferring, and discussing the project.

c. EPA will be the lead agency for many sites listed on the NPL. The State will designate a state lead agency using the criteria specified in Section IV. The agency so designated has the responsibility of maintaining communications between the State and EPA. This agency does not have responsibility for ensuring completion of the tasks listed in Section V B. However, this agency shall ensure that comments from all state agencies

are transmitted to EPA and shall coordinate the resolution of any disputes so that the State presents only one position to EPA.

d. Neither agency will significantly change its procedures for the cleanup of hazardous substances without notification to and review and comment from the other agency. Examples of such changes include technical guidance documents and applicable regulations.

2. Specific

a. Each agency will coordinate with the other agencies on its enforcement activities as specified in Section VI.

b. The lead agency shall provide to the support agency any California Environmental Quality Act (CEQA) documents at least ten working days prior to sending these documents to the state clearinghouse. If the support agency decides to comment, it shall do so within ten working days after receipt, or during the formal review process as mandated by CEQA.

c. The lead agency shall contact the support agency to identify ARARs for each specific site at the following times:

(1) During the scoping phase of the remedial investigation/ feasibility study (RI/FS) or equivalent.

(2) During the site characterization phase of the RI or equivalent.

(3) During the development of alternatives in the FS or equivalent.

(4) During Remedial Design (RD).

The support agency shall respond within 30 calendar days after a request for ARARs. The lead agency shall apply the ARARs identified by the support agency or it shall provide to the support agency, at least 20 calendar days prior to informing the responsible party or the public, a written memorandum which identifies ARARs that will not be applied and the reasons for such decisions.

For those sites where EPA is the lead agency, the state lead agency as determined according to this MOU, shall notify EPA of all ARARs identified by the parties to this agreement. However, the party identifying the ARARs shall be responsible for defending the application of its ARARs should EPA elect not to apply them.

d. The lead agency shall prepare or have the responsible party(ies) prepare the draft RAP or equivalent cleanup plan as an internal working draft document and provide a copy to the support agency at least 20 working days prior to general public distribution. If the support agency decides to comment, it will do so within 20 working days after receipt. Unless a shorter period of time is mutually agreed upon, any dispute shall be resolved by Section VII.

e. The lead agency shall provide all other technical documents, as specified in Section V.B.9. , and not otherwise referred to above, within a time sufficient for review and comment. In all cases. the lead agency shall provide at least 15 working days for review and response by a support agency unless a shorter period of time is mutually agreed upon. The support agency shall respond, as appropriate, in a timely manner.

B. Tasks

1. For sites listed on the NPL or in the DHS Site Mitigation annual work plan:

a. The lead agency shall be responsible for ensuring completion of the following tasks:

(1) Identifying imminent threats and initiate removal actions (if necessary).

(2) Identifying responsible parties.

(3) Issuing an order or entering into an enforceable agreement (if necessary).

(4) Coordinating enforcement actions (see Enforcement and Settlement Section VI).

(5) Establishing and maintaining an administrative record.

(6) Providing project oversight:

(i) Assigning a remedial project manager.

(ii) Maintaining a field presence including, if necessary, providing an on-scene coordinator.

(iii) Preparing and maintaining site schedules and workplans.

(iv) Reviewing technical documents listed in Section 9 of this paragraph for comment or approval.

(v) Managing applicable contracts.

(vi) Accounting for project costs.

(7) Preparing and/or reviewing RI/FS which includes:

(i) Site characterization.

(ii) RA alternatives.

(iii) Risk assessment.

(8) Requiring and approving the Quality Assurance Project Plan (QAPP) and Sampling and Analysis Plan (SAP).

(9) Providing technical documents to the support agency, including, but not limited to, as appropriate:

(i) Site schedule.

(ii) RI/FS workplan.

(iii) RI report.

(iv) FS report.

(v) Health and Safety Plan.

(vi) QAPP.

(vii) SAP.

(viii) Community relations plan.

(ix) RAP.

(x) CEQA documents.

(xi) Transportation plan.

(10) Maintaining community relations:

(i) Developing and implementing a community relations program.

(ii) Managing any technical assistance grants.

(11) Compiling ARARs.

(12) Conducting a complete Public Health Evaluation (PHE) (as appropriate).

(13) Preparing and approving the RAP.

(14) Preparing and/or approving RD/RA

(15) Complying with CEQA.

(16) Recovering cost (if necessary).

(17) Overseeing operations and maintenance, including long-term monitoring (if necessary).

(18) Restricting land use (as appropriate).

b. The support agency shall be responsible for reviewing and, if appropriate, providing comments on the documents listed in Section V.B.1.a.(9) within the time periods determined utilizing Section V.A.2. or the lead agency may assume that the support agency does not have any comments. Additionally, the support agency shall always respond to a request for ARARs, and shall perform tasks as appropriate according to its exclusive authority or capability.

2. For sites not listed on the NPL nor on the DHS Site Mitigation annual work plan:

a. The lead agency shall be responsible for ensuring completion of the following tasks:

(1) Conducting removal actions (if necessary).

(2) Identifying a responsible party.

(3) Coordinating enforcement action (see Enforcement and Settlement, Section VI).

(4) Establishing and maintaining an administrative record.

(5) Providing project oversight.

(i) Assigning a project manager.

(ii) Preparing and maintaining site schedules and workplans.

(iii) Reviewing technical documents.

(iv) Maintaining a field presence, as necessary.

(6) Preparing or approving an Employee Health and Safety Plan.

(7) Characterizing the nature and extent of the problem.

(8) Requiring and approving quality assurance and sampling plans.

(9) Evaluating cleanup alternatives.

(10) Complying with CEQA.

(11) Conducting community relations.

(12) Preparing or approving the cleanup plan.

(13) Overseeing cleanup.

(14) Providing technical reports to the support agency.

b. The support agency shall be responsible for reviewing and, if appropriate, providing written comments on the documents submitted pursuant to Section V.B.2.a within the time periods determined utilizing Section V.A.2. or the lead agency may assume that the support agency does not have any comments. Additionally, the support agency shall always respond to a request for ARARs, and shall perform tasks as appropriate according to its exclusive authority or capability.

C. Technical Requirements

1. The following outputs or items, in whole or in part, are required to be addressed for the completion of RAs at hazardous waste sites:

a. For sites Listed on the NPL or in the DHS Site Mitigation annual work plan:

(1) RAs (if needed).

(2) Identification of responsible parties.

(3) Enforceable agreement or order.

(4) Cooperative agreement.

(5) Administrative record.

(6) Remedial project manager.

(7) On-scene coordinator.

(8) Site schedule.

(9) Workplans.

(10) Community relations plan.

(11) QAPP.

(12) SAP.

(13) RI.

(i) Site history.

(ii) Identification of sources.

(iii) Site characterization.

(14) ARARs.

(15) FS.

(16) Record of decision (ROD)/RAP

(17) RD

(18) RA.

(19) PHE.

(20) CEQA document.

(21) Health and Safety Plan.

(22) Transportation plan (if needed).

b. For sites not listed on the NPL nor in the DHS Site Mitigation annual work plan:

(1) RAs.

(2) Identification of responsible parties.

(3) Administrative record.

(4) Remedial project manager.

(5) Site schedule.

(6) Workplan.

(7) Quality assurance plan.

(8) Sampling and analysis plan.

(9) RAP or cleanup plan.

(i) Site history.

(ii) Identification of sources.

(iii) Site characterization.

(iv) Feasible remedial alternative.

(v) RD.

(10) Community relations plan.

(11) RA.

(12) Employee Health and Safety Plan.

(13) Community Health and Safety Plan (if needed).

(14) CEQA compliance.

(15) Transportation plan (if needed).

2. The agencies shall define these requirements, as appropriate, according to 40 CFR 300 et seq., and HSC 25350 et seq., in addition to the guidance documents listed in Attachment A.

VI. ENFORCEMENT AND SETTLEMENT

A. For purposes of this MOU, enforcement means the action by an agency to compel performance by a responsible party, such as the issuance of an order or the filing of a complaint. Settlement means the resolution by agreement with the responsible party, in whole or in part, of matters in dispute, such as the performance required for satisfactory remedial action, claims for money, or liability.

B. The lead agency will communicate with the other agencies regarding its enforcement and settlement activities for hazardous waste sites. Communication means, for example, notification at least 10 working days in advance, if feasible, of a decision to issue an order or to initiate settlement negotiations; provision of enforcement or settlement documents for information or for review and comment; and, to the extent feasible, modification of a proposed order or agreement to incorporate the other agency's concerns. Staffs will meet and confer, as necessary, during drafting of enforcement and settlement documents.

C. Unnecessary or redundant enforcement documents are to be avoided. Neither agency will take enforcement actions that are not compatible or complementary to the enforcement actions of the other agencies. To the extent possible, consistent with preserving their respective authority or mandates, each agency will coordinate time schedules and demands so that responsible parties can respond to consistent direction.

D. To the extent practicable, each agency will assist the other in enforcement. Information that may be used to determine compliance or noncompliance will be transmitted to the enforcing agency as soon as possible but no later than 15 working days after being obtained and formalized.

E. Upon a determination of noncompliance with an administrative order and a decision to pursue litigation (i.e. , referral to the Attorney General or filing a complaint), the responsible agency will notify the other agencies at least seven working days prior to referring a matter to the Attorney General. Each agency will coordinate its legal actions to the extent practicable so that the Attorney General may bring joined or consolidated causes of action.

F. Negotiations may be commenced with a responsible party to enter into an enforceable agreement either to take cleanup action without the issuance of an order, to resolve noncompliance with an order that has been issued, or to resolve causes of action alleged in complaint. All decisions to negotiate with a responsible party will be coordinated between the agencies.

G. The lead agency will act as lead spokesperson for the negotiating team. The lead spokesperson will be responsible only for initiating and maintaining communications with the responsible parties, for coordinating the State's position, and for directing the agenda for settlement. The negotiating team will be composed of representatives from each agency with authority, with legitimate claims, and electing to participate. For purposes of dispute resolution in Federal Facility Agreements (FFAs), the lead agency and support agency may agree to designate which state agency will cast the State's vote.

Each agency is responsible for presenting its respective position. If an agency fails to attend negotiations or to meet other negotiating responsibilities without good cause, or without notifying the other participating agency in advance, then that agency must either defer to negotiating participants on issues discussed at the missed negotiation or withdraw from further negotiations relative to that particular site.

However, where practicable, in order to avoid unnecessary expenditure of resources for conducting negotiations, the support agency, after prior notification to and agreement by the lead agency, may elect to withdraw from or not participate in active negotiations, either temporarily or permanently. In such cases, the support agency is responsible for providing to the lead agency the details of their specific concerns regarding settlement. If this information is not provided, the lead agency will negotiate in the best interest of the State, but will have no responsibility to negotiate on behalf of the support agency issues for which the lead agency has neither authority nor assistance.

When the support agency does not attend negotiations, the lead agency is responsible for obtaining for the support agency terms of settlement identical to its own, provided that: the support agency provides the necessary information and assistance to the lead agency pursuant to this section; and the terms requested by the support agency are similar in scope and documentation to that of the lead agency ("identical terms" means similar percentage of settlement request or similar conditions as opposed to a dollar-for-dollar separation). Moreover, the lead agency is responsible for notifying the support agency if new issues arise which may be within the sole authority of the support agency, in order that the support agency has the opportunity to participate in those portions of the negotiations addressing such issues. The negotiation of FFAs with the federal government is an example of when this situation may occur. In this example, the lead agency will not settle for recovery of their costs without including those similarly justifiable costs of the support agency.

H. All communications with a responsible party related to negotiations will be coordinated by the lead spokesperson. Documents related to negotiations will be shared freely between the agencies and such documents which are confidential will be maintained in a manner consistent with any applicable requirements for confidentiality.

I. Each agency will support the other during negotiations. A single position is essential, and the agency advocating the most conservative or stringent position will be responsible for defending its position. A disagreeing agency will remain silent or request a recess. All agencies involved should meet prior to each negotiating session in order to minimize disagreements.

J. Before agreement or settlement with responsible parties can be reached, the concerns and claims of each agency regarding the issues to be agreed upon or settled will be resolved. An agency will not settle independently with responsible parties without advance concurrence by the other participating parties. Disputes shall be settled pursuant to the procedure described in Section VII.

K. Settlement with a responsible party will include provision for payment by the responsible party for all oversight costs incurred or to be incurred by any negotiating agency that will participate in the RA procedure.

VII. DISPUTE RESOLUTION

A. Disputes shall be resolved, if at all possible, through informal discussion, negotiation, and consensus. Such informal discussions may, if necessary, include staff at all levels, including those listed in Section VII.B.1. If the dispute cannot be resolved informally within a reasonable length of time or if continuing nonresolution of the dispute would place either party at a disadvantage, then either party may notify the other party that such a dispute exists and exercise the formal dispute resolution procedure described below.

B. Disputes shall be resolved formally using the following procedure:

1. Jointly the staffs of the agencies involved in the dispute shall prepare a memorandum describing the dispute. The lead agency shall provide copies to the appropriate RA of the Toxic Substances Control Program (TSCP) and to the Executive Officer (EO) of the appropriate Regional Board. The memorandum shall address and explain all sides to the dispute, shall state the consequences of each recommended decision and shall provide a date by which a decision is needed. The lead staff person for each agency shall co-sign the memorandum prior to submitting it to management.

2. If the DHS RA and the RWQCB EO cannot resolve the dispute within the time requested in the memorandum, then they will jointly present written notification of the dispute to both the Executive Director (ED) of the SWRCB and the Deputy Director of the TSCP.

3. If the SWRCB ED and the TSCP Deputy Director cannot resolve the dispute within 30 calendar days from the day the memorandum is delivered to them, then the memorandum shall be delivered to the SWRCB and the Director of DHS. If within 30 calendar days they cannot resolve the dispute, the memorandum shall be delivered to the Secretary of Environmental Affairs and to the Secretary of Health and Welfare. If within 30 calendar days they cannot resolve the dispute, the memorandum shall be delivered to the Governor.

4. When the dispute is resolved, a written decision shall be provided to all parties to this MOU.

C. During such time that any formal or informal dispute is not yet resolved, neither agency will comment adversely in public. The time required to resolve a dispute shall not be used to unnecessarily or unfairly delay action by either agency.

John J. Kearns
Acting Deputy Director
Toxic Substances Control Program
Department of Health Services
State of California

Date: 7/30/90

James W. Baetge
Executive Director
State Water Resources Control Board
State of California

Date: 7-31-90

ATTACHMENT A

APPLICABLE LAWS, REGULATIONS, AND GUIDANCE DOCUMENTS

A. California Water Code.

B. California Health and Safety Code.

C. Titles 22/23 (Subchapter 15) California Code of Regulations.

D. California Environmental Quality Act.

F. National Oil and Hazardous Substances Contingency Plan.

G. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA.

H. Superfund Public Health Evaluation Manual.

I. Superfund Exposure Assessment Manual.

J. Methodology for Characterization of Uncertainty in Exposure Assessments.

K. RCRA Ground-Water Monitoring Technical Enforcement Guidance Document.

L. The Endangerment Assessment Handbook.

M. Superfund Remedial Design and Remedial Action Guidance.

N. Standard Operation Safety Guides (OSWER).

O. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (DHS [NIOSH]).

P. Data Quality Objectives for Remedial Response Activities (OSWER).

Q. Samplers and Sampling Procedures for Hazardous Waste Sources (EPA).

R. A Compendium of Superfund Field Operations Methods.

S. Handbook on Remedial Action on Waste Disposal Sites.

T. Uncontrolled Hazardous Waste Site Ranking System--A User's Manual.

U. Community Relations in Superfund: A Handbook (EPA) 03/86.

V. The California Site Mitigation Decision Tree Manual.

W. Small Site Cleanup Guidance Document (to be completed).

X. Leaking Underground Fuel Tank Manual.

ATTACHMENT B

ACRONYMS USED IN THE MEMORANDUM OF UNDERSTANDING

1.	AIP	Agreement In Principle
2.	ARARS	Applicable or Relevant and Appropriate Requirements
3.	CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
4.	CEQA	California Environmental Quality Act
5.	DHS	Department of Health Services
6.	DOE	U.S. Department of Energy
7.	DSMOA	Defense (Department)-State Memorandum of Agreement
8.	ED	Executive Director
9.	EO	Executive Officer
10.	EPA	U.S. Environmental Protection Agency, Region 9
11.	FFA	Federal Facility Agreement
12.	FS	Feasibility Study
13.	HSC	Health and Safety Code
14.	MOA	Memorandum of Agreement
15	MOU	Memorandum of Understanding
16.	NPL	National Priorities List
17	PHE	Public Health Evaluation
18	QAPP	Quality Assurance Project Plan
19.	RA	Remedial Action or Regional Administrator
20.	RAP	Remedial Action Plan (State equivalent to ROD)
21.	RCRA	Resource Conservation and Recovery Act
22.	RD	Remedial Design
23.	RI	Remedial Investigation
24.	ROD	Record of Decision (Federal equivalent to RAP)
25.	RWQCB	Regional Water Quality Control Board

26.	SAP	Sampling and Analysis Plan
27	SWRCB	State Water Resources Control Board
28.	TAC	Technical Advisory Committee
29.	TSCP	Toxic Substances Control Program
30.	WC	Water Code

MEMORANDUM OF UNDERSTANDING
BETWEEN THE
SOIL CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE
AND THE
STATE WATER RESOURCES CONTROL BOARD
FOR
PLANNING AND TECHNICAL ASSISTANCE RELATED TO
WATER QUALITY POLICIES AND ACTIVITIES

I. PURPOSE:

The purpose of this Memorandum of Understanding (MOU) is to formalize cooperation between U.S. Department of Agriculture (USDA), Soil Conservation Service (SCS) and the State Water Resources Control Board (State Board), and to develop appropriate guidelines and procedures related to water quality activities. The SCS and State Board share a common interest in maintaining, protecting, and improving the quality of waters (surface and ground water) of the State.

Through this MOU, the State Board seeks to utilize the personnel and expertise of SCS to increase the assistance available to California in the development and implementation of water quality programs and projects. Coordination and cooperation between SCS and State Board will reduce unnecessary duplication of effort, accelerate the implementation of best management practices (BMPs) and other nonpoint source (NPS) measures, and increase overall program effectiveness.

II. AUTHORITIES:

This MOU is entered into under the authorities of the Soil Conservation and Domestic Allotment Act (16 U.S.C. Section 590-f), as amended, Division 7 of the California Water Code (Porter-Cologne Act), and the authorities of the Clean Water Act (CWA), [Section 304(l), 314, 319, and 320], as amended.

Nothing in this MOU alters the statutory or regulatory authority of SCS or the State Board. This MOU is intended to strengthen those statutory requirements through the development of cooperative federal-State efforts.

III. BACKGROUND:

USDA Regulation 9500-7, Nonpoint Source Water Quality Policy, December 5, 1986 and USDA Regulation 9500-8, Policy for Groundwater Quality, November 9, 1987 established policy for integrating surface and ground water quality protection and improvement into the appropriate programs and activities.

The report to the Congress by the Secretary of Agriculture in the National Program for Conservation of Soil and Water: The 1988-90 Update gives top priority to the solution of soil erosion on agricultural land. The second priority is the "protection of the quality of surface and ground water from harmful contamination from nonpoint sources".

SCS, a technical agency of the USDA and, in cooperation with Resource Conservation Districts in California, provides technical assistance for implementation of water quality programs. SCS has a number of field offices which can provide technical assistance to most of the counties within California.

The Porter-Cologne Act, administered by the State Board, establishes a comprehensive program for the protection of water quality and the beneficial uses of the waters of the State. The Porter-Cologne Act is intended to provide a "statewide program for water quality control".

Section 319 of the CWA, as amended, requires the State to develop a NPS management program for controlling NPS pollution. The State Board has developed a State NPS Management Program which lists the SCS as providing technical and financial assistance to improve and protect land and water resources.

The State Board and SCS recognize the need to improve, conserve, and protect the quality of surface and ground water by undertaking efforts to avoid harmful NPS contamination and, thereby maintain the quality and quantity of water available for safe drinking supplies, irrigated agriculture, fisheries, and other beneficial uses. A coordinated effort is necessary to address these issues.

IV. SCS AGREES TO:

A. Integrate water quality concepts and management techniques into all programs and activities to address surface and ground water NPS pollution.

B. Implement internal policies that elevate the importance of water quality in all SCS programs and assure consistency of SCS actions with the State NPS Management Program.

C. Provide technical assistance to the State Board in the support and development of BMPs appropriate for the control and reduction of NPS pollution.

D. Encourage the targeting of water resource projects to hydrologic units that are tributary to the high priority waterbodies identified in the State Board's Clean Water Strategy and Water Quality Assessment Process.

E. Encourage the California Association of Resource Conservation Districts (CARCDs) and their more than 100 member districts to cooperate with appropriate State and local agencies in addressing the water quality priorities of federal agencies and the State Board.

F. Provide technical assistance through RCDs to landowners in dealing with NPS pollution problems.

V. STATE BOARD AGREES TO:

A. Use the SCS Field Office Technical Guide as a resource reference in the development and implementation of BMPs.

B. Assist the SCS in the selection of priority hydrologic units for the implementation of water resource projects.

C. Jointly develop with the SCS and CARCD demonstration projects addressing water quality concerns.

D. Encourage the voluntary or cooperative approach as the first step in the development and implementation of solutions to the NPS problem.

E. Consider the development of a statewide water quality policy for reducing NPS pollution of surface and ground waters and achieving water quality standards by working with other agencies.

F. Coordinate the activities of the California Regional Water Quality Control Boards with those activities being proposed and implemented by the SCS.

G. Define the goals and objectives of the NPS Interagency Advisory Committee and conduct regular meetings.

VI. SCS AND STATE BOARD MUTUALLY AGREE TO:

A. Develop a process for BMP selection and implementation to reduce or prevent agricultural pollution in priority waterbodies.

B. Continue to upgrade and update the SCS's Field Office Technical Guide and BMPs as new technology is developed.

C. Develop agricultural BMPs for NPS pollution control with input from the NPS Interagency Advisory Committee, and others.

D. Develop implementation priorities and policies for NPS pollution activities.

E. Provide guidance and technical assistance to implementation agencies.

F. Encourage participation of other federal, State, and local agencies in the control of NPS pollution.

VII. OTHER CONDITIONS OF THE MOU:

A. This is not a fiscal or a funds obligation document. Endeavors involving reimbursements or transfer of funds between SCS and the State Board for the purposes of this Agreement will be in accordance with USDA/SCS and State Board financial procedures. Any reimbursement agreement will be contingent upon the availability of funds and upon limitations of appropriations authorized by law.

B. This MOU complies with the nondiscrimination provisions of Title VI of the Civil Rights Act of 1964 and other nondiscrimination statutes, namely, Section 504, Title IX and the Age Discrimination Act of 1975 provides that no person in the United States shall, on the grounds of race, color, national origin, age, sex, religion, or handicap be excluded from participation in, or be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving federal or State assistance.

C. This MOU becomes effective on the date of signature by both parties and shall continue indefinitely. It may be modified at any time upon the mutual consent of the parties and it may be terminated by either party giving a 30-day advance written notice to the other party.

BY: W. Don Maughan
W. Don Maughan
Chairman
State Water Resources
Control Board
Sacramento, California

Date: July 31, 1990

BY: Pearlie S. Reed
Pearlie S. Reed
State Conservationist
Soil Conservation Service
Davis, California

Date: July 31, 1990

MEMORANDUM OF UNDERSTANDING

AMONG

ENVIRONMENTAL AFFAIRS AGENCY
AIR RESOURCES BOARD
STATE WATER RESOURCES CONTROL BOARD
CALIFORNIA INTEGRATED WASTE MANAGEMENT BOARD

I. INTRODUCTION

This Memorandum of Understanding (MOU) expresses the desire of the Air Resources Board (ARB), State Water Resources Control Board (SWRCB), California Integrated Waste Management Board (CIWMB), and Environmental Affairs Agency (Agency) to enhance program coordination. We undertake this task to minimize risks to public health and the environment, eliminate duplication of effort, and provide regulatory consistency.

The MOU consists of general and specific provisions. General provisions include (A) the scope of the agreement, which defines the parties and issues to which the MOU applies, (B) the principles which will govern the conduct of the parties and, (C) the existing statutory framework.

Specific provisions, which address the protocols the parties will follow, include (A) the responsibilities of the Boards and the Agency, (B) procedures to be followed to ensure communication and program coordination, (C) the manner by which the parties will settle their disputes, (D) implementation steps, and (E) procedures for amending, withdrawing from, and repealing this MOU.

II. BACKGROUND

California has a decentralized environmental management system. At the state level, the ARB, SWRCB, CIWMB, and Department of Health Services (DHS) formulate policies and regulations pertaining to air quality, water quality, solid waste, and hazardous waste, respectively. At the regional and local levels, the Air Quality Management Districts, Air Pollution Control Districts, Regional Water Quality Control Boards, and Local Enforcement Agencies conduct permitting and enforcement activities.

Many environmental issues cut across organizational lines. These interagency issues stem from the fact that pollutants do not recognize the boundaries of environmental media or political and institutional subdivisions. To effectively deal with interagency issues, the management of the Boards and the Agency set forth in this MOU some guiding principles and procedures to govern our conduct.

III. GENERAL PROVISIONS

A. SCOPE

This MOU is binding upon the ARB, SWRCB, CIWMB, and Agency. This MOU is effective immediately.

This MOU covers all activities of the Boards, and shall be used to determine the relationship of the Boards and guide communication among them and with the Agency.

An MOU is being prepared by the three Boards regarding solid waste disposal site testing and remediation (the SWAT program). For coordination of SWAT program activities, the parties should refer to both this MOU and the SWAT program MOU.

It is anticipated that in a limited number of instances, other, program-specific MOUs may be developed as a result of the problem identification and dispute resolution provisions of this MOU.

Although the local air districts, regional water quality control boards, and solid waste local enforcement agencies are not signatories to this agreement, the three Boards understand and agree that it is each Board's responsibility to inform and coordinate with their respective local or regional counterparts as outlined in Section IV(B)(3)(a) below.

B. PRINCIPLES

The Boards and the Agency recognize that we share a common goal--protection of public health and the environment. We also recognize that the resources available to achieve this goal are limited, and that duplication of effort, conflict, and confusion detract from our collective efforts. It therefore is the policy of the Agency and the Boards that the parties work together, in an atmosphere of mutual trust, confidence, cooperation and communication, to maximize the efficient use of our resources. Accordingly, the ARB, SWRCB, CIWMB, and the Agency are committed to work together, with other state agencies and other levels of government, to closely follow these guiding principles:

- We will resolve conflicts promptly.

- We will promote a multimedia approach to pollution control and pollution prevention that minimizes the total exposure to pollution faced by humans and the environment.

- We will avoid duplication of effort, and maximize the efficient use of resources.

C. EXISTING STATUTORY FRAMEWORK

1. Statutes of the State of California authorize certain actions or provide fundamental authority which must govern the operation of this MOU. Relevant sections include:

   a. The ARB has the responsibility for control of emissions from motor vehicles and shall coordinate, encourage, and review the efforts of all levels of government as they affect air quality (Health and Safety Code Section 39500).

      The ARB is the air pollution control agency for all purposes set forth in federal law (Health and Safety Code Section 39602).

   b. The SWRCB is the principal state agency with primary responsibility for the coordination and control of water quality (Water Code Section 13001).

      The SWRCB is the state water pollution control agency for all purposes stated in the Federal Water Pollution Control Act and any other federal act (Water Code Section 13160).

   c. The CIWMB shall adopt and revise minimum standards for solid waste handling and disposal for the protection of air, water and land from pollution (Public Resources Code Section 43020). The Board shall adopt rules and regulations, as necessary, to carry out Division 30 of the Public Resources Code (Public Resources Code Section 40502). The standards which the CIWMB must adopt shall include the design, operation, maintenance and ultimate reuse of solid waste processing or disposal facilities (Public Resources Code Section 43021).

      The CIWMB is the state solid waste management agency for all purposes stated in the Federal Resources Conservation and Recovery Act of 1976 and any other federal act affecting solid waste (Public Resources Code Section 40508).

   d. The Chairperson of the ARB serves as the principal advisor to the Governor on, and assists the Governor in establishing, major policy and program matters on environmental protection. The Chairperson also serves as the principal communications link for the effective transmission of policy problems and decisions to the Governor relating to the activities of the SWRCB and the CIWMB (Health and Safety Code Section 39511).

2. Other statutory provisions, noted below, speak to the interaction of the Boards. In particular, these provisions address the interaction of the Boards with respect to control of the air quality and water quality impacts of solid waste management facilities. However, these provisions do not adequately cover all

situations that arise, they are themselves subject to interpretation, and in general they need to be viewed in the context of each Board's general authority as outlined above. Section IV(A)(4) below sets forth procedures to be used to address such issues.

3. The statutory provisions which speak to the interaction of the Boards are as follows:

   a. The CIWMB shall consider any recommendations of the ARB for the prevention of air pollution and the SWRCB for the prevention of water pollution (Public Resources Code Section 43020).

   b. Division 30 of the Public Resources Code (which confers CIWMB authority) is not a limitation on the power of any state agency in the enforcement or administration of any provision of law which it is specifically authorized or required to enforce or administer, including, but not limited to, the exercise by the state water board or the regional water boards of any of their powers and duties pursuant to Division 7 (commencing with Section 13000) of the Water Code, and the exercise by the State Air Resources Board or any air pollution control district or air quality management district of any of its powers and duties pursuant to Part 3 (commencing with Section 40000) of Division 26 of the Health and Safety Code. (Public Resources Code Section 40055 (a)).

   c. The exercise of CIWMB authority under Division 30, including, but not limited to, the adoption of regulations, plans, permits, or standards and enforcement actions shall not duplicate or be in conflict with any determination relating to water quality control made by the state water board or regional water boards. (Public Resources Code Section 40055(b)).

   d. Any plans, permits, standards, or corrective action taken by the CIWMB pursuant to Division 30 shall incorporate, as a condition of the action, any applicable waste discharge requirements issued by the state water board or a regional water board, and shall be consistent with all applicable water control plans adopted pursuant to Section 13170, and Article 3 (commencing with Section 13240) of Chapter 4 of Division 7, of the Water Code and the state policies for water quality control adopted pursuant to Article 3 (commencing with Section 13140) of Chapter 3 of Division 7 of the Water Code existing at the time of the action or proposed action. (Public Resources Code Section 40055(c)).

   e. No provision of Division 7 of the Water Code (which confers SWRCB authority) or any ruling of the state [water] board or a regional board is a limitation . . . on the power of a state agency in the enforcement or administration of any provision of law which it is specifically permitted or required to enforce or administer (Water Code Section 13002).

IV. SPECIFIC PROVISIONS

A. BOARD AND AGENCY RESPONSIBILITIES

1. The ARB is responsible for development of standards and regulations pertaining to air quality, the SWRCB is responsible for development of standards and regulations pertaining to water quality, and the CIWMB is responsible for development of standards and regulations pertaining to waste management.

2. It is the responsibility of all Boards to act in a fashion to minimize overlap and duplication of effort. Management of the Boards has an affirmative responsibility to identify areas of duplication and overlap, work towards a mutually-agreeable delineation of activity, and foster a multimedia approach to pollution prevention and pollution control. The Agency will, as a back-up mechanism, screen Board material to identify issues with potential multi-Board implications.

3. It is the intent of the Boards and the Agency that regulations pertaining to issues of mutual interest, to the extent possible, be jointly developed by the affected Boards. The development of regulations by the Boards shall be governed by the following procedure:

   a. When a Board determines that it intends to develop or modify regulations, it shall notify the other Boards and the Agency in writing as to the subject matter of any proposed new regulation, and the section numbers of any existing regulations proposed to be modified.

   b. The other Boards shall review the notice and, within 30 days, notify the originating Board and the Agency in writing as to which proposals, if any, deal with issues that are of concern.

   c. For issues so identified, regulatory language shall be jointly developed by the affected Boards. The resulting language shall be adopted by each affected Board and placed in the relevant portion of the California Administrative Code for each affected Board.

   d. Any disputes that arise during this process shall be resolved according to the dispute resolution procedure outlined in Section IV(C) below. If the dispute cannot be resolved in a manner that results in the adoption of identical language by each affected Board, then any Board may proceed with individually developed regulations.

4. The Boards shall apply the following procedures when interpreting and implementing the statutory provisions regarding the interaction of the Boards cited in Section III(C)(3) above:

a. Any disagreement as to the interpretation of the above-referenced statutory provisions shall be resolved according to the dispute resolution procedure outlined in Section IV(C) below.

b. The CIWMB shall be the principal coordinating agency for all matters concerning the collection and disposal of solid waste in California, acting in concert with other affected state agencies. To "act in concert" means to act in a manner consistent with the intent and the provisions of this MOU.

c. As a pro-active measure to prevent potential conflict, the Executive Officers, at the first quarterly meeting convened pursuant to Section IV(D) below, shall identify critical waste management-related regulatory-areas where cooperative work is needed. ("Executive Officers" refers to the Executive Officer of the ARB, the Executive Director of the SWRCB, and the Chief Executive Officer of the CIWMB). The Executive Officers shall define tasks and milestones necessary to address the identified issues.

d. At subsequent quarterly meetings the Executive Officers shall review progress on waste management coordination, take corrective action as needed, and identify future needs.

5. It is the responsibility of each Board to:

a. Communicate with the other Boards in a timely manner.

b. Forward applicable draft policies, regulations, guidance documents or other relevant materials to the Agency for screening.

c. Notify other Boards when a particular facility, site or issue is of interest.

d. Provide comment, analysis, evaluation and advice on areas within its unique expertise.

e. Carry forward to other Boards the concerns and positions expressed by advocacy groups active in its issue areas.

6. It is the responsibility of the Agency to:

a. Screen the draft materials forwarded pursuant to Section IV(A)(5)(b) above to identify areas with potential multi-Board impact. If the Agency identifies such a potential impact, the Agency will provide comments to all Boards.

B. COMMUNICATION

The parties recognize that achieving the goals of this MOU rests upon effective communication across programmatic and organizational lines. This MOU therefore sets forth procedures addressing communication at the management level, at the staff level, with other levels of government, and with regulated facilities. The purpose of these procedures is to systematize and formalize the existing communication mechanisms.

1. At the management level, the Executive Officers or their designees will meet quarterly as described in Section (IV)(D) below.

2. Another essential step is fostering an awareness, at the staff level, that our environmental programs are inter-related, and that actions taken in one program can have an effect upon other programs. In order to encourage such an awareness, the Executive Officers will:

   a. Identify the issues where inter-staff communication is needed.

   b. Designate, for each Board, a contact person on that issue.

   c. Ensure that the contact persons meet on a regular basis.

   d. Provide regular opportunities for cross-program training and orientation.

   e. Provide copies of Office of Administrative Law rulemaking calendars to Agency and to the other Boards.

3. Local government and the federal government are essential components of California's environmental regulatory system. The Boards and the Agency recognize that the state must work with other levels of government in a clear, consistent fashion, and that each Board has a unique relationship with its local and federal counterparts.

   a. Each Board and the Agency agrees to work through the appropriate Board when communicating with local and regional agencies on a statewide basis. Any communication addressed to all local air pollution districts shall be routed through the ARB, communication addressed to all Regional Boards shall be routed through the SWRCB, and communication addressed to all Local Enforcement Agencies shall be routed through the CIWMB. Communication addressed to a single local or regional agency on a site-specific basis need not be routed through the appropriate Board. In such cases, however, the Board shall receive a copy of the correspondence.

   b. When providing comments to or otherwise communicating with federal agencies, each Board shall work with the other Boards to ensure that a consistent, coordinated state position is expressed.

4. It also is important that the Boards and the Agency deal with regulated facilities in a consistent, predictable fashion. The long-term credibility and effectiveness of our environmental programs suffers whenever regulatory agencies impose conflicting or duplicative requirements on facilities.

   In order to prevent such occurrences, each Board will establish procedures to ensure that appropriate notification is provided to other Boards regarding activities which affect facilities which are also regulated by other Boards.

C. DISPUTE RESOLUTION

1. It is the intent of the three Boards and the Agency that programmatic conflicts be resolved, to the extent possible, through informal discussion, negotiation, and consensus. However, it is also the intent that conflicts be resolved promptly.

   If a dispute cannot be resolved informally within a reasonable length of time or if continuing nonresolution of the dispute would place a Board at a disadvantage, then any Board may notify the other Boards and the Agency that a dispute exists and invoke the formal dispute resolution procedure described below.

2. Disputes shall be resolved formally using the following procedure:

   a. A meeting shall be convened involving staff from the affected Boards. At the meeting the staffs shall clarify the issues subject to dispute, identify alternative solutions, identify the consequences that would result from each alternative, and determine the date by which a decision is needed. This information shall be provided to the relevant Division Chiefs, who shall have no more than 30 days to resolve the issue.

   b. If the Division Chiefs from the affected Boards cannot resolve the dispute within the time allowed, then they will jointly notify the Executive Officers of the affected Boards, and the Agency Secretary.

      The affected Boards shall jointly be responsible for resolving the dispute. If the dispute is not resolved within 30 days, then the issue shall be referred to the Agency Secretary for resolution. The Agency Secretary, acting in consultation with the affected Boards, shall develop a recommended course of action and act as coordinator to bring about a resolution to the dispute.

   c. If the Agency Secretary is unable to develop a consensus course of action acceptable to all affected Boards within 30 calendar days of referral from the Boards, then each affected Board shall prepare a memorandum providing direction to their respective staffs as to how to proceed in the case. These memoranda will not necessarily describe a single course of action, but are intended to communicate and document each Board's future direction.

d. If the dispute is resolved by the Agency Secretary, then a written decision shall be provided to all parties of this MOU.

3. If, on an issue for which the formal dispute resolution mechanism has been invoked, a formal petition for review of an action or inaction by a Board is filed by a third party, the statutory or regulatory time periods required for action on the petition shall take precedence over those in Section IV(C)(2) above. However, the parties shall attempt to complete the actions described in Section IV(C)(2) to resolve the dispute within the statutory or regulatory time periods associated with the petition.

D. IMPLEMENTATION

1. In order to facilitate implementation of this MOU, the Executive Officers or their designees and the Secretary of Environmental Affairs designee will meet quarterly. This group will provide guidance and advice to the Agency Secretary and Board staff on technical issues that develop during performance under this agreement, and will assist, if called upon, in the settlement of technical disputes. The group will also evaluate the achievement of the principles of this MOU and will provide an annual report to the Agency Secretary. This report will be submitted by March 1 of each year, will cover the prior calendar year and will, if appropriate, include recommendations for modifications to this MOU to improve attainment of the principles of the parties.

   The quarterly meetings will be held on a rotating chair basis, with each Executive Officer or designee and the Agency Secretary designee being responsible, in turn, for organizing and hosting the meeting and preparing the agenda.

2. The first quarterly meeting of the Executive Officers or their designees will be held within 30 days of the execution of this MOU.

E. AMENDMENT, WITHDRAWAL, AND REPEAL

1. This MOU may be amended with the mutual written approval of all signatories or their successors.

2. Any signatory to the MOU, or his or her successor, may withdraw from the MOU by sending written notification to the Agency Secretary. In the event that one party withdraws from the MOU, the MOU continues in full force for the remaining parties and continues to govern their activities.

3. This MOU may be repealed in its entirety with the mutual written approval of all signatories or their successors.

The parties hereto have caused this MOU to be duly executed on the respective dates set forth opposite their signatures.

Janeanne Sharpless
Secretary of Environmental Affairs

8/27/90
Date

James Boyd, Executive Officer
Air Resources Board

8/27/90
Date

James Baetge, Executive Director
State Water Resources Control Board

8/27/90
Date

George Larson, Chief Executive Officer
California Integrated Waste Management Board

8/27/90
Date

MEMORANDUM OF UNDERSTANDING
BETWEEN THE
STATE WATER RESOURCES CONTROL BOARD
AND THE
CALIFORNIA DEPARTMENT OF PESTICIDE REGULATION
FOR THE PROTECTION OF
WATER QUALITY (SURFACE AND GROUND WATER)
FROM POTENTIALLY ADVERSE
EFFECTS OF PESTICIDES

BACKGROUND

The State Water Resources Control Board (SWRCB) and the California Department of Pesticide Regulation (CDPR) have responsibilities relating to the protection of water quality from the potentially adverse effects of pesticides. Both agencies believe that the State will benefit by a unified and cooperative program to address water quality problems related to the use of pesticides.

The purpose of this Memorandum of Understanding (MOU) between the SWRCB and CDPR is to ensure that pesticides registered in California are used in a manner that protects water quality and the beneficial uses of water while recognizing the need for pest control.

The Food and Agricultural Code, as amended by the 1991 Governor's Reorganization Plan No. 1, charges CDPR with the responsibility of ensuring the orderly regulation of pesticides while protecting the quality of the total environment (including water quality) and the health, and safety of the public.

SCOPE

This MOU is intended to assure that the respective authorities of the SWRCB and CDPR, relative to the protection of water quality and beneficial uses from impairment by the use of pesticides, will be exercised in a coordinated and cohesive manner designed to eliminate overlap of activities, duplication of effort, and inconsistency of action. To that end, this MOU establishes principles of agreement regarding activities of the signatory agencies, identifies primary areas of responsibility and authority between these agencies, and provides methods and mechanisms necessary to assure ongoing coordination of activities relative to such purposes. This MOU also describes how the agencies will work cooperatively to achieve the goals of the respective agencies.

STATUTORY AUTHORITIES

The Porter-Cologne Water Quality Control Act establishes a comprehensive water quality control program for California. The Federal Clean Water Act adds additional water quality control provisions to be implemented nationwide. The SWRCB and the nine California Regional Water Quality Control Boards (CRWQCB) are responsible for protecting the beneficial uses of water in California and for controlling all discharges of waste into waters of the State. The SWRCB sets overall State policy, adopts or approves all water quality control plans, and hears petitions to review CRWQCB decisions. The CRWQCBs have primary responsibility for permitting, inspection, and enforcement actions. The CRWQCBs implement and enforce the policies adopted by the SWRCB.

CDPR is the lead agency for pesticide regulation in California. California law requires CDPR to register and regulate the use of pesticides and protect public health and safety by providing for environmentally sound pest management.

The Pesticide Contamination Prevention Act of 1985 (Article 15, Chapter 2, Division 7 of the Food and Agricultural Code) authorizes CDPR to:

1. Collect and analyze environmental fate data on all pesticides registered for agricultural use in California to determine ground water data gaps and identify and monitor potential ground water contaminants;

2. Review any pesticide or related chemical found in ground water or in soil under certain conditions to determine if that chemical pollutes or threatens to pollute ground water as a result of legal agricultural use and take appropriate corrective action when necessary; and

3. Compile and maintain a statewide database of wells sampled for pesticide active ingredients and to make an annual report on that inventory and any corrective actions taken by CDPR and/or the SWRCB.

The Pesticide Contamination Prevention Act (Act) also prescribes a cooperative working relationship between CDPR, as the lead agency, and the SWRCB for the purpose of protecting ground water from pesticide pollution as a result of agricultural uses. A subcommittee of CDPR's Pesticide Registration and Evaluation Committee (PREC) is established by the Act for this purpose.

The local administration of CDPR's pesticide regulatory program is the responsibility of the County Agricultural Commissioners (Commissioners), with coordination, supervision, and training provided by CDPR. The Commissioners enforce pesticide laws and regulations and evaluate permit requests for the use of restricted pesticides. In addition, the Commissioners monitor and inspect pesticide handling and use operations, investigate suspected pesticide misuse, and take enforcement action against violators.

PRINCIPLES OF AGREEMENT

The SWRCB and CDPR agree that the use of certain pesticides may degrade water quality and threaten beneficial uses. To protect the State's water, it is necessary to prevent water pollution by pesticides by establishing water quality objectives and by implementing control measures for those pesticides which have a potential to unreasonably affect beneficial uses.

In order to provide for better protection of water quality and beneficial uses for the people of California, the SWRCB and CDPR mutually agree to:

1. Promote both technical and policy consultations concerning pesticide water quality issues through formal channels, such as standing interagency committees and SWRCB workshops and meetings, as well as through informal staff exchanges of information. The SWRCB and CRWQCBs and CDPR will consult during the early stages of planning any investigation related to pesticides and water quality. The agencies will provide technical assistance to each other upon request.

2. Implement a pesticide detection notification system to ensure mutual awareness of pesticide finds in the waters of the State. Results of pesticide monitoring will be provided in an expeditious manner. Results of pesticide monitoring related to ground water will be provided in compliance with "Minimum Reporting Requirements for Well Sampling" approved by the SWRCB, California Department of Food and Agriculture, and California Department of Health Services in July 1986. Reporting requirements and procedures for data referrals relative to surface water will be described in an implementation document.

3. Collect, exchange, and disseminate information on (a) the use of pesticides, (b) impacts on the quality of the State's waters from such uses, and (c) any efforts to mitigate those impacts.

4. Share information on pesticide formulations and environmental fate and toxicity of active ingredients, inert ingredients, and break-down products. Procedures to protect proprietary information will be described in an implementation document.

5. Consult each other in developing or revising water quality objectives for pesticides and in developing or revising regulations which may impact water quality.

6. Participate in the development of State policies, guidelines, and management plans relative to pesticide use and water quality control.

7. Promote the development and implementation of Best Management Practices (BMPs) whenever necessary to protect the beneficial uses of the waters of the State from the potentially adverse effects of the use of certain pesticides. CDPR's plans to implement BMPs, as furnished to the SWRCB and/or CRWQCBs, should (a) describe the nature of the actions which are necessary to achieve the objectives, including recommendations for appropriate actions by any entity, public or private; (b) set a time schedule for actions to be taken; and (c) describe the points of application and the monitoring to be undertaken to determine compliance with the water quality objectives.

8. Implement BMPs initially upon voluntary compliance to be followed by regulatory-based encouragement of BMPs as circumstances dictate. Mandatory compliance will be based, whenever possible, on CDPR's implementation of regulations and/or pesticide use permit requirements. However, the SWRCB and CRWQCBs retain ultimate responsibility for compliance with water quality objectives. This responsibility may be implemented through the SWRCB and CRWQCBs' Basin Planning Programs or other appropriate regulatory measures consistent with applicable authorities and the provisions of the Nonpoint Source Management Plan approved by the SWRCB in November 1988.

9. Develop an implementation plan to (a) provide uniform guidance and direction to the CRWQCBs and to the Commissioners regarding the implementation of this MOU, (b) describe in detail procedures to implement specific sections of this MOU, and (c) make specific the respective roles of units within the signatory agencies.

DISPUTE AND CONFLICT RESOLUTION

It is the desire of both agencies to establish a speedy, efficient, and informal method for the resolution of interagency conflicts. Conflicts between the SWRCB and CRWQCBs, CDPR, and the Commissioners which cannot otherwise be informally resolved will be referred to the Executive Director of the SWRCB and the Director of CDPR. Conflicts which cannot be resolved at this level will be elevated to the Secretary of the California Environmental Protection Agency.

To assist the Executive Director of the SWRCB and the Director of CDPR in resolving conflicts, two staff persons will be appointed by the Chairman of the SWRCB and the Director of CDPR representing the interests of the SWRCB and CRWQCBs and CDPR and Commissioners, respectively.

This MOU shall become effective upon the date of final signature and shall continue in effect until modified by the mutual written consent of both parties or until terminated by either party upon a thirty (30) day advance written notice to the other party.

STATE WATER RESOURCES CONTROL BOARD

W. Don Maughan

W. Don Maughan, Chairman

Dec. 23, 1991
Date

CALIFORNIA DEPARTMENT OF PESTICIDE REGULATION

James W Wells

James W. Wells, Interim Director

Dec 23, 1991
Date

MEMORANDUM OF UNDERSTANDING (MOU)

FOR IMPLEMENTATION OF

THE SAN JOAQUIN VALLEY DRAINAGE PROGRAM'S RECOMMENDED PLAN

DECEMBER 1991

The U. S. Bureau of Reclamation, U. S. Fish and Wildlife Service, U. S. Soil Conservation Service, U. S. Geological Survey, Department of Water Resources, Department of Fish and Game, Department of Food and Agriculture, and the State Water Resources Control Board agree to the following:

1. Background. A management plan for agricultural subsurface drainage and related problems on the westside San Joaquin Valley was developed by the Federal-State San Joaquin Valley Drainage Program (SJVDP) during the period 1985-1990, and published in a September 1990 report by the same name.

2. Purpose. All parties to this MOU will use the management plan described in the September 1990 final report of the San Joaquin Valley Drainage Program (SJVDP Recommended Plan) as the principal guide for remedying subsurface agricultural drainage and related problems. All parties will work together to identify and define specific tasks and associated responsible parties, to seek needed funding and authorities, and to determine schedules for accomplishment, as necessary to implement all components of the SJVDP Recommended Plan.

3. Program. The parties will use the strategy described in "A Strategy for Implementation of the Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley", December 1991, as the initial step in developing an action plan. Based on it, the parties will prepare an annual work plan to establish priorities and coordinate activities to address the objectives of the Recommended Plan. During 1992, the parties will prepare work plans for 1992 and 1993. Subsequent work plans will be prepared two years in advance to facilitate budget development and funding requests. The parties will prepare an annual report that will outline and evaluate accomplishments during the year.

4. Funding and Legal Authority. It is understood by all parties that implementation of this MOU and the SJVDP Recommended Plan are subject to the availability of funding and legal authority. All parties to this MOU agree to support attempts by signatory agencies to secure the funding and authority necessary to implement work plans adopted pursuant to this MOU.

   In order to enhance efficiency and economy, and reduce duplications or conflicts in efforts, all parties to this MOU agree to coordinate requests for funding and authority.

5. Amendments. This MOU may be modified by mutual agreement as necessary to accomplish drainage management objectives.

6. Withdrawal. Any party to this MOU may withdraw by submitting a written notice to each of the other parties 120 days in advance of the intended withdrawal.

7. MOU not a contract. In entering into this MOU, it is the intention of the parties that this MOU shall not be construed to be an enforceable contract or agreement, but is rather a statement of principles.

8. Term of MOU. This MOU shall remain in effect until all components of the SJVDP Recommended Plan have been fully implemented or until it is dissolved by unanimous agreement of the signatory parties.

SIGNATURES

U. S. Bureau of Reclamation

Department of Water Resources

U. S. Fish and Wildlife Service

Howard A Sarasohn for
Department of Fish and Game

U. S. Soil Conservation Service

Department of Food and Agriculture

U. S. Geological Survey

W. Don Maughan
State Water Resources Control Board

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE STATE WATER RESOURCES CONTROL BOARD
AND
THE CALIFORNIA INTEGRATED WASTE MANAGEMENT BOARD
FOR THE REVIEW OF
BACKLOGGED SOLID WASTE ASSESSMENT TEST REPORTS

INTRODUCTION

This Memorandum of Understanding (MOU) consists of general and specific provisions for the review of Solid Waste Assessment Test (SWAT) reports as required by Assembly Bill 3348 (Eastin), signed by the Governor September 29, 1992.

BACKGROUND

1. **Agency Authority:**

   The California Water Code, Division 7 designates the State Water Resources Control Board (State Water Board) as the State's lead regulatory agency for water quality protection.

   The California Public Resources Code, Division 30 designates the California Integrated Waste Management Board (CIWMB) as the state's lead regulatory agency for solid waste disposal.

2. **Solid Waste Assessment Test Program:**

   In 1984, the Legislature adopted California Water Code §13273 which, among other things, required:

   A. The State Water Resources Control Board (State Water Board) to group all solid waste disposal sites (both active and closed) in ranks of 150 each in accordance with their threat to water quality,

   B. All landfill owner/operators, one rank per year, to conduct a SWAT (a determination whether the landfill is leaking hazardous waste) and to submit to the appropriate California Regional Water Quality Control Boards (Regional Water Boards) a report signed by a specified professional containing the findings of the SWAT together with appropriate conclusions,

   C. The Regional Water Boards are to review this report and determine whether, (1) the monitoring system was adequate to determine whether hazardous waste had leaked for the site and (2) the report author's conclusions were credible.

3. Current SWAT Program Status:

Between the start up of the SWAT program and June 30, 1991, 195 SWAT reports were approved and 15 SWAT waivers granted (for those cases where hazardous waste leakage was already well known). In addition, another 231 SWAT reports had been received, but not approved. Because of the heavy demands on the State's General Fund, funding for SWAT report review was eliminated in July 1991, leaving this large backlog of unreviewed SWAT reports.

4. Assembly Bill Number 3348 (Eastin):

In 1992, the Legislature adopted Assembly Bill 3348 (Eastin) which contains in Section 10, the following language:

"The following sums are hereby appropriated from the Solid Waste Disposal Site Cleanup and Maintenance Account in the Integrated Waste Management fund to the State Water Resources Control Board:

"(a) (1) Two million five hundred thousand dollars ($2,500,000), as a one-time allocation, but without regard to fiscal year, to complete a review of all solid waste assessment test reports that are required to be submitted to the appropriate regional water quality control boards by July 1, 1991, that have been classified in ranks one through five in the Solid Waste Assessment Test (SWAT) program pursuant to Section 13273 of the Water Code.

"(2) The expenditure of these funds shall be subject to the conditions specified in a memorandum of understanding which shall be entered into by the California Integrated Waste Management Board and the State Water Resources Control Board and which shall include, but need not be limited to, provisions linking the review and ranking of solid waste landfill facilities by the State Water Resources Control Board with the Solid Waste Disposal Site Cleanup and Maintenance Program implemented by the California Integrated Waste Management Board."

and the following:

"(c) The Legislature encourages the State Water Resources Control Board to complete the review performed pursuant to paragraph (1) of subdivision (a) on or before June 30, 1995."

THE CIWMB AND THE STATE WATER BOARD AGREE TO THE FOLLOWING:

1. **Scope:**

This MOU is effective immediately and is binding upon CIWMB, the State Water Board, and the nine Regional Water Boards.

This MOU includes provisions for sharing data, ensuring that activities at sites of common interest are coordinated, and conflict resolution.

2. **Sharing of Data:**

A. **SWAT Report Summaries:** The State Water Board will provide the CIWMB copies of all SWAT Report Summaries as prepared by the Regional Water Boards. Newly prepared Summaries shall be transmitted quarterly.

B. **Quarterly Progress Report:** Every three months, the State Water Board will provide the CIWMB an updated SWAT Status Report showing the current SWAT report review status for each landfill included in Ranks 1 through 5. For those SWAT reports which have not been approved yet, these status reports shall include for each, the name of the staff person assigned to work on it and the anticipated quarters (1) the review will start, (2) a corrected Report will be submitted, or (3) the SWAT report will be approved.

C. **Final Report:** The State Water Board will prepare a Summary Report of the findings of all the SWAT reports to date including, but not limited to, discussions of the following:

1. Hazardous waste presence in landfills,

2. General characterization of solid waste disposal site leakage,

3. Chemical characterization of leakage,

4. Impact of leakage on quality of nearby waters,

5. Impact of leakage on beneficial uses of nearby waters, especially of drinking water supply wells, and

6. Completed or proposed remedial actions.

In addition, this report shall contain a discussion of needed improvements in landfill designs and monitoring to reduce the threat which landfills pose to the beneficial uses of the State's waters.

A copy of this report shall be provided to the CIWMB by June 30, 1995.

3. **Ensuring that Activities of Common Interest are Coordinated:**

Whenever the CIWMB has a need for expedited Regional Water Board review of any landfill's SWAT report, CIWMB shall:

A. Request such a review in writing to the State Water Board and

B. State the date by which they need these data.

The State Water Board shall respond within 10 working days of the receipt of the request with:

A. The anticipated date the review will be completed, and

B Reasons for delay should it be impossible to meet the CIWMB's due date.

4. **Conflict Resolution:**

Any dispute arising out of the implementation of this Agreement shall be resolved in the following manner:

A. The designated Program Managers for the CIWMB and the State Water Board shall meet within ten (10) days of a request by either party. The party calling the meeting shall provide, in writing, at least five (5) days in advance of the meeting, a clear description of the dispute and a proposed solution. Following the meeting, the CIWMB Program Manager shall make a determination on the dispute, in writing, including reasons for the determination. The determination shall be sent to the State Water Board Program Manager within ten (10) days of the meeting.

B. If the State Water Board does not agree with the determination, the State Water Board may make a written request for a meeting between the Deputy Executive Director of the CIWMB , and the Chief of the Division of Clean Water Programs of the State Water Board. Such a meeting should occur within fifteen (15) days of the receipt of such request. The request must be accompanied by a statement of the disputed issues and a proposed solution. The CIWMB shall make a determination, in writing, and shall send this to the Chief, Division of Clean Water Programs, State Water Board, within fifteen (15) days of the meeting.

C. If the two Division Chiefs cannot resolve the issue in dispute, the matter shall be elevated to the Executive Directors of the two agencies for resolution.

D. Unresolved issues may be elevated to the Board Chairpersons of the State Water Board and the CIWMB.

E. Any issues which cannot be resolved by the Board Chairpersons shall be forwarded to the Secretary for Environmental Protection for a final and binding decision.

Ralph Chandler
Executive Director
California Integrated Waste
Management Board
State of California

Date: 1/8/93

for Walt Pettit
Executive Director
State Water Resources Control Board
State of California

Date: DEC 16 1992

SOLID WASTE ASSESSMENT TEST (SWAT)/AB 3348 PROGRAM
QUARTERLY STATUS REPORT
EXAMPLE FORMAT

For each landfill included in Rands 1 through 5:

1. Rank: 4

2. Name (including SWIS and WMUDS numbers): Klamath County Landfill, 59-AA-001, 1A123456789

3. Location (County and Nearest Community): Klamath, Deadman's Bar

4. Review Status:

   A. Approved, [ ]

   B. Awaiting Review, [ ]

   C. In Review, [ ]

   D. Returned to Owner/Operator for Corrections, or [x]

   E. Never received. [ ]

5. Regional Water Board (if status 4B, 4C, or 4D above, name and telephone number of review): North Coast, Jane Doe, (209) 555-1212

6. Review Target Dates (by Quarter)

   A. State of Review:

   B. Due date for Owner/Operator to have corrections made: 3rd Quarter, FY 1992-93

   C. Approval of SWAT Report:

7. Comments: No ground water sample taken. SWAT Investigation was clearly inadequate. Letter to owner/operator ordering correction of deficiencies was sent out February 1992 with a March 1993 deadline.

MEMORANDUM OF UNDERSTANDING
BETWEEN THE
BUREAU OF LAND MANAGEMENT
U.S. DEPARTMENT OF THE INTERIOR
AND THE
CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
FOR
PLANNING AND COORDINATION OF
NONPOINT SOURCE WATER QUALITY POLICIES AND ACTIVITIES

I. PURPOSE:

The purpose of this Memorandum of Understanding (MOU) is to formalize cooperation between the Bureau of Land Management (BLM), U.S. Department of the Interior, and the State Water Resources Control Board (SWRCB) and to develop appropriate procedures and clarify responsibilities related to nonpoint source (NPS) water quality issues and activities. The BLM and SWRCB share a common interest in maintaining, protecting, and improving the quality of waters (surface and ground water) of the State.

II. OBJECTIVES:

Through this MOU, SWRCB seeks to utilize the personnel and expertise of BLM to increase the development and implementation of water quality programs and projects relative to, but not limited to, agricultural, animal husbandry, silvicultural, mining, and construction activities on the public lands managed by BLM within the State of California. Coordination and cooperation between BLM and SWRCB will reduce unnecessary duplication of effort, accelerate the implementation of best management practices (BMPs), management measures (MM), and other NPS measures (NPSM) and increase overall program effectiveness.

The SWRCB and BLM recognize the need to improve, conserve, and protect the quality of surface and ground water by undertaking efforts to avoid pollution by NPSs and thereby maintain the quality and quantity of water available for safe drinking water supplies, irrigated agriculture, fisheries, and other beneficial uses. A coordinated effort will improve the likelihood of meeting these goals.

III. AUTHORITIES:

This MOU is entered into under the authorities of Division 7 of the California Water Code (Porter-Cologne Water Quality Control Act [Porter-Cologne Act]), the

authorities of the federal Clean Water Act (CWA), [Section 304(1), 314, 319, and 320], as amended, and the Federal Land Policy and Management Act of 1976, as amended, 43 U.S.C. 1701, et seq.

BLM Manual Section 7000.06(D-E), March 8, 1984, established BLM's policy for coordination with State agencies for related programs and provided for compliance with applicable State and federal water pollution control laws, standards, programs, and implementation plans.

BLM Instruction Memorandum No. 88-511, June 17, 1988, provides guidance to BLM field offices regarding coordination with State agencies on NPS pollution control activities. Instruction Memorandum No. 88-511 also addresses how BLM's NPS actions will be incorporated into the BLM planning process and into BLM's overall multiple-use resource objectives.

BLM has management responsibility for over 17 million acres of federal public lands throughout California. BLM's land-use oversight is provided through four district offices which are further subdivided into 15 resource area offices.

The Porter-Cologne Act, administered by SWRCB and the California Regional Water Quality Control Boards (CRWQCBs) establishes a comprehensive program for the protection of water quality and the beneficial uses of the waters of the State. The Porter-Cologne Act provides a "statewide program for water quality control."

SWRCB sets overall State policy, adopts statewide water quality control plans, approves all water quality control plans adopted by the CRWQCBs, and hears petitions to review CRWQCBs actions or inactions. The CRWQCBs have primary responsibility for permitting, inspecting, and enforcing actions regarding dischargers of waste. The CRWQCBs implement and enforce the policies and plans adopted by SWRCB.

Section 319 of CWA, as amended, requires the State to develop an NPS management program for controlling NPS pollution. SWRCB has developed a State NPS management program which lists the BLM as an agency with BMP/MM/NPSM implementation capability.

IV. PROCEDURES:

A. BLM AGREES TO:

1. Integrate water quality concepts and management techniques into the BLM planning system and into environmental review and clearance of land-use proposals to address surface and ground water NPS pollution.

2. Provide copies of draft Resource Management Plans, draft Environmental Impact Statements, and draft Environmental Assessments which have significant water quality issues to the CRWQCBs responsible for the affected area.

3. Provide BLM activity plans for those actions which have NPS issues as a primary concern to the responsible CRWQCBs for review and comment.

4. Incorporate BMP/MM/NPSM into BLM land uses and BLM permitted land uses, when necessary, to protect or maintain water quality.

B. SWRCB AGREES TO:

1. Encourage the voluntary or cooperative approach as the first step in the development and implementation of solutions to the NPS problem.

2. Coordinate the activities of the CRWQCBs with those activities being proposed and implemented by the BLM.

3. Define the goals and objectives of the NPS Interagency Advisory Committee and conduct regular meetings.

4. Emphasize to the CRWQCBs the importance of a timely response to BLM documents submitted for review.

C. BLM AND SWRCB MUTUALLY AGREE TO:

1. Encourage participation of other federal, State, and local agencies and land users in the control of NPS pollution.

2. Develop a process for BMP/MM/NPSM selection and implementation to reduce or prevent NPS pollution from public lands.

3. Develop BMP/MM/NPSM for federal land uses with input from the NPS Interagency Advisory Committee and other affected parties.

4. Develop implementation priorities and policies for NPS pollution activities.

5. Provide NPS guidance and technical assistance to parties responsible for implementation of NPS pollution control on public lands.

6. Encourage the participation of BLM, SWRCB, and CRWQCB staffs in on-the-ground inspections and tours to discuss public land NPS issues and proposed, ongoing, or completed BMPs.

7. Develop a Water Quality Management Plan and a Management Agency Agreement for the purpose of carrying out portions of the State's NPS Management Program on BLM lands.

8. Wherever appropriate, encourage the development and implementation of comprehensive management plans covering entire or significant portions of watersheds. These plans would be developed using the principles of Coordinated Resource Management and Planning and, as appropriate, would seek to resolve issues relating to biological diversity as they relate to NPS pollution.

V. ADMINISTRATION:

A. Nothing in this MOU alters the statutory or regulatory authority of BLM or SWRCB or requires the participants to obligate or expend funds in excess of available appropriations.

B. The terms of this MOU may be renegotiated at any time at the initiative of one of the participants following at least 30 days notice to the other participant.

C. This MOU may be cancelled at any time by one of the participants following at least 30 days notice to the other participant.

D. Any participant may propose changes to the MOU during its term. Such changes will be in the form of an amendment and will become effective upon signature by all of the participants.

E. The need for this MOU is expected to continue until the Water Quality Management Plan and Management Agency Agreement are in effect.

F. This MOU will become effective upon the date of signature by both parties.

APPROVED:

Ed Hastey, California State Director
U.S. Bureau of Land Management

2/3/93
Date

Eliseo M. Samaniego, Vice Chairman
State Water Resources Control Board

January 27, 1993
Date

RESOLUTION
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

DELEGATION OF CERTAIN DUTIES AND POWERS OF THE BOARD
TO ITS EXECUTIVE OFFICER PURSUANT TO SECTION 13223
CALIFORNIA WATER CODE

Resolution No: 70-118 Adopted: 1-22-70

WHEREAS, Section 13223 of the Porter-Cologne Water Quality Control Act provides that the Regional Board may delegate any of its powers and duties, with certain exceptions, to its Executive Officer, be it, therefore;

RESOLVED, that the California Regional Water Quality Control Board, Central Valley Region, does hereby delegate to its Executive Officer, under the general direction and control of the Board, all of the powers and duties of the Board under Division 7 of the California Water Code except those specified in Section 13223(a); and,

RESOLVED further, That the Executive Officer is authorized, and he is hereby directed to certify and submit copies of this resolution to such agencies and individuals as may have need therefor or as may request same; and

RESOLVED further, That any action that may be taken by the Regional Board pursuant to Division 7, California Water Code, includes such action by its Executive Officer pursuant to powers and duties delegated to him by the Board.

Norma L. Clevenger
Chairman

ATTEST:

Executive Officer

Memorandum of Understanding

Between

Ukiah District
U.S. Bureau of Land Management

and

California Regional Water Quality
Control Board, Central Valley Region

This agreement expresses an understanding made this date between the Bureau of Land Management, Ukiah District, hereinafter referred to as the BLM, and the California Regional Water Quality Control Board, Central Valley Region, hereinafter referred to as the "Board."

Whereas:

The State Water Resources Control Board and Regional Water Quality Control Boards have overall responsibility for water quality protection and, as such, must ensure that land management activities do not cause adverse impacts on beneficial water uses, and

Whereas:

The BLM is responsible for management and protection of the public land,

Therefore:

This agreement is hereby entered into between the BLM and the Board in order to improve and facilitate future coordination between these agencies, thereby ensuring that environmental degradation resulting from actions taken on the BLM lands relating to locatable minerals, solid leasable minerals, and other leasable minerals including oil and gas and geothermal activities in California is minimized.

Agreement

I. Permitting:

1) BLM approval of plans of operations, permits, leases or other use authorization on the BLM lands that involve the potential for a discharge of hazardous wastes or substances [1] into the environment will be conditioned on the approval by the Board of waste discharge requirements for the proposed activity, when applicable prior to commencement of any discharge.

2) The Board agrees to notify the BLM of the earliest possible time of any new applications for waste discharge requirements or permits for activities located on BLM lands and to provide the BLM with the opportunity to recommend requirements necessary to ensure adequate bonding for site closure, neutralization and surface reclamation, i.e., removal and/or neutralization necessary for full cleanup.

3) BLM agrees to notify the Board of and to circulate documents prepared pursuant to the National Environmental Protection Act (NEPA) which involve the interests of the State, such as the issuance of waste discharge requirements. This action is consistent with the Memorandum of Understanding entered into between the State and BLM on November 23, 1983.

4) BLM will supply lists of mining operations that may involve the use of hazardous materials when 3809 "Notice" has been submitted for a plan of operations (operations under 5 acres), to ensure the Board is aware of all operations occurring on the BLM lands and to ensure that operators required to obtain waste discharge requirements have applied for them.

II. Compliance

1) The Board will provide the BLM with a list identifying the operator/discharger and locations of all sites on BLM lands where hazardous materials are used or stored onsite that are currently regulated under waste discharge requirements.

2) The Board will provide BLM with a list of indicators of potential waste discharge violations that BLM inspectors can use to assist in the identification of potential violations, i.e., lists of the types of indicators at a site that should be noted when performing an inspection.

3) The BLM will notify the Board of any potential violations of waste discharge requirements established by the Board on the BLM lands discovered during routine compliance checks or otherwise brought to the BLM's attention.

4) The Board will provide BLM with a summary of all compliance inspection reports issued for sites on the BLM lands and copies of those reports which document violation.

5) Upon the Board's determination that a violation exists, the Board will take appropriate action to enforce the stipulations found in waste discharge requirements with assistance from BLM.

6) BLM will assist the Board in obtaining the operator/discharger's compliance with State and Federal regulations during any cleanup/ detoxification of a site.

III. Abandonment

For purposes of this agreement, "abandonment cases" means sites located on the BLM lands where the operator/discharger is unknown.

Prior to taking any formal enforcement action for violations of federal, state, or local requirements respecting waste discharges on abandoned sites located on the BLM lands, the Board will notify the BLM of the violation and provide the BLM with an opportunity to meet with the Board staff to explore methods of abating the violation. It is understood that this may not be possible in emergency situations. It is jointly agreed that this MOU can be canceled with 30 days notice and this agreement does not commit funds.

William Crooks
EXECUTIVE OFFICER
Central Valley RWQCB

9-30-85
Date

Van W. Manning
DISTRICT MANAGER
BLM, Ukiah District

9/6/85
Date

1/ As defined in Title 22 of the California Administrative Code, Division 4, Chapter 30.

Memorandum of Understanding

Between

Susanville District
U.S. Bureau of Land Management

and

California Regional Water Quality
Control Board, Central Valley Region

This agreement expresses an understanding made this date between the Bureau of Land Management, Susanville District, hereinafter referred to as the BLM, and the California Regional Water Quality Control Board, Central Valley Region, hereinafter referred to as the "Board."

Whereas:

The State Water Resources Control Board and Regional Water Quality Control Boards have overall responsibility for water quality protection and, as such, must ensure that land management activities do not cause adverse impacts on beneficial water uses, and

Whereas:

The BLM is responsible for management and protection of the public land,

Therefore:

This agreement is hereby entered into between the BLM and the Board in order to improve and facilitate future coordination between these agencies, thereby ensuring that environmental degradation resulting from actions taken on the BLM lands relating to locatable minerals, solid leasable minerals, and other leasable minerals including oil and gas and geothermal activities in California is minimized.

Agreement

I. Permitting:

1) BLM approval of plans of operations, permits, leases or other use authorization on the BLM lands that involve the potential for a discharge of hazardous wastes or substances[1/] into the environment will be conditioned on the approval by the Board of waste discharge requirements for the proposed activity, when applicable prior to commencement of any discharge.

2) The Board agrees to notify the BLM of the earliest possible time of any new applications for waste discharge requirements or permits for activities located on BLM lands and to provide the BLM with the opportunity to recommend requirements necessary to ensure adequate bonding for site closure, neutralization and surface reclamation, i.e., removal and/or neutralization necessary for full cleanup.

3) BLM agrees to notify the Board of and to circulate documents prepared pursuant to the National Environmental Protection Act (NEPA) which involve the interests of the State, such as the issuance of waste discharge requirements. This action is consistent with the Memorandum of Understanding entered into between the State and BLM on November 23, 1983.

4) BLM will supply lists of mining operations that may involve the use of hazardous materials when 3809 "Notice" has been submitted for a plan of operations (operations under 5 acres), to ensure the Board is aware of all operations occurring on the BLM lands and to ensure that operators required to obtain waste discharge requirements have applied for them.

II. Compliance

1) The Board will provide the BLM with a list identifying the operator/discharger and locations of all sites on BLM lands where hazardous materials are used or stored onsite that are currently regulated under waste discharge requirements.

2) The Board will provide BLM with a list of indicators of potential waste discharge violations that BLM inspectors can use to assist in the identification of potential violations, i.e., lists of the types of indicators at a site that should be noted when performing an inspection.

3) The BLM will notify the Board of any potential violations of waste discharge requirements established by the Board on the BLM lands discovered during routine compliance checks or otherwise brought to the BLM's attention.

4) The Board will provide BLM with a summary of all compliance inspection reports issued for sites on the BLM lands and copies of those reports which document violation.

5) Upon the Board's determination that a violation exists, the Board will take appropriate action to enforce the stipulations found in waste discharge requirements with assistance from BLM.

6) BLM will assist the Board in obtaining the operator/discharger's compliance with State and Federal regulations during any cleanup/detoxification of a site.

III. Abandonment

For purposes of this agreement, "abandonment cases" means sites located on the BLM lands where the operator/discharger is unknown.

Prior to taking any formal enforcement action for violations of federal, state, or local requirements respecting waste discharges on abandoned sites located on the BLM lands, the Board will notify the BLM of the violation and provide the BLM with an opportunity to meet with the Board staff to explore methods of abating the violation. It is understood that this may not be possible in emergency situations. It is jointly agreed that this MOU can be canceled with 30 days notice and this agreement does not commit funds.

William H Crooks

William Crooks
EXECUTIVE OFFICER
Central Valley RWQCB

9-30-85
Date

Rex Cleary

Rex Cleary
DISTRICT MANAGER
BLM, Susanville District

9/5/85
Date

1/ As defined in Title 22 of the California Administrative Code, Division 4, Chapter 30.

Memorandum of Understanding

Between

Bakersfield District
U.S. Bureau of Land Management

and

California Regional Water Quality
Control Board, Central Valley Region

This agreement expresses an understanding made this date between the Bureau of Land Management, Bakersfield District, hereinafter referred to as the BLM, and the California Regional Water Quality Control Board, Central Valley Region, hereinafter referred to as the "Board."

Whereas:

The State Water Resources Control Board and Regional Water Quality Control Boards have overall responsibility for water quality protection and, as such, must ensure that land management activities do not cause adverse impacts on beneficial water uses, and

Whereas:

The BLM is responsible for management and protection of the public land,

Therefore:

This agreement is hereby entered into between the BLM and the Board in order to improve and facilitate future coordination between these agencies, thereby ensuring that environmental degradation resulting from actions taken on the BLM lands relating to locatable minerals, solid leasable minerals, and other leasable minerals including oil and gas and geothermal activities in California is minimized.

Agreement

I. Permitting:

1) BLM approval of plans of operations, permits, leases or other use authorization on the BLM lands that involve the potential for a discharge of hazardous wastes or substances[1/] into the environment will be conditioned on the approval by the Board of waste discharge requirements for the proposed activity, when applicable prior to commencement of any discharge.

2) The Board agrees to notify the BLM of the earliest possible time of any new applications for waste discharge requirements or permits for activities located on BLM lands and to provide the BLM with the opportunity to recommend requirements necessary to ensure adequate bonding for site closure, neutralization and surface reclamation, i.e., removal and/or neutralization necessary for full cleanup.

3) BLM agrees to notify the Board of and to circulate documents prepared pursuant to the National Environmental Protection Act (NEPA) which involve the interests of the State, such as the issuance of waste discharge requirements. This action is consistent with the Memorandum of Understanding entered into between the State and BLM on November 23, 1983.

4) BLM will supply lists of mining operations that may involve the use of hazardous materials when 3809 "Notice" has been submitted for a plan of operations (operations under 5 acres), to ensure the Board is aware of all operations occurring on the BLM lands and to ensure that operators required to obtain waste discharge requirements have applied for them.

II. Compliance

1) The Board will provide the BLM with a list identifying the operator/discharger and locations of all sites on BLM lands where hazardous materials are used or stored onsite that are currently regulated under waste discharge requirements.

2) The Board will provide BLM with a list of indicators of potential waste discharge violations that BLM inspectors can use to assist in the identification of potential violations, i.e., lists of the types of indicators at a site that should be noted when performing an inspection.

3) The BLM will notify the Board of any potential violations of waste discharge requirements established by the Board on the BLM lands discovered during routine compliance checks or otherwise brought to the BLM's attention.

4) The Board will provide BLM with a summary of all compliance inspection reports issued for sites on the BLM lands and copies of those reports which document violation.

5) Upon the Board's determination that a violation exists, the Board will take appropriate action to enforce the stipulations found in waste discharge requirements with assistance from BLM.

6) BLM will assist the Board in obtaining the operator/discharger's compliance with State and Federal regulations during any cleanup/ detoxification of a site.

III. Abandonment

For purposes of this agreement, "abandonment cases" means sites located on the BLM lands where the operator/discharger is unknown.

Prior to taking any formal enforcement action for violations of federal, state, or local requirements respecting waste discharges on abandoned sites located on the BLM lands, the Board will notify the BLM of the violation and provide the BLM with an opportunity to meet with the Board staff to explore methods of abating the violation. It is understood that this may not be possible in emergency situations. It is jointly agreed that this MOU can be canceled with 30 days notice and this agreement does not commit funds.

William Crooks
EXECUTIVE OFFICER
Central Valley RWQCB

9-30-85
Date

Robert D. Rheiner, Jr.
DISTRICT MANAGER
BLM, Bakersfield District

8/13/85
Date

1/ As defined in Title 22 of the California Administrative Code, Division 4, Chapter 30.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
NEW MELONES UNIT
CENTRAL VALLEY PROJECT, CALIFORNIA

MEMORANDUM OF AGREEMENT FOR THE PROTECTION AND ENHANCEMENT OF THE WATER QUALITY OF THE STANISLAUS AND SAN JOAQUIN RIVERS AS AFFECTED BY THE NEW MELONES PROJECT UNDER WATER RIGHT APPLICATION 19304 OF THE UNITED STATES OF AMERICA AND BY MUNICIPAL AND INDUSTRIAL WASTES

WHEREAS, THE UNITED STATES INTENDS TO CONSTRUCT A DAM AND RESERVOIR IN AND ACROSS THE STANISLAUS RIVER AT A POINT UPSTREAM FROM OAKDALE, STANISLAUS COUNTY, CALIFORNIA, AND WILL UTILIZE SAID DAM AND RESERVOIR AND THEIR RELATED WORKS FOR THE DIVERSION AND STORAGE OF WATER OF THE STANISLAUS RIVER PRIMARILY FOR FLOOD CONTROL, DOMESTIC, IRRIGATION, RECREATION, MUNICIPAL AND INDUSTRIAL, FISH CULTURE, AND WATER QUALITY CONTROL PURPOSES AND FOR THE GENERATION OF HYDROELECTRIC ENERGY; SAID DAM TO BE KNOWN AS NEW MELONES DAM AND THE RESERVOIR CREATED THEREBY TO BE KNOWN AS NEW MELONES RESERVOIR; AND

WHEREAS, THE UNITED STATES HAS FILED AN APPLICATION AND IS SEEKING TO OBTAIN A PERMIT AND LICENSE TO APPROPRIATE AND APPLY TO BENEFICIAL USE WATERS OF THE STANISLAUS RIVER AND ITS TRIBUTARIES IN CONNECTION WITH THE OPERATION OF THE NEW MELONES DAM AND RESERVOIR, SUCH APPLICATION BEING DESIGNATED IN THE FILES OF THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD AS NUMBER 19304; AND

WHEREAS, THE CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD WITH RESPECT TO ITS REGION HAS THE DUTY TO OBTAIN COORDINATED ACTION IN WATER QUALITY CONTROL AND IN THE ABATEMENT, PREVENTION AND CONTROL OF WATER POLLUTION AND NUISANCE; AND

WHEREAS, THE BENEFICIAL USES OF THE STANISLAUS AND SAN JOAQUIN RIVERS ARE DEPENDENT UPON WATER QUALITY CONDITIONS, AND THE PARTIES RECOGNIZE THAT WATER QUALITY CONDITIONS MAY BE PROTECTED AND ENHANCED BY FACILITIES CONSTRUCTED AND OPERATED UNDER A PERMIT AND LICENSE ISSUED ON APPLICATION 19304; AND

WHEREAS, AUTHORITY TO INVESTIGATE THE NEED FOR WATER QUALITY CONTROL IS CONTAINED IN THE FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS OF 1961 (PUBLIC LAW 87-88, APPROVED JULY 20, 1961) WHICH PROVIDES IN PART

> "...IN THE SURVEY OR PLANNING OF ANY RESERVOIRS OF THE CORPS OF ENGINEERS, BUREAU OF RECLAMATION, OR OTHER FEDERAL AGENCY, CONSIDERATION SHALL BE GIVEN TO INCLUSION OF STORAGE FOR REGULATION OF STREAMFLOW FOR THE PURPOSE OF WATER QUALITY CONTROL..."

AND, IN ADDITION, THE 1962 FLOOD CONTROL ACT AUTHORIZING THE NEW MELONES PROJECT (PUBLIC LAW 87-874) PROVIDES

> "...THAT THE SECRETARY OF THE ARMY GIVE CONSIDERATION DURING THE PRECONSTRUCTION PLANNING FOR THE NEW MELONES PROJECT TO THE ADVISABILITY OF INCLUDING STORAGE FOR THE REGULATION OF STREAMFLOW FOR THE PURPOSE OF DOWNSTREAM WATER QUALITY CONTROL...;"

AND

WHEREAS, COOPERATIVE STUDIES BY THE PUBLIC HEALTH SERVICE, BUREAU OF RECLAMATION, AND CORPS OF ENGINEERS OF WATER QUALITY REQUIREMENTS IN STANISLAUS RIVER AND LOWER SAN JOAQUIN RIVER FOR IRRIGATION, FISH, AND OTHER PURPOSES WERE MADE DEMONSTRATING THE FEASIBILITY OF ADDING WATER QUALITY CONTROL AS A FUNCTION OF THE NEW MELONES PROJECT; AND

WHEREAS, THE CONSTRUCTION OF THE NEW MELONES DAM BY THE UNITED STATES AND OPERATION, AS PROVIDED IN THIS AGREEMENT, WILL ASSIST IN PROVIDING PROTECTION AND ENHANCEMENT OF THE QUALITY OF THE WATERS OF THE STANISLAUS AND SAN JOAQUIN RIVERS AND IT IS MUTUALLY BENEFICIAL AND DESIRABLE THAT THE PARTIES FORMALIZE THEIR UNDERSTANDING BY THIS MEMORANDUM OF OPERATING AGREEMENT:

NOW, THEREFORE, THE UNITED STATES ACTING BY AND THROUGH THE BUREAU OF RECLAMATION, HEREINAFTER CALLED THE BUREAU, ITS SUCCESSORS AND ASSIGNS, AND THE STATE OF CALIFORNIA, ACTING BY AND THROUGH ITS CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD, HEREINAFTER CALLED THE REGIONAL BOARD, ITS SUCCESSORS AND ASSIGNS, AND IN CONSIDERATION OF THE PREMISES CONTAINED AGREE AS FOLLOWS:

1. THE BUREAU SHALL, IN ADDITION TO FISHERY REQUIREMENTS, RELEASE FROM NEW MELONES DAM, FOR WATER QUALITY CONTROL PURPOSES IN THE DOWNSTREAM REACHES OF THE STANISLAUS RIVER AND IN THE SAN JOAQUIN RIVER BELOW THE

CONFLUENCE OF THE TWO RIVERS, FLOWS NECESSARY TO MAINTAIN THE OBJECTIVES LISTED BELOW, BUT NOT IN EXCESS OF 70,000 ACRE-FEET IN ANY ONE YEAR. RELEASES OF WATER FOR QUALITY CONTROL PURPOSES SHALL BE SCHEDULED TO MAINTAIN THE OXYGEN LEVEL AT OR ABOVE 5 MILLIGRAMS PER LITER (MG/L) IN THE STANISLAUS RIVER AND THE LEVEL OF TOTAL DISSOLVED SOLIDS NOT TO EXCEED A MEAN MONTHLY CONCENTRATION OF 500 MG/L IN THE SAN JOAQUIN RIVER IMMEDIATELY BELOW THE MOUTH OF THE STANISLAUS RIVER. PROVIDED: THAT IF HYDROLOGIC OR OTHER CONDITIONS PREVENT MAINTENANCE OF A 500 MG/L TDS LEVEL ON A MEAN MONTHLY BASIS DURING THE ENTIRE YEAR IN THE SAN JOAQUIN RIVER IMMEDIATELY BELOW THE MOUTH OF THE STANISLAUS RIVER, OPERATIONAL RELEASES OF THE WATER QUALITY RESERVATION WILL BE RESTRICTED TO THE IRRIGATION SEASON IN ACCORDANCE WITH IRRIGATIONISTS' NEEDS.

2. THE BUREAU SHALL MAKE ALL REASONABLE EFFORTS TO PERFECT AND PROTECT WATER RIGHTS NECESSARY FOR THE WATER QUALITY RESERVATION AND FOR WATER QUALITY OPERATIONAL PURPOSES.

3. THE REGIONAL BOARD SHALL MAKE ALL REASONABLE EFFORTS TO SUPPORT THE BUREAU TO OBTAIN AND PROTECT WATER RIGHTS FOR THE WATER QUALITY RESERVATION OF THIS PROJECT AND TO PROTECT THE WATER RELEASED FOR WATER QUALITY CONTROL PURPOSES.

4. SHOULD THE BUREAU ASSIGN, CONVEY OR OTHERWISE DISPOSE OF ANY INTEREST IN THIS PROJECT OR RIGHTS PURSUANT TO APPLICATION 19304, SUCH DISPOSITION SHALL EXPRESSLY BE MADE SUBJECT TO THE PROVISIONS OF THIS AGREEMENT.

5. THE BUREAU AND THE REGIONAL BOARD HEREBY AGREE THAT THE PROVISIONS OF THIS AGREEMENT SHOULD BE INCLUDED BY WAY OF REFERENCE OR OTHERWISE IN ANY PERMIT OR LICENSE BY THE STATE WATER RESOURCES CONTROL BOARD OF CALIFORNIA PURSUANT TO WATER RIGHT APPLICATION 19304.

DATED: THIS 2 DAY OF July, 1969.

UNITED STATES BUREAU OF RECLAMATION

By _____
REGIONAL DIRECTOR, REGION 2

CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD

By _____
CHAIRMAN, CENTRAL VALLEY REGIONAL BOARD

MEMORANDUM OF UNDERSTANDING BETWEEN THE CALIFORNIA DEPARTMENT OF FISH AND GAME, THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD AND MOSQUITO ABATEMENT AND VECTOR CONTROL DISTRICTS OF THE SOUTH SAN JOAQUIN VALLEY REGARDING VEGETATION MANAGEMENT IN WASTEWATER TREATMENT FACILITIES.

A meeting of representatives of the California Department of Fish and Game and the California Regional Water Quality Control Board, Central Valley Region and representatives from Mosquito Abatement and Vector Control Districts (Districts) from the Southern San Joaquin Valley Region was held on June 22, 1992 in the Department of Fish and Game office in Fresno, California. Also present at the meeting, though not in a participatory function, were representatives from the United States Fish and Wildlife Service and the California Department of Health Services, Environmental Management Branch. The purpose of the meeting was to discuss concerns regarding the vegetation management operations of Wastewater Treatment Facilities in the region.

During the course of the meeting several areas of agreement between the Department of Fish and Game, the Regional Water Quality Control Board and the Districts were reached. It is the intent of this Memorandum of Understanding to record and formalize these understandings.

Whereas, it is understood and agreed that:

1. The Districts have the legal authority to abate mosquitoes and mosquito breeding sources pursuant to California Health and Safety Code Section 2270.

2. The Department of Fish and Game has the legal authority for the protection of nesting birds, eggs and nests pursuant to California Fish and Game Code Section 3503.

3. The Regional Water Quality Control Board has the legal authority to order abatement of nuisances created by and to regulate discharges from wastewater treatment facilities, and may establish conditions in waste discharge requirements to prevent nuisance and pollution pursuant to California Water Code Sections 13304 and 13263.

4. Wastewater treatment facility operators are subject to waste discharge requirements and are responsible for the vegetation management operations at their respective facilities. Vegetation management includes the chemical or physical control of weeds in and around water impoundments

5. Vegetation associated with impounded water promotes mosquito breeding and the production of mosquitoes constitutes a public health nuisance.

6. Effective, on site, vegetation control by operators of wastewater treatment facilities is essential for the reduction of mosquito breeding in water impoundments and to maintain accessibility to the impoundments for inspection and mosquito control activities.

7. Birds, including waterfowl, shorebirds and passerines, utilize wastewater treatment facilities during the nesting season that occurs from April 1 through June 30.

8. Weed control operations, during the nesting season, are potentially detrimental and may result in the destruction of nesting birds, nests and eggs.

9. The diverse authorities of the various regulatory agencies has led to confusion on the part of wastewater treatment facility operators with regard to weed control operations.

Therefore, it is understood and agreed that:

1. The District will act as the lead agency in determining the adequacy of vegetation management operations in abating mosquito breeding sources.

2. On site, vegetative management operations at wastewater treatment facilities should include the maintenance of weed-free embankments, water edges and peripheral access roads, and the elimination of emergent and floating vegetation in all water impoundments.

3. Vegetation management operations in areas that attract nesting birds at wastewater treatment facilities should be carried out either before or after, **but not during**, the April 1 to June 30 bird nesting season.

4. In the event the District determines the existence of a potential public health nuisance from mosquito breeding, weed control may be conducted during the nesting season; provided that wastewater treatment facility personnel first survey the area and flag all existing nests and assure that these nests and birds are avoided during the weed control activities. Prior to conducting the survey, the Department of Fish and Game must be notified and given the opportunity to advise or assist facility personnel.

5. Should a public health threat create a situation where the destruction of nests and eggs due to weed control activity is unavoidable, the District will first contact the Department of Fish and Game and the U.S. Fish and Wildlife Service to request the issuance of an incidental take permit.

6. Areas away from impounded water may be left in a vegetated (weedy) state to attract nesting birds and to offer nesting habitat throughout the nesting season. These areas cannot be flooded unless vegetation is removed and vegetation cannot be removed during the nesting season.

These understandings were reached and this memorandum is signed in a spirit of cooperation among the signatory agencies. It is signed in the belief that a healthy environment and the protection of natural resources and the concern for and protection of the public health are compatible issues.

These understandings may be amended or terminated at any time provided that the Department of Fish and Game, the Regional Water Quality Control Board and the Districts agree in writing.

Concurrence:

By _____ Dated 3/16/93
CALIFORNIA DEPARTMENT OF
FISH AND GAME

By _____ Dated 2-24-93
CALIFORNIA REGIONAL WATER QUALITY
CONTROL BOARD, CENTRAL VALLEY REGION

By _____ Dated 3-25-93
COALINGA-HURON MOSQUITO ABATEMENT
DISTRICT

By _____ Dated 2-25-93
CONSOLIDATED MOSQUITO ABATEMENT
DISTRICT

By _____ Dated 2-24-93
DELANO MOSQUITO ABATEMENT DISTRICT

By Michael W. Allen
DELTA VECTOR CONTROL DISTRICT
Dated 2-25-93

By
FRESNO MOSQUITO AND VECTOR CONTROL DISTRICT
Dated 3-18-93

By Elizabeth Ann Cline
FRESNO WESTSIDE MOSQUITO ABATEMENT DISTRICT
Dated 2/25/93

By Harmon L Clement
KERN MOSQUITO AND VECTOR CONTROL DISTRICT
Dated 2-25-93

By
KINGS MOSQUITO ABATEMENT DISTRICT
Dated 02-25-93

By
MADERA COUNTY MOSQUITO ABATEMENT DISTRICT
Dated 2-25-93

By Marshall Hoogaard
TULARE MOSQUITO ABATEMENT DISTRICT
Dated 2-25-93

By
WEST SIDE MOSQUITO AND VECTOR CONTROL DISTRICT
Dated 2-25-93

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

RESOLUTION NO. 89-247

CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS AT
RETAIL FERTILIZER FACILITIES

WHEREAS, Section 13269 of the Porter-Cologne Water Quality Control Act authorizes the Regional Board to waive waste discharge requirements for a specific discharge or a specific type of discharger; and

WHEREAS, there are approximately 195 retail fertilizer facilities in the Central Valley Region; only 11 of which are covered by waste discharge requirements; and

WHEREAS, all retail fertilizer facilities generate waste associated with the mixing and/or transport and/or application of fertilizer materials; and,

WHEREAS, the waste generated has the potential to affect water quality if improperly disposed of; and

WHEREAS, the California Fertilizer Association, in cooperation with Regional Board staff, has developed a set of management practices to protect water quality at retail fertilizer facilities; and

WHEREAS, the fertilizer industry has indicated a willingness to implement these management practices at retail fertilizer facilities; and

WHEREAS, implementation of these management practices will ensure the future protection of water quality, will limit the need for waste discharge requirements, and will reduce the amount of Regional Board staff time needed to oversee these facilities; and

WHEREAS, the implementation of these management practices is to the benefit of the public and the waiver of individual waste discharge requirements is not against the public interest; and

WHEREAS, the Regional Board has assumed lead agency role for this project and has conducted an Initial Study in accordance with Title 14, California Code of Regulations, Section 15603; and

WHEREAS, the Initial Study concluded that the project as proposed would not have a significant effect on the environment and that a Negative Declaration should be prepared; and

WHEREAS, copies of the Initial Study, Negative Declaration, and attached *Conditions for Waiver of Waste Discharge Requirements at Retail Fertilizer Facilities* were transmitted to all agencies, and persons known to be interested in this matter, and to the State Clearinghouse; and

WHEREAS, no comments were received from any party receiving the Initial Study and proposed Negative Declaration; and

WHEREAS, the Board considered all testimony and evidence at a public hearing on 8 December 1989 in Sacramento, California, and good cause was found to approve the Initial Study and adopt a Negative Declaration; and

WHEREAS, in accordance with Title 14, California Code of Regulations, Section 15074, a Negative Declaration has been adopted for this project; Therefore, be it

RESOLVED, that the Board hereby waives waste discharge requirements for retail fertilizer facilities. This waiver shall only apply to those facilities that comply with the attached *Conditions for Waiver of Waste Discharge Requirements at Retail Fertilizer Facilities*; and be it further

RESOLVED, that this action waiving waste discharge requirements is conditional and may be terminated for any specific discharger at any time.

I, WILLIAM H. CROOKS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Central Valley Region, on 8 December 1989.

William H. Crooks

WILLIAM H. CROOKS, Executive Officer

Attachment

ATTACHMENT I

CONDITIONS FOR WAIVER OF WASTE DISCHARGE REQUIREMENTS AT RETAIL FERTILIZER FACILITIES

The following management practices have been recommended by the California Fertilizer Association and the Regional Water Quality Control Board as methods to protect water quality at retail fertilizer facilities. The Regional Board waived waste discharge requirements for retail fertilizer facilities, conditioned on their compliance with these management practices. A Time Schedule for implementing these management practices is given in Section 2. If the time schedule and the Management Practices are not followed by an individual facility, waste discharge requirements will be issued for that facility.

1. MANAGEMENT PRACTICES

A. Office Buildings

1. Good housekeeping practices shall be implemented which will prevent contamination of groundwater, surface water, and rain runoff.

2. If conditions are such that the office building and associated parking area are separated from the rest of the facility, signs should be posted indicating "Office Parking Only." By restricting delivery, vendor and application equipment from these areas, the potential for accidental contamination will be eliminated.

3. Roof and parking lot runoff should be controlled to the extent that they are prevented from intercepting potential contamination areas. Collection of this water will be necessary if contamination occurs.

4. Berming, rain gutters, and/or other control devices shall be used where necessary.

B. Equipment Storage Area

1. Good housekeeping practices and organizational practices shall be implemented which will prevent contamination of groundwater, surface water, and rain runoff.

2. Equipment, known or suspected of being in disrepair, shall not be stored in these areas unless completely empty of commercial grade fertilizer material.

3. Equipment that contains visual evidence of overfilling, or visual evidence of exterior residues, shall be cleaned by rinsing in the field or at a properly designed wash facility prior to storing in this area.

C. Bulk Warehousing and Storage of Fertilizer Materials

1. Good housekeeping practices shall be implemented which will prevent contamination of groundwater, surface water, and rain runoff.

2. If a fertilizer material is susceptible to wind suspension, it should be placed away from the open areas of the warehouse in order to prevent airborne contamination of soil, surface water, groundwater, or rain runoff.

3. Provided good housekeeping practices are sufficient, collection of surface runoff will not be necessary. If conditions are such that good housekeeping practices are not sufficient, surface runoff shall be collected from all contaminated areas associated with the warehouse and overhead bins, and transferred to an approved storage facility for dilute fertilizer solutions.

4. Berms, sloping rain gutters, and/or other water control devices shall be used where necessary.

5. All spilled dry material shall be collected immediately and handled in an appropriate manner.

D. Material Transfer Points

1. Good housekeeping practices shall be implemented which will prevent contamination of groundwater, surface water, and rain runoff.

2. Transfer systems shall be installed which eliminate unnecessary spillage. Hoses should not be drained in these areas unless facilities have been designated for this practice.

3. Provided good housekeeping practices are sufficient, collection of surface runoff will not be necessary. If conditions are such that good housekeeping practices are not sufficient, surface runoff shall be collected from this area, and transferred to an approved storage facility for dilute fertilizer solutions.

4. Berms, sloping rain gutters, and/or other water control devices shall be used where necessary.

E. Blending and Mixing Areas

1. Good housekeeping practices shall be implemented which will prevent contamination of groundwater, surface water, and rain runoff.

2. Dust and splash control devices shall be used where necessary.

3. Acceptable spill containment shall be provided in all newly constructed or renovated blending and mixing areas. The spill containment shall be capable of containing the maximum anticipated spill in accordance with operating conditions and practices.

4. Provided good housekeeping practices are sufficient, collection of surface runoff will not be necessary. If conditions are such that good housekeeping practices are not sufficient, surface runoff shall be collected from the blending and mixing area, and transferred to an approved storage facility for dilute fertilizer solutions.

5. Berms, below-grade construction, sumps, and/or other water control devices shall be used where necessary.

6. Liquid contained in an approved storage facility for dilute fertilizer solutions can be used in the blending and mixing operations.

F. Fertilizer Wash and Rinse Facility

1. Rinse water from facility equipment and application equipment shall be collected and transferred to an approved storage facility for dilute fertilizer solutions.

2. Contaminated surface runoff from the rinse pad shall be collected and transferred to an approved storage facility for dilute fertilizer solutions.

3. Berms, sloping, sumps, and other water control devices shall be used where necessary.

4. Solids from central collection points or from settling devices can be disposed of on agricultural land, provided that good agronomic practices are used.

5. Identification of the type of products that can be washed and rinsed at the wash/rinse facility shall be posted in a conspicuous area and enforced.

G. Tank Farms and Other Liquid Storage Areas

1. Good housekeeping practices shall be implemented which will prevent contamination of groundwater, surface water, and rain runoff.

2. Transfer systems shall be constructed that eliminate spillage. Hoses and connections shall not be drained into these areas.

3. Acceptable spill containment shall be provided for all new tank farms or renovated tank farms.

4. Pipes, connections, pumps, and/or tanks in disrepair shall not be used until the situation is rectified.

4. Provided good housekeeping practices are sufficient, collection of surface runoff will not be necessary. If conditions are such that good housekeeping practices are not sufficient, surface runoff shall be collected from all contaminated areas associated with the tank farm, and transferred to an approved storage facility for dilute fertilizer solutions.

5. Berms, sloping, and other water control devices shall be used where necessary.

H. Dilute Fertilizer Solutions Containment

1. Tanks and/or above ground containment shall be used to contain all liquids classified as dilute fertilizer solutions.

2. Adequate capacity shall be provided such that the system is operational at all times, and has the capability of containing all contaminated surface runoff.

3. Adequate storage shall be provided in the design of a tank or above ground containment, such that containment and/or evaporation of all collected dilute fertilizer solutions is available at all times. unless alternative methods of use are available (i.e. agronomical use on agricultural land, use in processes. or disposal to approved discharge facilities).

4. Access to the tank and/or above ground containment shall be restricted to qualified personnel only.

I. Pesticide Use

Note: These conditions implement existing laws and regulations, and do not impose any new restrictions.

1. There shall be no discharge of pesticide rinse water to any surface water, ground water, or subsurface disposal system.

2. There shall be no disposal or storage of a) pesticide rinse waters, b) unrinsed pesticide containers, or c) ineffectively rinsed pesticide containers, if there is the potential for residual pesticides to affect water quality via percolation, runoff, or soil erosion.

3. Facilities used to generate, collect, or store pesticide rinse waters shall not allow percolation to underlying soils or ground water.

4. Disposal or treatment areas for pesticide rinse water, pesticide containers, and wastes from spills or leaks shall comply with *Discharges of Waste to Land*, Subchapter 15, Chapter 3, Title 23, California Code of Regulations. In particular, there is no on-site treatment or disposal of 'hazardous waste' without a permit from the California Department of Health Services.

5. Waste management facilities shall be designed and managed to prevent nuisances and to provide for controlling access to the facilities.

6. If wastewater containing pesticides is applied to fields, such application must be in compliance with regulations contained in Title 3, Food and Agriculture, California Code of Regulations.

7. A report shall be submitted to the Regional Board addressing the containment and disposal of the following wastes: pesticide rinse waters, pesticide containers, contaminated soils resulting from leaks or spills, and wastes from any on-site rinse water recycling system. (See 1 January 1991 report, below).

2. TIME SCHEDULE FOR IMPLEMENTATION OF MANAGEMENT PRACTICES

In order to implement the above management practices, the following time schedule shall be utilized. Considerations of exemptions for specific facilities will be made by the Regional Board on a case-by-case basis.

By 1 June 1990

- designate office parking only area (A2)[1]
- clean equipment containing fertilizer residues before parking in equipment storage (B3)
- move fertilizer that may become airborne (C2)
- identify products that can be washed at the washrack, post a sign (F5)
- broken pipes, connections, pumps, and tanks can not be used until fixed (G4)
- broken application equipment may not be parked in equipment area unless empty (B2)
- restrict access to dilute fertilizer storage area to qualified personnel (H4)
- collect all dry material spilled in the bulk warehouse (C6)
- comply with provisions 1-6 of the Pesticide section (I)

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[1] numbers in parentheses refer to the specific items in Section 1 (Management Practices)

By 1 January 1991

= submit a report to the RWQCB detailing 1) the facility's 'good housekeeping' plans (A1, B1, C1, C3, D3, E4, G1, G5); 2) pesticide use/disposal practices (I.7); and a listing of the dates that facility modifications will be in place

By 1 January 1992

= control roof and office parking lot runoff (A3)
= control dust in bulk warehouse (C4)
= install transfer systems which eliminate spillage (D2, G2)
= control dust and splash in blending areas (E2)
= dispose of any solids onto agricultural lands (F4)

By 1 January 1994

= collect contaminated surface runoff from the bulk warehouse, material transfer points, blending/mixing areas, and tank farms, and transfer to an approved storage facility (C3, D3, E4, G4)
= construct spill containment structures for new or renovated blending and tank farms (E3, G3)
= collect rinsewater and transfer to an approved facility (F1)
= collect contaminated surface runoff from the wash pad (F2)
= construct a dilute fertilizer solutions containment system (H1, H2, H3)

Amended 12/8/89

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

RESOLUTION NO. 89-246

APPROVING THE INITIAL STUDY AND
ADOPTING A NEGATIVE DECLARATION FOR
THE CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS
AT RETAIL FERTILIZER FACILITIES

WHEREAS, Section 13269 of the Porter-Cologne Water Quality Control Act authorizes the Regional Board to waive waste discharge requirements for a specific discharge or a specific type of discharger; and

WHEREAS, there are approximately 195 retail fertilizer facilities in the Central Valley Region; only 11 of which are covered by waste discharge requirements; and

WHEREAS, all retail fertilizer facilities generate waste associated with the mixing and/or transport and/or application of fertilizer materials; and,

WHEREAS, the waste generated has the potential to affect water quality if improperly disposed of; and

WHEREAS, the California Fertilizer Association, in cooperation with Regional Board staff, has developed a set of management practices to protect water quality at retail fertilizer facilities; and

WHEREAS, the fertilizer industry has indicated a willingness to implement these management practices at retail fertilizer facilities; and

WHEREAS, implementation of these management practices will ensure the future protection of water quality, will limit the need for waste discharge requirements, and will reduce the amount of Regional Board staff time needed to oversee these facilities; and

WHEREAS, the implementation of these management practices is to the benefit of the public and the waiver of individual waste discharge requirements is not against the public interest; and

WHEREAS, the Regional Board has assumed lead agency role for this project and has conducted an Initial Study in accordance with Title 14, California Code of Regulations, Section 15603; and

WHEREAS, the Initial Study concluded that the project as proposed would not have a significant effect on the environment and that a Negative Declaration should be prepared; and

WHEREAS, copies of the Initial Study, Negative Declaration, and attached *Conditions for Waiver of Waste Discharge Requirements at Retail Fertilizer Facilities* were transmitted to all agencies, and persons known to be interested in this matter, and to the State Clearinghouse; and

WHEREAS, no comments were received during the thirty day public comment period from any party receiving the Initial Study and proposed Negative Declaration; and

WHEREAS, the Board considered all testimony and evidence at a public hearing on 8 December 1989 in Sacramento, California, and good cause was found to approve the Initial Study and adopt a Negative Declaration: Therefore, be it

RESOLVED, that the California Regional Water Quality Control Board, Central Valley Region, approves the Initial Study and adopts a Negative Declaraton for conditional waiver of waste discharge requirements at retail fertilizer facilities.

I, WILLIAM H. CROOKS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Central Valley Region, on 8 December 1989.

William H. Crooks

WILLIAM H. CROOKS, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

RESOLUTION 90-034

CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS AT PESTICIDE APPLICATOR FACILITIES

WHEREAS, Section 13269 of the Porter-Cologne Water Quality Control Act states that the Regional Board may waive waste discharge requirements for a specific type of discharge; and

WHEREAS, there are several hundred pesticide applicators in the Central Valley Region who have the potential to discharge waste which could be regulated by the Regional Board; and

WHEREAS, pesticide waste management practices that comply with existing laws and regulations and will protect water quality have been described in a Regional Board document "Conditions for Waiver of Waste Discharge Requirements at Pesticide Applicator Facilities" a copy of which is incorporated in this Resolution as Attachment 1; and

WHEREAS, staff have developed a regulatory program for pesticide applicators so that the waste management practices that they utilize can be reviewed; and

WHEREAS, it is anticipated that reviews will reveal that waste management practices at many of these facilities do not pose a threat to water quality; and

WHEREAS, only a few of the facilities operated by pesticide applicators are currently under waste discharge requirements; and

WHEREAS, it is to the benefit of the public that waste discharge requirements be waived at pesticide applicator facilities that do not pose a threat to water quality and such waiver is not against the public interest; and

WHEREAS, such a waiver program is a "project" under the California Environmental Quality Act and the Regional Board has assumed lead agency role for the project and has conducted an Initial Study in accordance with Title 14, California Code of Regulations, Section 15603; and

WHEREAS, the Initial Study concluded that the project as proposed would not have a significant effect on the environment and that a Negative Declaration should be prepared; and

WHEREAS, copies of the Initial Study, proposed Negative Declaration, and the "Conditions for Waiver of Waste Discharge Requirements at Pesticide Applicator Facilities" were transmitted to all agencies and persons known to be interested in this matter and to the State Clearinghouse; and

WHEREAS, no comments were received during the thirty-day public comment period from any party receiving the Initial Study, proposed Negative Declaration,

and the waiver conditions; and

WHEREAS, the Regional Board considered all testimony and evidence at a public hearing on 26 January 1990 in Sacramento, California, and good cause was found to approve the Initial Study and adopt a Negative Declaration for conditional waiver of waste discharge requirements at pesticide applicator facilities; and

WHEREAS, in accordance with Title 14, California Code of Regulations, Section 15074, a Negative Declaration has been adopted for this project; Therefore, be it

RESOLVED, that the Board hereby waives waste discharge requirements for pesticide applicator facilities which meet the "Conditions for Waiver of Waste Discharge Requirements at Pesticide Applicator Facilities". This waiver is conditional and may be revoked at any time.

I, WILLIAM H. CROOKS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Central Valley Region, on 26 January 1990.

William H. Crooks

WILLIAM H. CROOKS, Executive Officer

Ammended

ATTACHMENT 1 / RESOLUTION 90-034

CONDITIONS FOR WAIVER OF WASTE DISCHARGE REQUIREMENTS AT PESTICIDE APPLICATOR FACILITIES

Purpose Of This Document

Pesticide application using aerial or ground equipment may result in production of wastes which can affect water quality. The subject wastes consist of pesticide rinse waters, unrinsed or ineffectively rinsed pesticide containers, leaks, and accidental spills. Residual pesticides from treated fields are not addressed by this document.

This document describes waste management practices which, if utilized by pesticide applicators, will not result in an adverse impact on surface or ground water. Those applicators who adopt the practices presented in this document will qualify for a waiver of waste discharge requirements. The waiver will be issued at the discretion of the Regional Board and may be revoked by the Board at any time.

Acceptable Waste Management Practices

1. There is no discharge of pesticide rinse water to any surface water, ground water, or subsurface disposal system.

2. There is no disposal or storage of pesticide rinse waters or unrinsed or ineffectively rinsed pesticide containers where residual pesticides can affect water quality via percolation, runoff, or soil erosion.

3. Facilities used to generate, collect, or store pesticide rinse waters do not allow percolation to underlying soils or ground water.

4. Disposal or treatment areas for pesticide rinse waters, pesticide containers, and wastes from spills or leaks comply with Subchapter 15, Chapter 3, Title 23, California Code of Regulations (CCR). In particular, there is no on-site treatment or disposal of 'hazardous waste' without a permit from the California Department of Health Services (DHS) if such a permit is required by law or regulation.

5. Waste management facilities are designed and managed to prevent nuisances and to provide for controlling access to the facilities.

6. If wastewater containing pesticides is applied to fields, such application must be in compliance with regulations contained in Title 3, CCR.

Regional Board's Review Program

All pesticide applicators are expected to manage their waste in compliance with State laws and regulations. Upon order by the Regional Board, a Certified Commercial Applicator or other pesticide applicator shall prepare a technical report for his facility. The report shall be submitted to the Regional Board upon request and shall address containment and disposal of the following wastes:

1. Pesticide rinse waters.

2. Pesticide containers.

3. Contaminated materials resulting from leaks or spills.

4. Wastes from on-site rinse water recycling systems.

Based on a review of the technical report, Board staff shall determine if:

A. Investigation by staff demonstrates that there is no expected impact on water quality from the proposed waste management practices and that the pesticide applicator facilities meet the conditions for waiver of waste discharge requirements, or

B. A monitoring program should be implemented to develop additional information on the impacts from on-site waste discharges, or

C. The conditions for waiver of waste discharge requirements have not been met and, consequently, a Report of Waste Discharge should be requested and waste discharge requirements prepared.

If staff makes the finding in A above, a waiver of waste discharge requirements shall apply pursuant to Board Resolution 90-034 and shall apply only for the practices described in the technical report. Staff shall instruct the operator to file an updated technical report if there is any substantial change in waste management practices.

If staff makes the finding in B above, the Regional Board may choose to waive waste discharge requirements for that specific operator pending review of monitoring reports. The waiver shall be at the discretion of the Board.

Definition of Terms Used in This Document

Some of the terms used in this document are defined in the CCR, and appropriate citations are given below:

1. "Certified Commercial Applicator" means:

(a) a current authorized agent on an Agricultural Pest Control Operator license issued by the director of the Department of Food and Agriculture (director);

(b) a pilot holding a valid Journeyman certificate issued by the director;

(c) a person holding a Certified Technician certificate issued by the Vector Biology and Control Section of the Department of Health Services;

(d) a person holding a valid Structural Pest Control Operator or Field Representative license issued by the Structural Pest Control Board of the Department of Consumer Affairs; and

(e) a person holding a valid Certified Commercial Applicator certificate issued by the director. (Section 6000.2, Title 3, CCR.)

2. "Designated waste" is defined in Section 2522 of Title 23, CCR.

3. "Field" means any area (including a greenhouse) upon which one or more crops are commercially grown. (Section 6000.4, Title 3, CCR.)

4. "Hazardous waste" means waste that is hazardous pursuant to Section 66693 et seq., Title 22, CCR.

5. "Ineffectively rinsed pesticide container" means a container which has residual pesticides at levels that are hazardous or designated waste.

6. "Pesticide rinse water" is wastewater from washing the interior (tanks, lines, spray nozzles, etc.) or exterior of pesticide application equipment.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

RESOLUTION NO. 83-105

ADOPTION OF AN AMENDMENT TO PART I OF THE WATER QUALITY CONTROL PLANS FOR THE SACRAMENTO RIVER (5A), SACRAMENTO-SAN JOAQUIN DELTA (5B), SAN JOAQUIN-RIVER (5C), AND TULARE LAKE (5D) BASINS
FOR
LAND DISPOSAL OF STILLAGE WASTE FROM WINERIES

WHEREAS, under Section 13240 of the Porter-Cologne Water Quality Control Act and Section 303(e) of the Federal Clean Water Act amendments of 1972 (PL 92-500), the California Regional Water Quality Control Board, Central Valley Region (hereafter Board), adopted Water Quality Control Plans for Basins 5A, 5B, 5C, and 5D on 25 July 1975; and

WHEREAS, the potential exists for disposal of stillage waste by land application to adversely affect water quality and create nuisance conditions; and

WHEREAS, a study was completed for The Wine Institute by Metcalf and Eddy Engineers in February of 1980, entitled, "Land Application of Stillage Waste: Odor Control and Environmental Effects"; and

WHEREAS, the Board has developed an amendment to Part I of the Water Quality Control Plans for Basins 5A, 5B, 5C, and 5D regarding disposal of winery stillage waste by land application; and

WHEREAS, the amendment prescribes guidelines to minimize the potential for adverse water quality effects and nuisance conditions but does not preclude the establishment of more stringent requirements by local agencies or the Board for control of water quality concerns associated with land disposal of stillage waste; and

WHEREAS, the basin planning process has been certified as a "functional equivalent" to the California Environmental Quality Act requirements for preparing environmental documents and is therefore exempt from those requirements (Public Resources Code Section 21000, et seq.) in accordance with Section 15108 of the State EIR guidelines (California Administrative Code, Title 14, Division 7, Chapter 3); and

WHEREAS, on 12 August 1983, the Board conducted a public hearing after notice to all interested persons, in accordance with PL 92-500 and the California Water Code, and has considered the evidence regarding the amendment introduced at that hearing and submitted to the Board prior to the hearing: Therefore be it

RESOLVED, That the Board adopts the above described amendment to the Water Quality Control Plans for Basins 5A, 5B, 5C, and 5D, and be it further

RESOLVED, That the Executive Officer is instructed to transmit the Water Quality Control Plan amendment to the State Water Resources Control Board for its consideration and approval.

I, WILLIAM H. CROOKS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Central Valley Region, on 12 August 1983.

William H. Crooks

WILLIAM H. CROOKS, Executive Officer

AMENDMENT TO WATER QUALITY CONTROL PLAN

Land Disposal of Stillage Waste from Wineries

Problem Statement

A substantial number of wineries operate throughout the Central Valley. Many of these wineries operate stills. Wineries with stills produce substantial quantities of stillage waste which is high in concentrations of BOD and nitrogen. The stillage is normally discharged directly to land without any prior treatment. There is a potential for the waste to affect water quality and to create nuisance conditions.

A study has been conducted[1/] to develop recommendations for minimizing water quality effects and nuisance conditions resulting from land application of stillage waste. There is a need to implement guidelines for land disposal of stillage waste that can be used by the industry as a general indication of minimum disposal practices when accompanied with suitable soil, weather, ground water and other conditions affecting the discharge.

The guidelines address the unique problems associated with the management of the land disposal of stillage wastes. They will be utilized in the evaluation of the adequacy of technical reports submitted for the development of waste discharge requirements. Portions of the criteria contained herein may be included as part of the waste discharge requirements on a case-by-case basis depending on the site conditions.

Guidelines for Land Disposal of Stillage Waste from Wineries

The following guidelines will be applied for the preservation and enhancement of state waters for all present and anticipated beneficial uses, prevention of water pollution, health hazards and nuisance conditions. The guidelines may not be applicable in cases where local soil, ground water, weather or other conditions are not compatible with the stillage to be disposed. These guidelines prescribe criteria for disposal of stillage waste from wineries and do not preclude the establishment of more stringent requirements by local agencies or the Board.

The Board has determined that the following guidelines should be followed by wineries which practice land disposal of stillage without any prior treatment of the waste.

Rapid Infiltration Method

I. Disposal Site Requirements

1. The land used for disposal should be as remote from habitation as possible.

2. The soils should be capable of infiltrating 3 to 4 inches of stillage in 24 hours or less.

1/ "Land Application of Stillage Waste: Odor Control and Environmental Effects" prepared for The Wine Institute, by Metcalf and Eddy, Engineers, Palo Alto, California, February 1980.

3. Soil permeability should be greater than 2 inches per hour for the entire profile.

4. There should be no unripped hardpan within the top 10 feet of the soil profile.

5. Soil depth should be 10 feet or greater.

6. Depth to ground water should be 10 feet or greater.

II. Operational Procedures

1. Cooling water and any other wastewater with low COD concentrations should be separated from the stillage before land application.

2. Stillage waste should be spread on land between long, narrow, level checks. The surface should be leveled uniformly within 0.1 foot per 100 feet, without potholes.

3. At the inlet of the checks, the flow should be distributed using splash plates or other devices to prevent deep holes from forming.

4. The depth of each stillage application should not exceed the following:

Period of Year	Depth of Stillage Application (inches)
Aug 1 to Oct 1	3.7
Oct 1 to Dec 1	3
Dec 1 to May 1	2.5

5. Standing stillage should not be present 24 hours after application has ceased.

6. After stillage waste has been applied to an area, the area should be allowed to dry for at least the following period before re-application of waste:

Period of Year	Drying Time (days)
Aug 1 to Oct 1	6
Oct 1 to Dec 1	9
Dec 1 to May 1	13

7. After stillage has been applied to an area, if leathers have not been removed, the area should be raked or rototilled before re-application of stillage.

8. Loading rates and drying times for stillage waste from raisins or pomace should follow the criteria for December 1 to May 1 operations.

9. Land area used for disposal should equal or exceed the following:

Period of Year	Land Area[1/] (acres per 100,000 gpd of stillage waste)
Aug 1 to Oct 1	7
Oct 1 to Dec 1	12.3
Dec 1 to May 1	20.6

1/ These land areas are directly related to the drying time stated in No. 6 above. Complete infiltration recovery to the original values may not be obtained by these relatively short resting cycles. At some application sites, the infiltration rate constantly decreases as the application season progresses. A decrease in infiltration of about 75% can be expected with only three applications. Therefore the number of stillage applications at a specific site should be kept to a minimum. Repeated application of stillage with minimum drying times may require larger land areas.

10. During periods when it is not used for stillage disposal, the disposal area should be planted with crops to assist in the removal of residual nitrogen concentrations from the soil if necessary.

Slow Rate Irrigation Method

Most existing stillage disposal sites are located on relatively permeable soils. Where the available land for application of stillage is such that the limiting permeability is slow to moderately slow, the use of slow rate irrigation may be used as an alternative to rapid infiltration. The application depends on the expected evaporation and infiltration and can range from less than 0.5 to 1.5 inches (13,600 to 40,000 gal/acre). Resting periods should range from 18 to 20 days or more. The resultant average loading rates and land areas are shown in Table 1. All other Disposal Site Requirements and Operation Procedures for the rapid infiltration method also apply to the slow rate irrigation method.

TABLE 1. SLOW RATE IRRIGATION
AREA REQUIREMENTS

	Soil Permeability, Slow	Soil Permeability, Moderately Slow
Limiting soil permeability, in/hr	0.06-0.2 (clay loam)	0.2-0.6 (clay loam or silt loam)
Infiltration capacity, in/day	0.5	1.0
Resting period, days	20	13
Average loading rate, gal/acre/day	670	1,940
Area required per 100,000 gal/day of stillage, acres	150	52

Basin Plan Amendment and Action Plan for Erosion/Sedimentation*

Problem Statement

Accelerated erosion from man's disturbance of soil resources (construction, agricultural operations, highway construction, etc.) contributes to turbidity and sedimentation in basin streams. For example, the US Army Corps of Engineers removes over 10 million cubic yards of sediment yearly from the Sacramento River.

There exists a tremendous push by the urban population for construction of primary residences and second-homes (with support activities) in the rural lands of the Central Valley. Exposure of soil during construction of house pads and access roads, and the subsequent earth disturbing cuts and fills can accelerate erosion many times above that which occurs in undeveloped watershed lands.

Agricultural activities can cause a long-term persistent erosion/sedimentation problem. Conversion of steeper sloping lands for agricultural production is occurring as new water sources become available and flatter land becomes more scarce. The conversion of these lands involves the removal of natural vegetation and alteration of natural drainage patterns, which can increase erosion from irrigation and rainfall runoff.

Highway construction, management of forest lands and federal grazing lands are also sources of accelerated erosion; however, these are dealt with in other 208 issues.

Sediment from erosion can have both short and long-term effects on water quality/beneficial uses. The immediate effect is increased turbidity in adjacent water ways, resulting in adverse impacts on fish and wildlife habitat, reduced water pump life due to abrasion, increased municipal/industrial water treatment costs for turbidity removal, and impaired recreation and aesthetic value. Some of the long-term effects are reduced reservoirs capacity, increased flooding hazard from reduced channel capacities, increased irrigation system maintenance and increased dredging costs. Sediment is also a carrier of other pollutants such as pesticides, heavy metals, and nutrients.

Action Plan

The State and Regional Boards contracted with several agencies to collect existing data and make recommendations for developing a statewide policy and a regional action plan for the control of erosion/sedimentation. These studies have been completed and used as supportive studies (Attachment 1) for this Regional Board action plan.

Objective are:

1. Beneficial uses of receiving waters that are presently significantly impacted by sediment should be restored to a water quality level consistent with state and federal water quality standards.

* As adopted in Resolution No. 79-180

2. Beneficial uses of receiving waters presently unimpaired but threatened by impacts of sediment should be protected.

3. Sediment control standards and program performance evaluation criteria should be based upon Best Management Practices and understanding of the impacts of sediment on beneficial uses.

4. Local units of government should have the lead role, with the Regional Board involving and assisting them, in the assessment of sediment problems, the determination of problem areas, and the estimate of sediment control priorities within their jurisdiction.

5. Land use activities that produce significant sediment impacts upon beneficial uses should be addressed by local voluntary programs that provide for inclusion of Best Management Practices applied in the context of management plans acceptable to the affected land users..

6. Minimum county-wide erosion control and surface runoff management criteria should be enacted to address impacts of sediment produced by construction activities.

7. Regional Board participation in sediment control programs shall include assistance in the establishment of local control programs, participation in the determination of water quality problem areas and a cooperative program evaluation with local units of government. Upon failure of local programs to address impacts, waste discharge permits shall be issued for sediment control purposes.

8. In critical water quality problem areas, counties and cities in the Central Valley should submit action plans to the Regional Board within a reasonable time frame that sets forth local sediment control programs consistent with basin plan objectives and criteria. The control features of such action plans shall be incorporated into subsequent water quality management plans.

Guidelines for Existing Erosion/Sedimentation Probelms

1. The resource management subsystem approach developed by the USDA-Soil Conservation Service and reported in their "Recommended Plan for Best Management Practices" shall be considered as Best Management Practices to control or reduce erosion/sedimentation.

2. The Regional Board recognizes the sediment problem area maps developed by the USDA-Soil Conservation Service as the most comprehensive regional assessment of erosion problems for private lands presently available. These maps will be refined to assess significantly impacted water with the ehlp of SCS/RCD, county, and interested agencies.

3. Regional Board will cooperate with counties to establish county erosion control committees, composed of interest groups including those representing the public interest, and local, state, and federal agencies with resource management skills. Committee duties are:

   a. Provide local input and assistance to develop a control plan for the problem area.

   b. Define with the Regional Board, seasonal water quality and soil loss standards for their area.

   c. Seek technical assistance from agencies in planning, review, and implementation of Best Management Practices.

   d. Seek funding for implementation of Best Management Practices.

   e. Provide leadership in working with land users in the problem area.

   f. Encourage development and/or implementation of local erosion/sedimentation control ordinance.

Guidelines for Potential Erosion/Sediment Problems

A. Agriculture

Potential problems stem from conversion of one type of agricultural land use to another (i.e., range to cultivated agriculture) which result in soil disturbing activities and removal of vegetative cover.

1. Local units of government should identify areas where such conversions are likely to occur and erosion/sedimentation will have adverse impacts on water quality.

2. The county erosion control committees should work with the county to develop a control plan for identified areas.

3. Local USDA-Soil Conservation Service/RCD and UC Cooperative Extension offices should establish education and information programs to assist agricultural land users in planning and applying Best Management Practices to mitigate erosion during and after conversion.

B. Construction

1. Plans for erosion/sedimentation control should be a requirement for issuance of a county or city grading and/or building permit for construction activities that will disturb greater than 10,000 square feet of surface area and/or more than 100 cubic yards of excavated material.

2. Plans for erosion/sedimentation control should meet the following minimum criteria:

   a. During development and/or construction, adequate measures to protect against erosion/sedimentation shall be provided.

   b. Land shall be developed in increments of workable size that can be completed during a single construction season. Erosion and sediment control measures shall be coordinated with the sequence of grading, development and construction operations.

   c. Vegetation shall be removed only when absolutely necessary.

   d. Every effort shall be made to conserve top soil for reuse in revegetation of disturbed areas.

   e. All disturbed soil surfaces shall be stabilized and revegetated before the rainy season.

   In addition, plans should address the need for the following criteria:

   a. Sediment basins and traps shall be installed in conjunction with the initial grading operation.

   b. The drainage and storm water runoff control system and its component facilities shall be designed to fit the hydrology of the area under full development and have adequate capacity to transport the flow from all upstream areas.

   c. The drainage and storm water runoff control system and its component facilities shall be nonerosive in design, shall conduct runoff to a stable outlet, and be installed prior to the rainy season.

3. Those counties and cities that have adopted and are implementing ordinances and programs compatible with these guidelines shall transmit tentative maps for land develpments containing 100 lots or more with sufficient information that the proposed development will meet these guidelines or the approved county/city erosion control ordinances.

4. Construction activities in counties and cities having no erosion control programs or one which is not in compliance with the Regional Board guidelines may be required to file a report of waste discharge.

Supportive Studies

The following studies were performed to provide much of the technical and institutional information on which the recommendations of this plan are based:

1. Recommended Plan of Best Management Practices, Soil Conservation Service, 1979.
2. 208 Institutional Study, John Muir Institute, 1979.
3. Nevada County Sediment Control Plan, Nevada County RCD and Nevada County, 1979.
4. Placer County Sediment Control Plan, Placer County RCD and Placer County, 1979.
5. A Water Quality Study for Spanish Grant Drainage District and Crow Creek Watersned, G.L. Gustafson and Orestimba RCU, 1978.
6. A Gully Control Demonstration Project, Cottonwood RCU, 1979.
7. Erosion and Sediment Control Handbook, Department of Conservation Resources Agency, State of California, 1978.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

RESOLUTION NO. 83-135

AMENDING THE WATER QUALITY CONTROL PLAN
FOR
GUIDELINES FOR PROTECTION OF WATER QUALITY
DURING CONSTRUCTION AND OPERATION OF
SMALL HYDRO PROJECTS

WHEREAS, the California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) adopted a Water Quality Control Plan on 25 July 1975; and

WHEREAS, high energy costs and attractive economic benefits have resulted in a recent boom in the development of small hydropower projects in Central Valley watersheds; and

WHEREAS, these projects can adversely affect water quality, aquatic and riparian habitat. and recreational/aesthetic uses of streams; and

WHEREAS, guidelines have been developed which set forth Regional Board policy on small hydro development, project standards for water quality protection, and procedures for project approval; and

WHEREAS, the Regional Board has conducted an environmental assessment pursuant to Title 14, California Administrative Code, and has determined that the proposed action will not have a significant effect on the environment; and

WHEREAS, the Regional Board, on 23 September 1983 in Sacramento and on 28 October 1983 in Redding, held public hearings and considered all evidence concerning this matter: Therefore be it

RESOLVED, That the Board hereby adopts the Guidelines for Protection of Water Quality During Construction and Operation of Small Hydro Projects as an amendment to the Water Quality Control Plan; and be it further

RESOLVED, That the Executive Officer is instructed to transmit the Water Quality Control Plan amendments to the State Water Resources Control Board for its consideration and approval.

I, WILLIAM H. CROOKS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Central Valley Region, on 28 October 1983.

WILLIAM H. CROOKS, Executive Officer

GUIDELINES FOR PROTECTION OF WATER QUALITY DURING CONSTRUCTION AND OPERATION OF SMALL HYDRO PROJECTS

I. POLICIES AND PRINCIPLES

All beneficial instream uses, including water quality, aquatic and riparian habitat, recreational and aesthetic uses, should be protected.

The Regional Board will be responsible for addressing water quality-related impacts of small hydro projects. Nonwater quality-related impacts will be addressed by other authorities; i.e., Department of Fish and Game; State Water Resources Control Board, Division of Water Rights; federal land management agencies; and local governments.

Construction and operation of small hydro projects shall not result in a violation of adopted water quality objectives as contained in the Board's Water Quality Control Plan. The following objectives are considered of particular importance in protecting beneficial uses from adverse impacts of small hydro projects.

A. TEMPERATURE

Water temperature shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration does not adversely affect beneficial uses. At no time shall temperature be increased by more than 5°F above background levels. Where temperature increases would threaten fisheries or other beneficial uses, the applicant may be required to establish baseline temperature conditions.

B. 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 50 Jackson Turbidity Units (JTU), increases shall not exceed 20%.
- Where natural turbidity is between 50 and 100 JTU, increases shall not exceed 10 JTU.
- Where natural turbidity is greater than 100 JTU, increases shall not exceed 10%.

The above turbidity limits will be eased during any working period when construction work must occur in flowing water, to allow a turbidity increase of 15 JTU as measured 300 feet below the discharge.

C. SEDIMENT

The suspended sediment load and concentration shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses. Where suspended or settleable sediment would threaten fisheries or other beneficial uses, the applicant may be required to establish baseline sediment conditions.

D. SETTLEABLE MATERIAL

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

E. DISSOLVED OXYGEN

Dissolved oxygen shall not be depressed below levels specified in the Board's Water Quality Control Plan.

II. PROJECT STANDARDS AND REQUIREMENTS

A. CONSTRUCTION

The project applicant shall submit to the Regional Board an Erosion Control Plan specifying those measures which will be used to prevent erosion/sedimentation problems during project construction. The plan shall include a map of the project site delineating where erosion control measures will be applied. The erosion control plan shall include the following minimum criteria.

1. Construction equipment shall not be operated in flowing water except as may be necessary to construct crossings or barriers.

2. Where working areas are adjacent to or encroach on live streams, barriers shall be constructed which are adequate to prevent the discharge of turbid water in excess of those limits specified above.

3. Material from construction work shall not be deposited where it could be eroded and carried to the stream by surface runoff or high stream flows.

4. All permanent roads shall be surfaced with material sufficient to maintain a stable road surface.

5. All disturbed soil and fill slopes shall be stabilized in an appropriate manner.

6. Surface drainage facilities shall be designed to transport runoff in a nonerosive manner.

7. Riparian vegetation shall be removed only when absolutely necessary.

8. There shall be no discharge of petroleum products, cement washings or other construction materials.

9. Erosion control measures shall be in place by October 15 of each year.

10. Stream diversion structures should be designed to preclude accumulation of sediment. If this is not feasible, the applicant must develop an operation plan that will prevent adverse downstream effects from sediment discharges.

11. The project shall be designed to avoid erosion and degradation of water quality in the event of a failure in the water transport system. An automatic, immediate shutoff mechanism is an acceptable method (in many cases, the only feasible method).

III. PROJECT REVIEW AND REGULATION

A. Applicants should seek early consultation with the Regional Board to determine water quality concerns and to arrange a site inspection if needed.

B. Where appropriate, the Regional Board will participate with the applicant and other reviewing agencies to determine the scope of the project's environmental assessment.

C. The Regional Board will review the FERC application which should include the following water quality-related information:

1. All environmental assessment information.

2. A copy of the Erosion Control Plan.

3. A description of all project mitigations for water quality protection.

D. The Regional Board will issue a letter addressing the need for Water Quality Certification and waste discharge requirements.

Waste Discharge Requirements

1. The Regional Board believes the standard specifications contained in Section II of these guidelines will provide water quality protection from small hydro construction and operation. In most instances, the Regional Board will waive the need for Reports of Waste Discharge and waste discharge requirements for projects which comply with these standard specifications.

2. Waste discharge requirements may be required for projects having high potential for water quality impairment or for major projects where construction work will be continued beyond one year.

Water Quality Certification

1. Regulations under Section 401 of the Clean Water Act require applicants for federal licenses or permits (such as FERC licenses or U.S. Corps Dredge and Fill Permits) to obtain state certification of conformance with water quality standards.

2. In most instances, the Regional Board will waive water quality certification provided the project includes the standards specified in Section II of these guidelines and it is determined that project operation will not violate adopted water quality objectives.

IV. ENFORCEMENT

When investigations by staff reveal that a project is impairing, or threatens to impair, beneficial uses of water, the project owner/operator is required to take corrective action as follows:

A. The responsible party shall be promptly notified and asked to submit a description of actions and a time schedule to be taken to bring the project into compliance with these guidelines.

B. A Cleanup and Abatement Order may be issued where the discharge of waste to surface waters is imminent and normal administrative procedures will not afford timely water quality protection. Upon failure to comply with such Cleanup and Abatement Order, the matter shall be referred to the Attorney General for appropriate action.

C. The Regional Board may expend available monies to perform any cleanup and abatement work which, in its judgment, is required to prevent substantial adverse impacts on water quality and beneficial uses. The discharger shall be liable for all costs incurred in taking the cleanup and abatement action.

Guidelines for Waste Disposal from Land Developments

In its June 1971 Interim Water Quality Control Plan the Board included Guidelines for Land Development Planning. These Guidelines were substantially modified on 15 December 1972 and retitled Guidelines for Waste Disposal From Land Developments. The Guidelines that follow are substantially the same as those adopted in 1972 but contain changes based upon experience gained from working closely with local governmental agencies in the development of individual waste disposal ordinances.

Section 13260 of the Porter-Cologne Water Quality Control Act requires any person discharging waste or proposing to discharge waste to file a report of the discharge containing such information as may be required by the Board. In the early 1950's, the Board waived the filing of reports for discharges from individual sewage disposal systems in those counties having satisfactory ordinances or regulations. Traditionally, these individual discharges have been treated by septic tank - leaching systems.

The Water Quality Control Act requires local governmental agencies to notify the Board of the filing of tentative subdivision maps or applications for building permits involving six or more family units except where the waste is discharged to a community sewer system.

The Board believes that control of individual waste treatment and disposal systems can best be accomplished by local county environmental health departments if these departments are strictly enforcing an ordinance that is designed to provide complete protection to ground and surface waters and to the public health.

The following principles and policies will be applied by the Board in review of water quality factors related to land developments and waste disposal from septic tank-leaching systems:

- There are great differences in the geology, hydrology, geography, and meteorology of the 40 counties which lie partially or wholly within the Central Valley. The criteria contained herein are considered to be applicable to the Central Valley and pertain to: (a) all tentative maps filed after 15 December 1972, (b) all divisions of land made after 15 December 1972, and (c) all final maps for which tentative maps were filed prior to 15 December 1971. Local agencies and the Board may adopt and enforce more stringent regulations which recognize particular local conditions that may be limiting to wastewater treatment and disposal.

- The Board does not intend to preempt local authority and will support local authority to the fullest extent possible. Where local authority demonstrates the inability or unwillingness to adopt an ordinance compatible with these guidelines, the Board intends to withdraw its waiver concerning waste disposal from individual systems and will require each and every party proposing to discharge waste within that county to submit a report of waste discharge as required by Section 13260 of the Porter-Cologne Water Quality Act.

- Evaluation of the cpability of individual waste treatment systems to achieve continuous safe disposal of wastes requires detailed local knowledge of the area involved. The experience and recommendations of local agencies will, therefore, be an important input to the information upon which the Board will base its decision.

- There are many areas within the Central Valley that are not conducive to individual waste treatment and disposal systems. In these areas, connection to an adequate community sewerage system is the most satisfactory method of disposing of sewage. The Board believes that individual disposal systems should not be used where community systems are available and that every effort should be made to secure public sewer extensions, particularly in urban areas. Where connection to a public sewer is not feasible and a number of residences are to be served, due consideration should be given to construction of a community sewage treatment and disposal system.

- The installation of individual disposal systems, especially in large numbers, creates discrete discnarges which must be considered on an individual basis. The life of such disposal systems may be quite limited. Failures, once they begin in an area, generally will occur on an areawide basis. Further, regular maintenance is important to successful operation of individual disposal systems. To assure continued protection of water quality, to prevent water pollution and to avoid the creation of public health hazards and nuisance conditions, a public entity* shall be formed with powers and responsibilities defined herein for all subdivisions having 100 lots or more. Subdivisions with less than 100 lots which threaten to cause water quality or public health problems will also be required to form a public entity.

Criteria for Septic Tank - Leaching Systems

The following criteria will be applied to assure continued preservation and enhancement of state waters for all present and anticipated beneficial uses, prevention of water pollution, health hazards, and nuisance conditions. These

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* Public Entity - A local agency, as defined in the State of California Government Code Section 53090 et seq., which is empowered to plan, design, finance, construct, operate, maintain, and to abandon, if necessary, any sewerage system or the expansion of any sewerage system and sewage treatment facilities serving a land development. In addition, the entity shall be empowered to provide permits and to have supervision over the location, design, construction, operation, maintenance, and abandonment of individual sewage disposal systems within a land development, and shall be empowered to design, finance, construct, opeate, and maintain any facilities necessary for the disposal of wastes pumped from individual sewage disposal systems and to conduct any monitoring or surveillance programs required for water quality control purposes. (Unless there is an existing public entity performing these tasks.)

criteria prescribe conditions for waste disposal from septic tank-leaching systems for single family residential units or the equivalent and do not preclude the establishment of more stringent criteria by local agencies or the Board. The Board may prohibit the discharge from septic tank-leaching systems which do not conform to these criteria. Systems which cannot meet the following criteria may be allowed in selected areas if they are individually designed. The criteria may not be applicable in all cases to commercial or industrial developments.

The septic tank, absorption systems, and disposal area requirements for other than single family residential units shall be based upon the current edition of the "Manual of Septic Tank Practice" or in accordance with methods approved by the Executive Officer. An adequate replacement area equivalent to at least the initial disposal area shall be required at the time of design of the initial installation and incompatible uses of the replacement area shall be prohibited.

Minimum Distances

The Board has determined the following minimum distances (in feet) should be followed in order to provide protection to water quality and/or public health:

Facility	Domestic Well	Public Well	Flowing Stream(1)	Drainage Course of Ephemeral Stream(2)	Cut or Fill Bank(3)	Property Line(4)	Lake or Reservoir(5)
Septic Tank or Sewer Line	50	100	50	25	10	25	50
Leaching Field	100	100	100	50	4h	50	200
Seepage Pit	150	150	150	50	4h	75	200

(1) As measured from the line which defines the limit of a 10-year frequency flood.

(2) As measured from the edge of the drainage course or stream.

(3) Distance in feet equals four times the vertical height of the cut or fill bank. Distance is measured from the top edge of the bank.

(4) This distance shall be maintained when individual wells are to be installed and the minimum distance between waste disposal and wells cannot be assured.

(5) As measured from the high water line.

Minimum Criteria

- The percolation rate* in the disposal area shall not be slower than 60 minutes per inch, or not slower than 30 minutes per inch if seepage pits are proposed. The percolation rate shall not be faster than five minutes per inch unless it can be shown that a sufficient distance of soil is available to assure proper filtration.
- Soil depth below the bottom of a leaching trench shall not be less than five feet, nor less than 10 feet below bottom of a seepage pit.
- Depth to anticipated highest level of ground water below the bottom of a leaching trench shall not be less than five feet, nor less than 10 feet below bottom of seepage pit. Greater depths are required if soils do not provide adequate filtration.
- Ground slope in the diposal area shall not be greater than 30 percent.
- The minimum disposal area shall conform to tne following:

Percolation Rate (minutes/inch)	Minimum Usable Disposal Area (sq ft)
41-60	12,000
21-40	10,000
11-20	8,000
Less than 10	6,000

- Areas that are within the minimum distances which are necessary to provide protection to water quality and/or public health shall not be used for waste disposal. The following areas are also considered unsuitable for the location of disposal systems or replacement area:
  - Areas within any easement which is dedicated for surface or subsurface improvement.
  - Paved areas.
  - Areas not owned or controlled by property owners unless said area is dedicated for waste disposal purposes.
  - Areas occupied or to be occupied by structures.

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* Determined in accordance with procedures contained in current US Department of Health, Education, and Welfare "Manual of Septic Tank Practice" or a method approved by the Executive Officer.

Implementation

- The Board will review local ordinances for the control of individual waste disposal systems and will request local agencies to adopt criteria which are compatible with or more stringent than these guidelines.

- In those counties which have adopted an ordinance compatible with these guidelines, the Board will pursue the following course of action for discharges from individual septic tank-leaching systems.

  - Land developments consisting of less than 100 lots will be processed entirely by the county. Tentative maps for subdivisions involving six or more family units shall be transmitted to the Board along with sufficient information* to clearly determine that the proposed development will meet the approved county ordinance. The Board or the appropriate local authority may require a public entity if potential water quality or public health problems are anticipated.

  - Tentative maps for land developments containing 100 lots or more shall be transmitted to the Board. The map shall be accompanied by a report of waste discharge and sufficient information to clearly demonstrate that the proposed development will meet these guidelines or the approved county ordinance. A public entity is required prior to any discharge of waste.

- The Board will prohibit the discharge of wastes from land developments which threaten to cause water pollution, quality degradation, or the creation of health hazards or nuisance conditions. These guidelines will be used to evaluate potential water quality or health problems. In certain locations and under special circumstances the Board's Executive Officer may waive individual criteria or he may waive the formation of a public entity. Land developers are to be aware that a waiver by the Executive Officer is not binding on any location entity.

  Examples of these special circumstances would be:

  - Short time, interim use of individual septic tank-leaching systems may be acceptable in areas which do not meet these guidelines if sufficient, dependable funding of community collection, treatment, and disposal is demonstrated and a plan and time schedule for implementation is being followed.

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* The Board's staff has developed a document entitled "Information Needs for Waste Disposal from Land Developments". This document discusses the necessary reports, maps, etc., that must be submitted in order to evalute proposed land developments.

- A failure to meet the minimum criteria could be negated by other favorable conditions. for example, the installation of individual septic tank-leaching systems may be allowed in areas which cannot meet the minimum criteria in these guidelines if the disposal area is increased sufficiently to allow for special design systems* that have been shown to be effective in similar areas.

- Severe impact on water quality has resulted from improper storm drainage and erosion control. Land developers must provide plans for the control of such runoff from initial construction up to complete build-out of the development.

- The disposal of solid waste can have an impact on water quality and public health. Land developers must submit a plan which conforms to the regional or county master plan and contains adequate provisions for solid waste disposal for complete build-out of the development.

- The disposal of septic tank sludge is an important part of any areawide master plan for waste disposal. Land developers must submit a plan which con- forms to the regional or county master plan and contains adequate provisions for septic tank sludge disposal for complete build-out of the development.

- The responsibility for the timely submittal of information necessary for the Board or the appropriate local authority to determine compliance with these guidelines rests with persons submitting proposals for development or discharge. For those developments which are to be submitted to the Board, the Porter-Cologne Water Quality Control Act provides that no person shall initiate any new discharges of wastes prior to filing a report of waste discharge and prior to (1) issuance of waste discharge requirements, (2) the expiration of 120 days after submittal of an adequate report of waste discharge, or (3) the issuance of a waiver by the Regional Board.

- A report of waste discharge which does not provide the information required by these guidelines is an inadequate report. The 120-day time period does not begin until an adequate report has been submitted. Thus, to avoid extensive delay, every effort should be made to comply with these guidelines at the earliest possible date during formulation of proposals.

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* Special design systems will be accepted for review from registered engineers, geologists, or sanitarians who are knowledgeable and experienced in the field of septic tank-leaching system design and installation. These systems will include at least a 100 percent replacement disposal area. these systems shall be installed under the supervision of the designer, the public entity responsible, and the local health department.

Amendment to Water Quality Control Plan and Action Plan for Mining*

Problem Statement

Although water quality problems from active mines are effectively controlled through traditional avenues of waste discharge requirements, permits, and enforcement, acid mine drainage and heavy metals from inactive mines have created sterile stream conditions in isolated locations throughout central and northern California. Most of those mines known to be causing water quality problems are in the Central Valley Region.

Action Plan and Development

In planning to correct water quality problems caused by past mining activity, the Board undertook several related studies, the summaries and general recommendations of which are given below.

Tables 1 and 2 show, respectively, an inventory and ranking of problem mines in the Central Valley Region. A report was prepared describing the method used to rank the mines.

A study of enforcement and funding options was also completed.

Technical feasibility studies were conducted or are underway. These site-specific studies at Walker Mine in Plumas County; Malakoff Diggins in Nevada County; and Leviathan Mine in Alpine County will be used to promote cleanup at those sites and serve as examples of the application of BMPs for tunnel, open pit spoils, and sediment problems, respectively, with transfer value to other mines. The abatement project a Penn Mine, Calaveras County, begun as a 208 project, will also aid in identifying controls and techniques for other mines. A summary of acid mine drainage control technology has been prepared. Control methods (BMPs) that appear most promising for application in California are suggested in Figure 1. A Memorandum of Understanding among the State Water Resources Control Board, the US Bureau of Reclamation, and the Department of Fish and Game was prepared which outlines a program of correction for the Spring Creek watershed, Iron Mountain Mine, Shasta County.

The Board will take the following approach in applying the results of the studies described above:

1. The Board finds there are serious water quality problems related to inactive mines and will take necessary actions to control those problems using the priorities shown in Table 2 as a guide.

2. In implementing necessary controls, the Board will take appropriate actions identified in the legal, institutional, and funding studies conducted during the 208 planning program.

* As adopted in Resolution No. 79-149

3. As an important initial step in implementation and enforcement, feasibility studies should be developed for all high priority problem mines. Owners and operators will be required to prepared such plans, or in some cases, as appropriate, the Board will seek funds from the identified sources to conduct the studies. BMPs shown in Figure 1 should be considered in developing those plans.

4. The State Board and EPA should assist the Region in pursuing promising funding sources and other appropriate measures as recommended in the legal, institutional, and funding studies.

5. To prevent future problems, the Board will require owners and operators of active mines to prepare plans for closure and reclamation. Closure and reclamation plans for all operations will meet the minimum requirements of regulations in the Surface Minign and Reclamation Act of 1975 and will be coordinated with the State Board of Mining and Geology.

Public Participation

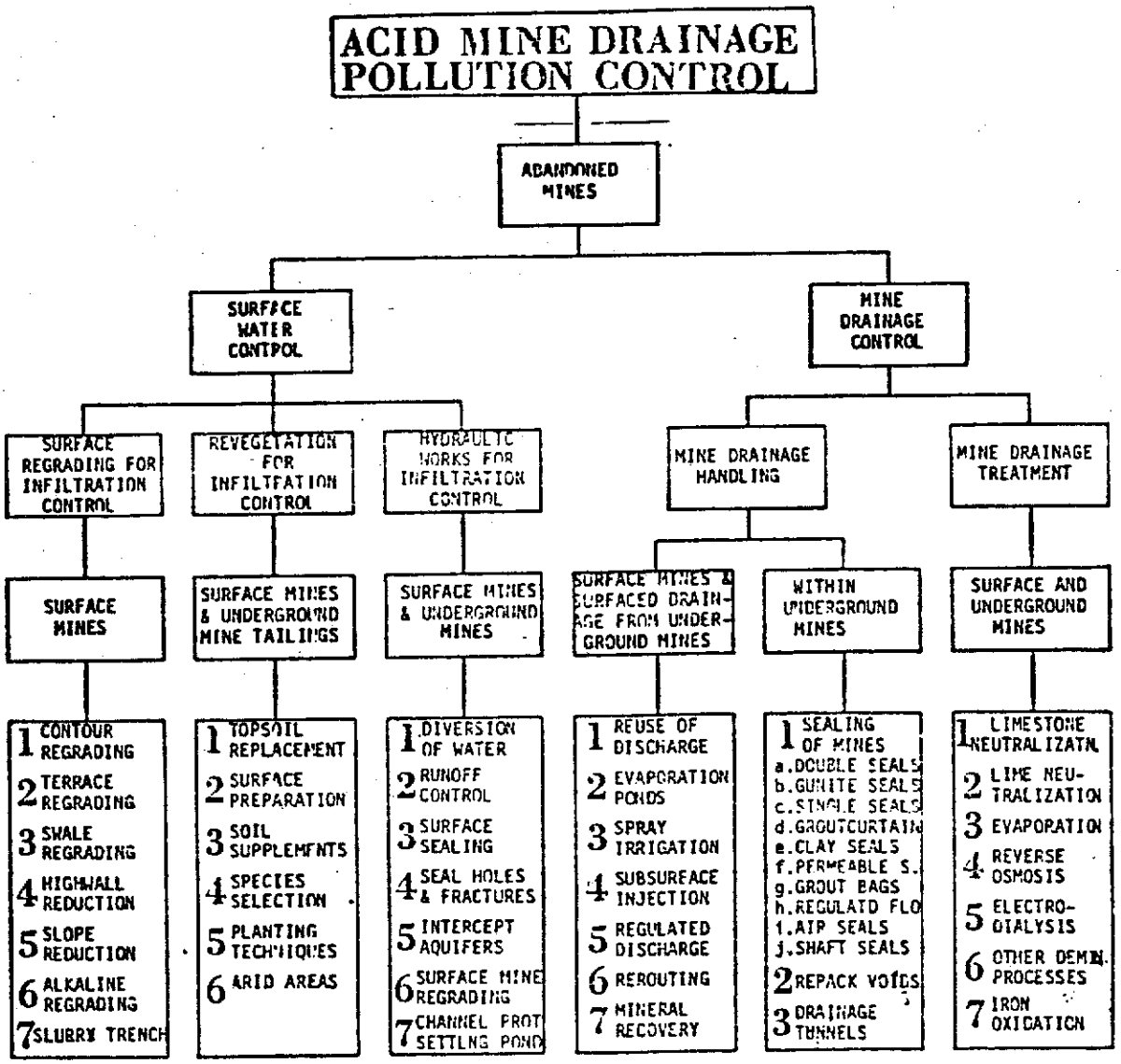
Work plans and products were reviewed by a Mining Technical Advisory Group (MTAG) and individuals and groups on the Regional and State Board agenda lists. A Penn Mine subcommittee toured the mine site and reviewed proposed abatement plans. One meeting with the MTAG was held to review the draft inventory and assessment report, discuss the legal study, and evaluate staff proposals for the site-specific feasibility studies.

Negative Declaration

A Negative Declaration was prepared for this project.

FIGURE 1

BEST MANAGEMENT PRACTICES AVAILABLE FOR
CONTROL OF AMD FROM ABANDONED MINES



adapted from unpublished literature review by the Sanitary Engineering Research Lab, U.C. Berkeley

TABLE 1. INVENTORY OF PROBLEM MINES

Watershed	Mine Name	County	CDMG Map No.	USGS Map	Latitude	Longitude	Commodity Mined	Type of Operation	Receiving Stream
American River, SF	Alhambra Shumway	El Dorado	5A-733	Georgetown	38 49.54'	120 47.37'	Gold	Undergrnd	Mosquito Trail Glch—Rock Crk—SF American R
Bear River	Dairy Farm	Placer	5A-633	Cmp Far W	39 1.81'	121 17.25'	Copper	Undergrnd	Camp Far West Reservoir
	Lava Cap-Banner	Nevada	5A-571	Chicago Pk	39 13.64'	120 58.19'	Gold	Undergrnd	L.Clipper Crk—Greenhorn Crk—Rollins Res—Bear R
Butte Creek	Cherokee	Butte	5A-278	Cherokee	39 38.20'	121 37.70'	Gold	Hyd Placr	Sawmill Ravine—Dry Creek—Butte Crk
	Mineral Slide	Butte	(none)	Paradise	39 47.14'	121 37.63'	Gold	Undergrnd	L.Butte Crk—Butte Crk
Cache Creek	Abbott	Lake	5A-645	Wilbur Spg	39 1.23'	122 26.63'	Mercury	Undergrnd	Harley Glch—Cache Crk
	Manzanita	Colusa	5A-644	Wilbur Spg	39 2.30'	122 25.82'	Mercury	Undergrnd	Sulfur Crk—bear Crk—Cache Crk
	Reid	Yolo	5A-656	Knoxville	38 51.88'	122 22.20'	Mercury	Undergrnd	Davis Crk—Cache Crk
	Sulfur Bank	Lake	5A-650	Clr Lk Hi	38 59.90'	122 40.35'	Merc,Sul	Open Pit	Clear Lake—Cache Crk
Cosumnes River	Copper Hill	Amador	5B-044	Latrobe	38 30.13'	120 58.00'	Copper	Undergrnd	Cosumnes River
Feather River	China Gulch	Plumas	(none)	Greenvlle	40 12.74'	120 45.17'	Copper	Undergrnd	Lights Crk—Wolf Crk—NF Feather R
	Engel	Plumas	5A-076A	Greenvlle	40 12.20'	120 46.41'	Cop,Silv	Undergrnd	Lights Crk—Wolf Crk—NF Feather R
	Iron Dyke	Plumas	5A-080	Greenvlle	40 3.90'	120 50.60'	Cu,Ag,Au	Undergrnd	Taylor Crk—Indian Crk—Wolf Crk—NF Feather R
	Walker	Plumas	5A-159	Mt Inglls	39 58.70'	120 39.80'	Copper	Undergrnd	L.Grizzly Crk—Indian Crk—Wolf Crk—NF Feather R
Fresno Slough	New Idria	San Benito	5D-045	Idria	36 24.85'	120 40.39'	Mercury	OPit&Undg	San Carlos Crk—Silver Crk—Panoche Crk
Mokelumne River	Argonaut	Amador	5B-105	Jackson	38 21.72'	120 47.10'	Gold	Undergrnd	Jackson Crk—Dry Crk—Mokelumne R
	Newton	Amador	5B-089	Ione	38 20.45'	120 53.20'	Copper	Undergrnd	Copper Crk—Sutter Crk—Dry Crk—Mokelumne R
	Penn	Calaveras	5B-223	Vlly Spg	38 13.97'	120 52.50'	Copper	OPit&Undg	Mokelumne River (Camanche Res)
Putah Creek	Aetna	Napa	5A-785	Aetna Spg	38 39.43'	122 29.51'	Mercury	Surf&Undg	Swartz Crk—Pope Crk—Putah Crk—Lake Berryessa
	Anderson	Lake	5A-652	Whisp Pne	38 46.35'	122 42.40'	Mercury	Undergrnd	Anderson Crk—Bear Canyon Crk—Putah Crk—Lk. Ber
	Big Injun	Lake	5A-650A	Whisp Pne	38 45.85'	122 42.40'	Mercury	Surf&OPit	Bear Canyon Crk—Putah Crk—Lake Berryessa
	Corona	Napa	5A-790	Detert Spg	38 40.21'	122 32.47'	Mercury	Undergrnd	James Crk—Pope Crk—Putah Crk—Lake Berryessa
	Great Western	Lake	5A-795	Mt St Hel	38 42.87'	122 38.44'	Mercury	OPit&Undg	Hoodoo Crk—Dry Crk—Putah Crk—Lake Berryessa
	Knoxville	Napa	5A-659	Knoxville	38 49.61'	122 20.34'	Mercury	OPit&Undg	Knoxville Crk—Eticuera Crk—Lake Berryessa
	Oat Hill	Napa	5A-789	Detert Spg	38 40.50'	122 21.65'	Mercury	Surface	James Crk—Pope Crk—Putah Crk—Lake Berryessa
Sacramento River	Afterthought	Shasta	5A-019	Millville	40 44.10'	122 4.10'	Cu,Ag,Au	Undergrnd	L.Cow Crk—Sacramento R
	Balaklala	Shasta	5A-033	Shasta Dam	40 43.59'	122 29.79'	Cu,Zn,Ag	Undergrnd	West Squaw Crk—Shasta Lake
	Bully Hill	Shasta	5A-017	Bldbkka Mt	40 47.80'	122 12.20'	Cu,Zn,Pb	Undg&Surf	First Crk, Town Crk—Shasta Lake
	Golinsky	Shasta	5A-014	Lamoine	40 45.84'	122 27.40'	Cu,Zn,Au	Undergrnd	L.Backbone Crk—Shasta Lake
	Greenhorn	Shasta	5A-055	Frnch Glch	40 39.75'	122 41.65'	Cu,Au,Ag	Undergrnd	Willow Crk—Clear Crk—Whiskeytown Lake
	Iron Mountain	Shasta	5A-041	Frnch Glch	40 40.39'	122 31.47'	Cu,Zn,Au	Undg&Surf	Spring Crk—Keswick Res (Sacramento R)
	Keystone	Shasta	5A-037	Frnch Glch	40 43.10'	122 30.32'	Cu,Au,Ag	Undergrnd	West Squaw Crk—Shasta Lake
	Mammoth	Shasta	5A-013	Lamoine	40 45.84'	122 27.40'	Cu,Zn,Au	Undergrnd	L.Backbone Crk—Shasta Lake
	Shasta King	Shasta	5A-035	Shasta Dam	40 43.80'	122 29.80'	Cu,Au,Ag	Undergrnd	West Squaw Crk—Shasta Lake
San Joaquin Delta	Mount Diablo	Contra Costa	(none)	Antioch So	37 53.87'	121 52.54'	Mercury	Undergrnd	Marsh Crk—Marsh Crk Res—San Joaquin Delta
Stanislaus River	Empire	Calaveras	5C-072	Copperopls	37 58.60'	120 38.30'	Copper	OPit&Undg	Copper Crk—Black Crk—Tulloch Res (Stanislaus R)
	Keystone	Calaveras	5C-073	Copperopls	37 59.20'	120 38.90'	Copper	Undergrnd	Penny Crk—Sawmill Crk—Black Crk—Tulloch Res
Yuba River	Kenton	Sierra	5A-357	Alleghany	39 27.31'	120 51.52'	Gold	Undergrnd	Kanaka Crk—M Yuba R
	Malakoff Diggings	Nevada	5A-345	Pike,NBlmf	39 22.20'	120 55.00'	Gold	Surf Hydr	Humbug Crk—SF Yuba R
	Plumbago	Sierra	5A-384	Alleghany	39 27.17'	120 48.74'	Gold	Undergrnd	Buckeye Ravine—M Yuba R
	Sixteen to One	Sierra	5A-367	Alleghany	39 27.92'	120 50.53'	Gold	Undergrnd	Kanaka Crk—M Yuba R

TABLE 2 MINE RANKING

Mine Name	Rank	Chemical C	Chemical Q	Pollution Problem	Data Source
Iron Mountain	H	30	5-70	acid,Cu,Zn,Fe from tailings and adits to creeks	USGS WRI78-32, CDFG, CDMG reports, and CVRWQCB inspections
Mammoth	H	30	3	acid,Cu,Zn,Fe from adits to creek	USGS WRI78-32
Penn	H	26	680	acid,Cu,Zn,Fe from tailings and shafts to river	CDFG and CVRWQCB reports and inspections
Balaklala	H	26	5	acid,Cd,Cu,Zn from adits and dump to creek	USGS WRI78-32 and DWR report
Keystone	H	26	5	acid,Cd,Cu,Zn from adits and dump to creek	USGS WRI78-32 and DWR report
Afterthought	H	24	68	acid,Cd,Cu,Zn from main portal to creek	CDFG report
Mount Diablo	H	23	.6-1	acid,Hg,Fe from tailings and overburden to creek	CVRWQCB and DWR inspections and reports
Bully Hill	H	21	1.8	acid,Cd,Cu,Zn from mine to creek	USGS WRI78-32
Walker	H	17	11	Cu,Zn from tailings and portal to creek	CVRWQCB, CONOCO, and AMAX inspections and sampling
Sulfur Bank	H	15	5	Hg from open pit to lake	USGS and DWR reports
Newton	M	30	.3	acid,Cu,Fe from tailings to creek	CVRWQCB inspections
Greenhorn	M	19	.6-5	Cu,Zn,Fe from tailings to creek	CDFG inspection
New Idria	M	19	.6-5	Hg,Fe from mine to creek	CVRWQCB inspection
Corona	M	17	1.2	acid,Hg,Fe from adits to creek	CVRWQCB inspections
Manzanita	M	15	3.5	Hg from mine area to creek	CVRWQCB inspection
Cherokee	M	15	.6-5	Hg from mine area to creek	CVRWQCB inspection
Copper Hill	M	5	474	Cu,Zn from mine area to river	STORET and USGS-DWR data
Empire	L	20	.3	Cu from tailings to creek	CVRWQCB inspection
Abbott	L	15	.1	Hg from tailings to creek	CVRWQCB inspections
Knoxville	L	10	2	Hg from mine area to creek	CVRWQCB inspection
Keystone	L	4	2	none observed but Cu suspected, perhaps Fe	CVRWQCB inspection
Lava Cap-Banner	L	3	1.5	none detected in creek but As,Ag,Hg are possible	CVRWQCB inspection
Great Western	L	3	1	none detected but Hg suspected	CVRWQCB inspection
Alhambra Shumway	L	2	1	none detected and sedimentation suspected	CVRWQCB inspection
Anderson	L	0	13	none detected but Hg suspected	CVRWQCB inspection
Big Injun	L	0	8	none detected but Hg suspected	CVRWQCB inspection
Kenton	L	0	5	none detected but As possible	STORET data and CVRWQCB inspections of creek
16 to 1	L	0	5	none detected but As possible	STORET data and CVRWQCB inspections of creek
Engel	L	0	3	none detected but Cu suspected	STORET data
China Gulch	L	0	3	none detected but Cu suspected	STORET data
Oat Hill	L	0	3	none detected in creek but mine runoff high in Hg,Fe	CVRWQCB inspections
Aetna	L	0	.5	none detected but Hg suspected	CVRWQCB inspection
Shasta King	L	0	.1	none detected in creek but mine water high in acid,Cu	USGS WRI78-32 and DWR report
Golinsky	L	0	0	none observed (no flow from mine) but Cu,Zn are possible	USGS WRI78-32
Iron Dyke	L	0	0	none observed (no flow from mine) but Cu is possible	CVRWQCB inspections
Argonaut	L	0	0	none observed (no flow from mine) but acid is possible	CVRWQCB inspection
Dairy Farm	L	0	0	none observed but acid,Cu are possible	CVRWQCB communication with S. Sutter Water District
Plumbago	U N K N O W N			no inspection due to remote location, As suspected	
Reid	U N K N O W N			no inspection due to inaccessibility, acid,Hg suspected	
Melakoff Diggings	S P E C I A L			high sediment and turbidity from mine area to creek	CVRWQCB inspection
Mineral Slide	S P E C I A L			sediment and turbidity from mine area to creek	CVRWQCB observation

The Federal Antidegradation Policy
(40 CFR 131.12)

(a) The State shall develop and adopt a statewide antidegradation policy and identify the methods for implementing such policy pursuant to this subpart. The antidegradation policy and implementation methods shall, at a minimum, be consistent with the following:

(1) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

(2) Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

(3) Where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

(4) In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with section 316 of the (Clean Water) Act.

Appendix 40 - Grassland Watershed Wetland Channels for Which Beneficial Uses Have Been Identified

Southern Grassland Wetland Channels

	Starting Location	Ending Location
Agatha Canal North	Starts at the Agatha North/Geis split at NE1/4, SE1/4, SE1/4, Sec. 12, T11S, R11E	Discharges to the Santa Fe Canal at Mueller Weir at NW1/4, SW1/4, SW1/4, Sec. 21, T10S, R11E
Agatha Canal South	Diversion from Helm or Main Canal at NW1/4, SE1/4, NE1/4, Sec. 31, T11S, R12E	Terminates at the Agatha North/Geir split at NE1/4, SE1/4, SE1/4, Sec. 12, T11S, R11E
Almaden Ditch	Begins at the Agatha Canal at Mallard Rd at SE1/4, NE1/4, SE1/4, Sec. 12, T11S, R11E	Terminates at Mesquite Drain siphon at the SW1/4, SW1/4, SW1/4, Sec. 11, T11E, R11E
Almond Drive Ranch	Diversions from the Main Canal and Main Drain at the SW1/4, SW1/4, SW1/4, Sec. 6, T11S, R10E	Discharges to Reedly Ditch at SW1/4, SW1/4, SW1/4, Sec. 5, T11S, R10E
Ascot Ditch	Diversion from the Main Canal at the SE1/4, SW1/4, SW1/4, Sec. 7, T11S, R11E	Terminates at the SW1/4, SE1/4, SE1/4, Sec. 8, T11S, R11E
Britto Ditch	Diversion from Camp 13 at the NW1/4, SE1/4, NE1/4, Sec. 22, T11S, R11E	Terminates at the SW1/4, SE1/4, NE1/4, Sec. 10, T11S, R11E
Camp 13	Diversion of the Main Canal or Main Drain or Hamburg Drain at the SW1/4, SE1/4, SE1/4, Sec. 27, T11S, R11E	Discharges to Mud Slough (south) at the SE1/4, NE1/4, NE1/4, Sec. 33, T10S, R11E
Charleston Drain	Freshwater diversions from the Outside Canal at the SW1/4, SW1/4, NE1/4, Sec. 32, T11S, R11E	Discharges to Upper Gadwall Ditch at the SW1/4, SW1/4, NW1/4, Sec. 6, T11S, R11E
Cocke Ditch	Diversion from the Arroyo Canal at the NE1/4, SW1/4, SW1/4, Sec. 21, T10S, R11E	Terminates at the NW1/4, SE1/4, Sec. 16, T10S, R11E
Colony Branch 2	Enters the Southern Grassland at the SW1/4, NW1/4, SW1/4, Sec. 8, T11S, R12E	Drains into Bennett Drain at the NE1/4, SE1/4, NE1/4, Sec. 7, T11S, R12E
Colony Branch 3/Bennett	Enters the Southern Grassland at the SE1/4, SW1/4, SW1/4, Sec. 5, T11S, R12E	Terminates at the Agatha Canal North at the SW1/4, SW1/4, SW1/4, Sec. 6, T11S, R12E
Cotton Drain	Enters the Grassland at the NW1/4, NE1/4, SE1/4, Sec. 32, T10S, R11E	Discharges to Mud Slough(s) at the SE1/4, SW1/4, SE1/4, Sec. 28, T10S, R11E

	Starting Location	Ending Location
Flyway Ditch	Diversion from Almond Dr. Ditch at SE1/4, SW1/4, SW1/4, Sec. 5, T11S, R11E	Discharges to Cotton Drain at the NW1/4, SE1/4, NE1/4, Sec. 32, T10S, R11E
Gables Ditch	Diversion of Main Canal at the NE1/4, NW1/4, NW1/4, Sec. 31, T11S, R12E	Terminates at the SW1/4, NW1/4, SW1/4, Sec. 18, T11S, R12E
Geis Ditch	Begins at the Agatha North/Geis split at the NE1/4, SE1/4, SE1/4, Sec. 12, T11S, R11E	Discharges to Camp 13 at NW1/4, NW1/4, SW1/4, Sec. 3, T11S, R11E
Helm Canal	Takeouts from the Main Canal at NE1/4, SE1/4, NE1/4, Sec. 31, T11S, R11E	Terminates at the Helm Canal extension at the SW1/4, SW1/4, NW1/4, Sec. 26, T11S, R11E
Line Ditch	Enters Grassland at the SW1/4, SE1/4, NE1/4, Sec. 5, T11S, R12E	Terminates at the NE1/4, NE1/4, NE1/4, Sec. 6, T11S, R12E
Lower Gadwall Canal	Continuation of the upper Gadwall, starts at the Almond Dr. intersection at the SE1/4, SE1/4, SE1/4, Sec. 5, T11S, R11E	Discharges to Mud Slough (south) at the NE1/4, NE1/4, NW1/4, Sec. 33, T10S, R11E
Meyers Ditch	Diversion from Helm Canal at SE1/4, SW1/4, SW1/4, Sec. 26, T11S, R11E	Terminates at the SE1/4, SW1/4, SW1/4, Sec. 23, T11S, R11E
Mud Slough (south)	Begins at the end of Camp 13 at the SE1/4, NE1/4, NE1/4, Sec. 33, T10, R11E	Discharges to Salt Slough at the Los Banos WA at the NW1/4, NE1/4, SW1/4, Sec. 18, T9S, R10E
Pozo Drain	Enters the GWD at SW1/4, SW1/4, SW1/4, Sec. 8, T11S, R12E	Discharges to the Agatha Canal North at the NE1/4, SE1/4, NE1/4, Sec. 12, T11S, R12E
Reedly Ditch	Continuation of Almond Dr. Drain at the SW1/4, SW1/4, SW1/4, Sec. 4, T11S, R11E	Discharges to Camp 13 at the SE1/4, SE1/4, SE1/4, Sec. 4, T11S, R11E
San Pedro Canal	Diversion from the Arroyo Canal at the NW1/4, NE1/4, NW1/4, Sec. 26, T10S, R11E	Discharges to Boundary/Devon Drain at the NE1/4, NE1/4, SE1/4, Sec. 31, T9S, R11E
SLCC Arroyo Canal	Enters the Southern Grassland at the NE1/4, SE1/4, NE1/4, Sec. 25, T10S, R11E	Discharges to the Santa Fe Canal at Mueller Weir at the NW1/4, SW1/4, SW1/4, Sec. 21, T10S, R11E
Sorsky Ditch	Diversion of Camp 13 and Continuation of Sorsky Bypass at the NE1/4, NW1/4, NW1/4, Sec. 27, T11S, R11E	Discharges to Camp 13 at SW1/4, SW1/4, SW1/4, Sec. 3, T11S, R11E
Stillbow Ditch	Begins at Bennett Ditch at the SW1/4, SE1/4, SW1/4, Sec. 6, T11S, R12E	Discharges to the Agatha Canal North at the SW1/4, NW1/4, NW1/4, Sec. 36, T10S, R11E
240 Ditch	Diversion from Helm Canal at NE1/4, NW1/4, NW1/4, Sec. 36, T11S, R11E	Terminates at Sorsky Ditch at NE1/4, NW1/4, NE1/4, Sec. 23, T11S, R11E
Upper Gadwall Ditch	Diversion of Camp 13 at the NW1/4, SE1/4, SE1/4, Sec. 22, T11S, R11E	Terminates at Reedly Ditch at the NE1/4, NE1/4, NE1/4, Sec. 8, T11S, R11E

40/2/3

3 May 1996 (as adopted by the RWQCB)

Northern Grassland Wetland Channels

	Starting Location	Ending Location
Eagle Ditch	Diversion of the Santa Fe Canal at the NE1/4, SE1/4, NE1/4, Sec. 30, T.8S, R.10E	Discharges to Mud Slough (north) at the SW1/4, SE1/4, NE1/4, Sec. 7, T.8S, R.9E
Fremont Ditch	Diversion from San Luis Canal at the SE1/4, SW1/4, SW1/4, Sec. 35, T.8S, R.10E	Discharges to Mud Slough (north0 at the NW1/4, NW1/4, NE1/4, Sec. 20, T.8S, R.10
Garzas Creek	Enters Grassland Water District (GWD) at the intersection of Sections 22, 23, 26, 27, T.8S, R.9E	Discharges to Los Banos Creek NE1/4, NE1/4, NE1/4, Sec. 13, T.8S, R.9E
Gun Club Road Ditch	Diversion of Los Banos Cr at the intersection sof Sections 13, 14, 23, 24, T.8S, R.9E	Terminates at Eagle Ditch at the SW1/4, SE1/4, SE1/4, Sec. 13, T.8S, R.9E
Kesterson Ditch	Diversion of the Santa Fe Canal at the SE1/4, SE1/4, SW1/4, Sec. 32, T.8S, R.10E	Terminates at the NW1/4, NW1/4, SE1/4, Sec. 34, T.8S, R.10E
Los Banos Creek	Begins service at CCID Main Canal at the SE1/4, SW1/4, SW1/4, Sec. 9, T.10S, R.10E	Discharges to Mud Slough (north) at the NE1/4, NW1/4, SW1/4, Sec. 26, T.7S, R.9E
Mosquito Ditch	Diversion from the San Luis Wasteway at the NE1/4, NW1/4, NW1/4, Sec. 19, T.9S, R.10E	Discharges to Los Banos Creek at NE1/4, NE1/4, SE1/4, Sec. 6, T.9S, R10E
Rubino Ditch	Diversion of the San Luis Spillway at the SW1/4, SE1/4, SW1/4, Sec. 17, T.9S, R.10E	Terminates at the NW1/4, SW1/4, SW1/4, Sec. 8, T.9S, R.10E
San Luis Canal	Starts at a diversion of the Main Canal at NE1/4, NW1/4, SW1/4, Sec. 36, T.10S, R.10E	NE1/4, NE1/4, SW1/4, Sec. 5, T.8S, R.10E
San Luis Spillway Ditch	Diversion of the San Luis Wasteway at the intersection of Sections 17, 18, 19, 20, T.9S, R.10E	Discharges to the Santa Fe Canal at SE1/4, SE1/4, SW1/4, Sec. 16, T.9S, R.10E
San Luis Wasteway[1]		
Standard Ditch	Diversion from San Luis Canal at the NE1/4, SW1/4, NE1/4, Sec. 25 T.9S, R.10E	Terminates at the NE1/4, NE1/4, SW1/4, Sec. 15, T.9S, R.10E
Santa Fe Canal[2]	Extension of the Arroyo Canal at Mueller Weir at the NW1/4, SW1/4, SW1/4, Sec. 21, T.10S, R.11E	Terminates at a tributary of Mud Slough (north) at the SW1/4, SW1/4, SE1/4, Sec. 7, T.8S, R.10E
Santa Fe Canal Extension	Diversion of the Santa Fe Canal at the SW1/4, Sec. 7, T.8S, R.10E	
Westside Ditch	Diversion of Garzas Cr at the intersection of Sections 22, 23, 26, 27, T.8S, R.9E	Discharges to Los Banos Creek at the SE1/4, NW1/4, NW1/4, Sec. 11, T.8S, R.9E

[1] Begins as an extension of the Arroyo Canal. Receives only SLCC operational spill water at this point.
[2] Source is the Delta-Mendota Canal.

40/3/3

3 May 1996 (as adopted by the RWQCB)

Appendix 41 - San Joaquin Area Subarea Descriptions

The Lower San Joaquin River watershed has been divided into seven major geographic subareas. In some cases, the major subareas have been further subdivided into minor subareas to provide a greater level of detail. The following is a technical description of each of the subareas comprising the LSJR Basin.

East Valley Floor Subarea

BEGINNING at the junction of the Stanislaus River and the San Joaquin River lying in Section 19, Township 3 South, Range 7 East, Mount Diablo Meridian; thence along the following courses:

1. Meander the centerline of the Stanislaus River northeasterly upstream to its intersection with boundary of Calwater RBUASPW area 6535100000 (Manteca Hydrologic Area) near Caswell Memorial State Park;
2. North on the said boundary of Calwater RBUASPW area 6535100000 (Manteca Hydrologic Area) near Caswell Memorial State Park to its intersection with the centerline of a road located slightly more than one half mile north of the river;
3. East on centerline of said road to its junction with the centerline of the north levee of the Stanislaus River;
4. Southwesterly on centerline of said Stanislaus River levee to its intersection with the centerline of the park road connecting to the campsites, were said road extended to intersect the levee;
5. Easterly on said road to the point of intersection with a line perpendicular from the bank of the Stanislaus River directly opposite of Campsite number 24;
6. North-Northeasterly on said perpendicular line to its intersection with the centerline of the Stanislaus River;
7. East to the intersection with the crest of the ridge parallel to the opposite side of the river bend from the Caswell Memorial State Park;
8. Southeast on said ridge to its intersection with the centerline of the south bank levee of the Stanislaus River;
9. Meander centerline of said levee northeasterly to its intersection with the centerline of Modesto Irrigation District Lateral Number 6;
10. Meander centerline of said Lateral No. 6 easterly to its junction with the centerline of Modesto Main Canal;
11. Meander centerline of said Main Canal southeasterly to its junction with the centerline of Thompson Lateral;
12. Meander centerline of said Thompson Lateral northerly to its junction with the centerline of Stowell Lateral;
13. Meander centerline of said Stowell Lateral northeasterly to its junction with the centerline of Claribel Lateral;
14. Meander centerline of said Claribel Lateral southerly to its junction with the centerline of Dry Creek;
15. Meander centerline of Dry Creek westerly to its intersection with the centerline of Modesto Main Canal;
16. Meander centerline of said Main Canal northwesterly to its junction with Modesto Irrigation District Lateral Number 3;
17. Meander centerline of said Lateral No. 3 westerly to its junction with Modesto Irrigation District Lateral Number 4;
18. Meander centerline of said Lateral No. 4 southwest to its intersection with the boundary of the McHenry Avenue Stormdrain Basin, as defined by the City of Modesto, in Modesto;
19. Meander the boundary of the said McHenry Avenue Stormdrain Basin to its intersection with the boundary of the Ninth Street Stormdrain Basin, as defined by the City of Modesto, in Modesto;
20. Meander boundary of the said Ninth Street Stormdrain Basin to its intersection with the centerline of Franklin Street;
21. South on the centerline of Franklin Street to the intersection with the centerline of Locust Street;
22. West on the centerline of Locust Street to its intersection with the centerline of Modesto Irrigation District Lateral Number 5, were it extended west to intersect the centerline of said Lateral No. 5;
23. Meander centerline of said Lateral No. 5 southwesterly to its intersection with the centerline of Hart Road;

24. South on the centerline of said road to its junction with the centerline of Paradise Road;
25. West on the centerline of Paradise Road to its junction with the centerline of Shiloh Road;
26. Southerly 1.5 miles on the centerline of said Shiloh Road to the location where it bends to the due west;
27. Meander the drainage boundary of the Tuolumne River southeasterly to its intersection with the centerline of Turlock Irrigation District Lower Lateral Number 2;
28. Meander centerline of said Lateral No. 2 westerly to its junction with the centerline of Turlock Irrigation District Lateral Number 1;
29. Meander centerline of said Lateral No. 1 to its junction with the centerline of Ceres Main Canal;
30. Meander centerline of said Ceres Main Canal easterly to its junction with the centerline of Turlock Main Canal;
31. Meander centerline of said Turlock Main Canal easterly to its junction with the centerline of Highline Canal;
32. Meander centerline of said Highline Canal southerly to its intersection with the drainage boundary of Sand Creek approximately 2000 feet upstream of the intersection with Keyes Road in Stanislaus County;
33. Meander drainage boundary of Sand Creek such that it is included in the East Valley Floor back to its intersection with the centerline of Highline Canal approximately one half mile southeast of the intersection of Hickman Road and Monte Vista Avenue in Stanislaus County;
34. Meander centerline of said Highline Canal southwest to its intersection with the drainage divide between Turlock Irrigation District Cross Ditch Number 1 and Turlock Irrigation District Cross Ditch Number 2 approximately 0.33 miles southwest of the intersection of Santa Fe Drive with the Merced County line;
35. Meander said drainage divide southwesterly to its intersection with the centerline of Turlock Irrigation District Lateral Number 6 at the junction of the centerlines of Turlock Main Canal, Turlock Irrigation District Lateral Number 5 (Harding Drain), and said Lateral No. 6;
36. Meander centerline of said Lateral No. 6 southwesterly to its junction with the centerline of Turlock Irrigation District Lateral Number 7;
37. Meander centerline of said Lateral No. 7 southwesterly to its junction with the centerline of Stevinson Lower Lateral;
38. Meander centerline of said Stevinson Lower Lateral southwesterly to its intersection with the centerline of an unnamed aqueduct approximately one quarter of one mile west of the intersection of Tegner Road and Taylor Avenue in Merced County;
39. Westerly on the centerline of said aqueduct to its junction with the centerline of the Merced River at its apparent point of discharge;
40. Meander centerline of the Merced River to its junction with the centerline of an unnamed canal pumped from the river less than one fifth of a mile downstream of the discharge point of the unnamed aqueduct;
41. Northwest on centerline of said unnamed canal to its intersection with the centerline of an unnamed unpaved road parallel to the Merced River, which begins nearly at the pump on the river;
42. Meander the centerline of said road westerly to its junction with the centerline of Kelley Road;
43. South on the centerline of Kelley Road to its intersection with the centerline of River Road;
44. Southeast on centerline of said River Road to its intersection with the centerline of the East Side Canal;
45. Meander centerline of said East Side Canal northeasterly to its intersection with a line due east coincident with the ninety degree bend in River Road in Section 4, Township 7 South, Range 14 East, Mount Diablo Meridian;
46. East on said line to its intersection with the centerline of River Road in Merced County;
47. Northeasterly on centerline of said River Road to its intersection with the West Side Boulevard, were said road extended to intersect River Road;
48. East on centerline of said West Side Boulevard to its junction with the centerline of Weir Road in Merced County;
49. Northeast to the junction of the centerlines of Magnolia Avenue and Howard Avenue in Merced County;
50. East on centerline of said Magnolia Avenue to its intersection with the southern drainage boundary of the Garibaldi Lateral;

51. Meander said southern boundary of Garibaldi Lateral to its intersection with the centerline of Hammatt Lateral at its junction with the centerline of Arena Canal near Livingston;
52. South on said drainage boundary of Bear Creek to its intersection with the centerline of the East Side Irrigation Canal, also known as the East Side Bypass Project, near said canal's junction with Howard Lateral;
53. Southwesterly on the drainage boundary of the San Joaquin River upstream of its intersection with Lander Avenue (Highway 165) to its intersection with the centerline of the San Joaquin River at its intersection with the centerline of Lander Avenue (Highway 165);
54. Meander centerline of said San Joaquin River northwesterly to its junction with the centerline of the Stanislaus River and the point of beginning of this description.

North Stanislaus Minor Subarea

BEGINNING at the junction of the Stanislaus River and the San Joaquin River lying in Section 19, Township 3 South, Range 7 East, Mount Diablo Meridian; thence along the following courses:

1. Meander the centerline of the Stanislaus River northeasterly upstream to its intersection with boundary of Calwater RBUASPW area 6535100000 (Manteca Hydrologic Area) near Caswell Memorial State Park;
2. North on the said boundary of Calwater RBUASPW area 6535100000 (Manteca Hydrologic Area) near Caswell Memorial State Park to its intersection with the centerline of a road located slightly more than one half mile north of the river;
3. East on centerline of said road to its junction with the centerline of the north levee of the Stanislaus River;
4. Southwesterly on centerline of said Stanislaus River levee to its intersection with the centerline of the park road connecting to the campsites, were said road extended to intersect the levee;
5. Easterly on said road to the point of intersection with a line perpendicular from the bank of the Stanislaus River directly opposite of Campsite number 24;
6. North-Northeasterly on said perpendicular line to its intersection with the centerline of the Stanislaus River;
7. East to the intersection with the crest of the ridge parallel to the opposite side of the river bend from the Caswell Memorial State Park;
8. Southeast on said ridge to its intersection with the centerline of the south bank levee of the Stanislaus River;
9. Meander centerline of said levee northeasterly to its intersection with the centerline of Modesto Irrigation District Lateral Number 6;
10. Meander centerline of said Main Canal southeasterly to its junction with the centerline of Thompson Lateral;
11. Meander centerline of said Thompson Lateral northerly to its junction with the centerline of Stowell Lateral;
12. Meander centerline of said Stowell Lateral northeasterly to its junction with the centerline of Claribel Lateral;
13. Meander centerline of said Claribel Lateral southerly to its junction with the centerline of Dry Creek;
14. Meander centerline of Dry Creek westerly to its intersection with the centerline of Modesto Main Canal;
15. Meander centerline of said Main Canal northwesterly to its junction with Modesto Irrigation District Lateral Number 3;
16. Meander centerline of said Lateral No. 3 westerly to its junction with Modesto Irrigation District Lateral Number 4;
17. Meander centerline of said Lateral No. 4 southwest to its intersection with the boundary of the McHenry Avenue Stormdrain Basin, as defined by the City of Modesto, in Modesto;
18. North, west, and south on the boundary of the said McHenry Avenue Stormdrain Basin to its intersection with the boundary of the Ninth Street Stormdrain Basin, as defined by the City of Modesto, in Modesto;
19. West and south on the boundary of the said Ninth Street Stormdrain Basin to its intersection with the centerline Highway 99;
20. Northwest on centerline of said Highway 99 to its intersection with the centerline of Woodland Avenue/Coldwell Avenue;

21. West on centerline on said centerline of Woodland Avenue to its intersection with the western boundary intersection of Sections 21 and 28, Township 3 South, Range 8 East, Mount Diablo Meridian;
22. North on boundary of Section 21, Township 3 South, Range 8 East, Mount Diablo Meridian to its intersection with the centerline of Modesto Irrigation District Lateral Number 3;
23. West on centerline of said Lateral No. 3 to its junction with the centerline of an unnamed lateral approximately one half mile downstream of the intersection with the section boundary;
24. Meander centerline of said unnamed canal southwesterly to its junction with the centerline of the north levee of Modesto Irrigation District Lateral Number 4 if it were extended to cross said unnamed canal;
25. Meander centerline of said levee of Lateral No. 4 westerly to its junction with the centerline of the eastern levee of Finnegan Cut on San Joaquin River;
26. Meander centerline of said levee of Finnegan Cut on the San Joaquin River to its intersection with the centerline of Maze Boulevard in Stanislaus County;
27. Westerly on centerline of said Maze Boulevard to its intersection with the centerline of the San Joaquin River;
28. Meander centerline of said San Joaquin River northerly to its intersection with the centerline of the Stanislaus River and the point of beginning of this description.

Northeast Bank Minor Subarea

BEGINNING at the centerline of the San Joaquin River at the Maze Boulevard Bridge lying in Section 29, Township 3 South, Range 7 East, Mount Diablo Meridian; thence along the following courses:

1. Easterly on centerline of said Maze Boulevard to its intersection with the centerline of the east bank levee of the San Joaquin River;
2. Meander centerline of said levee of the San Joaquin River southeasterly to its intersection with the north bank levee of Modesto Irrigation District Lateral Number 4;
3. Meander centerline of said levee of Lateral No. 4 easterly to its intersection with the centerline of an unnamed lateral connecting Lateral No. 3 and Lateral No. 4, were it extended east to said centerline;
4. Meander centerline of said unnamed lateral to its junction with the centerline of Modesto Irrigation District Lateral Number 3;
5. East on centerline of said Lateral No. 3 to its intersection with the western boundary of Section 21, Township 3 South, Range 8 East, Mount Diablo Meridian;
6. South on boundary of said Section 21 to its intersection with the centerline of Woodland Avenue;
7. East on the centerline of said Woodland Avenue to its intersection with the centerline of Highway 99;
8. Southeast on the centerline of said Highway 99 to its intersection with the centerline of Franklin Street;
9. South on the centerline of Franklin Street to the intersection with the centerline of the centerline of Locust Street;
10. West on the centerline of Locust Street to its intersection with the centerline of Modesto Irrigation District Lateral Number 5, were it extended west to intersect said Lateral No. 5;
11. Meander centerline of said Lateral No. 5 southwesterly to its intersection with the centerline of Hart Road;
12. South on the centerline of said road to its junction with the centerline of Paradise Road;
13. West on the centerline of Paradise Road to its junction with the centerline of Shiloh Road;
14. South 1.5 miles on the centerline of said Shiloh Road to the location where it bends to the due west;
15. Meander the drainage boundary of the Tuolumne River southeasterly to its intersection with the centerline of Turlock Irrigation District Lower Lateral Number 2;
16. Meander centerline of said Lateral No. 2 westerly to its junction with the centerline of Turlock Irrigation District Lateral Number 1;
17. Meander centerline of said Lateral No. 1 to its junction with the centerline of Ceres Main Canal;
18. Meander centerline of said Ceres Main Canal easterly to its junction with the centerline of Turlock Main Canal;

19. Meander centerline of said Turlock Main Canal southerly to its junction with the centerline of Turlock Irrigation District Upper Lateral Number 3;
20. Meander centerline of said Lateral No. 3 westerly to its junction with the centerline of Turlock Irrigation District Lower Lateral Number 3;
21. West on centerline of said Lateral No. 3 to its intersection with the centerline of an unnamed lateral located approximately 3000 feet downstream of the Lateral No. 3 intersection with the centerline of Carpenter Road in Stanislaus County;
22. South on centerline of said unnamed lateral to its intersection with the centerline of Monte Vista Avenue in Stanislaus County;
23. Southwesterly on the drainage boundary separating the San Joaquin River from the unnamed drain and associated natural channel to its junction with the centerline of the east bank levee of the San Joaquin River;
24. Northwesterly on centerline of said levee of the San Joaquin River to its intersection with the drainage of the San Joaquin River upstream of West Main Street approximately 700 feet southeast of the intersection of the centerline of the east bank levee of the San Joaquin River and the centerline of West Main Street;
25. Northwesterly on drainage boundary of the San Joaquin River upstream of Las Palmas Avenue in Stanislaus County to its intersection with the centerline of the San Joaquin River at its intersection with the centerline of Las Palmas Avenue;
26. Northwesterly on the centerline of said San Joaquin River to its intersection with the centerline of Maze Boulevard and the point of beginning of this description.

Stevinson Minor Subarea

BEGINNING at the centerline of the San Joaquin River at its junction with the centerline of the Merced River lying in Section 03, Township 07 South, Range 09 East, Mount Diablo Meridian; thence along the following courses:

1. East on centerline of Hills Ferry Road to its intersection with the centerline of River Road in Merced County;
2. Southeast on centerline of said River Road to its intersection with the centerline of the East Side Canal;
3. Meander centerline of said East Side Canal northeasterly to its intersection with a line due east coincident with the ninety degree bend in River Road in Section 4, Township 7 South, Range 14 East, Mount Diablo Meridian;
4. East on said line to its intersection with the centerline of River Road in Merced County;
5. Northeasterly on centerline of said River Road to its intersection with the West Side Boulevard, were said road extended to intersect River Road;
6. East on centerline of said West Side Boulevard to its junction with the centerline of Weir Road in Merced County;
7. Northeast to the junction of the centerlines of Magnolia Avenue and Howard Avenue in Merced County;
8. East on centerline of said Magnolia Avenue to its intersection with the southern drainage boundary of the Garibaldi Lateral;
9. Meander said southern boundary of Garibaldi Lateral to its intersection with the centerline of Hammatt Lateral at its junction with the centerline of Arena Canal near Livingston;
10. South on said drainage boundary of Bear Creek to its intersection with the centerline of the East Side Irrigation Canal, also known as the East Side Bypass Project, near said canal’s junction with Howard Lateral;
11. Southwesterly on the drainage boundary of the San Joaquin River upstream of its intersection with Lander Avenue (Highway 165) to its intersection with the centerline of the San Joaquin River at its intersection with the centerline of Lander Avenue (Highway 165);
12. Northwesterly on centerline of said San Joaquin River to its junction with the centerline of the Merced River and the point of beginning of this description.

Turlock Area Minor Subarea

BEGINNING at the centerline of the San Joaquin River at the intersection with the centerline of the Las Palmas Avenue Bridge lying in Section 15, Township 05 South, Range 08 East, Mount Diablo Meridian; thence along the following courses:

1. Southeasterly on the drainage boundary of the San Joaquin River upstream of West Main Street in Stanislaus County to its intersection with the centerline of the east bank levee of the San Joaquin River approximately 700 feet southeast of the intersection of the centerline of said levee and the centerline of West Main Street;
2. Southeasterly on centerline of said levee of the San Joaquin River to its intersection with the drainage boundary approximately 3500 feet south of the intersection of the centerline of Jennings Road and the centerline of West Main Street in Stanislaus County separating the San Joaquin River from an unnamed lateral and associated natural channel downstream of its intersection with the centerline with Monte Vista Avenue in Stanislaus County;
3. Northwesterly on said drainage boundary to its intersection with the centerline of Monte Vista Avenue at its intersection with the centerline of the unnamed lateral;
4. North on centerline of said unnamed lateral to its junction with the centerline of Turlock Irrigation District Lower Lateral Number 3 approximately 3000 feet downstream of said Lateral No. 3 intersection with the centerline of Carpenter Road in Stanislaus County;
5. Meander centerline of said Lateral No.3 east to its junction with the centerline of Turlock Irrigation District Upper Lateral Number 3;
6. Meander centerline of said Lateral No. 3 east to its junction with the centerline of Turlock Main Canal;
7. Meander centerline of said Turlock Main Canal north to its junction with the centerline of Highline Canal;
8. Meander centerline of said Highline Canal southerly to its intersection with the drainage boundary of Sand Creek approximately 2000 feet upstream of the intersection with Keyes Road in Stanislaus County;
9. Meander drainage boundary of Sand Creek such that it is included in the East Valley Floor back to its intersection with the centerline of Highline Canal approximately one half mile southeast of the intersection of Hickman Road and Monte Vista Avenue in Stanislaus County;
10. Meander centerline of said Highline Canal southwest to its intersection with the drainage divide between Turlock Irrigation District Cross Ditch Number 1 and Turlock Irrigation District Cross Ditch Number 2 approximately 0.33 miles southwest of the intersection of Santa Fe Drive with the Merced County line;
11. Meander said drainage divide southwesterly to its intersection with the centerline of Turlock Irrigation District Lateral Number 6 at the junction of the centerlines of Turlock Main Canal, Turlock Irrigation District Lateral Number 5 (Harding Drain), and said Lateral No. 6;
12. Meander centerline of said Lateral No. 6 southwesterly to its junction with the centerline of Turlock Irrigation District Lateral Number 7;
13. Meander centerline of said Lateral No. 7 southwesterly to its junction with the centerline of Stevinson Lower Lateral;
14. Meander centerline of said Stevinson Lower Lateral southwesterly to its intersection with the centerline of an unnamed aqueduct approximately one quarter of one mile west of the intersection of Tegner Road and Taylor Avenue in Merced County;
15. Westerly on the centerline of said aqueduct to its junction with the centerline of the Merced River at its apparent point of discharge;
16. Meander centerline of the Merced River to its junction with the centerline of an unnamed canal pumped from the river less than one fifth of a mile downstream of the discharge point of the unnamed aqueduct;
17. Northwest on centerline of said unnamed canal to its intersection with the centerline of an unnamed unpaved road parallel to the Merced River, which begins nearly at the pump on the river;
18. Meander the centerline of said road westerly to its junction with the centerline of Kelley Road;
19. South on the centerline of Kelley Road to its intersection with the centerline of Hills Ferry/River Road;
20. West on centerline of said Hills Ferry Road to its intersection with the centerline of the San Joaquin River;
21. Meander centerline of said San Joaquin River northwesterly to its intersection with the centerline of West Main Street and the point of beginning of this description.

Appendix 41 - San Joaquin Area Subarea Descriptions

Grassland Subarea

BEGINNING at the junction of the Newman Wasteway and the San Joaquin River lying in Section 10, Township 7 South, Range 9 East, Mount Diablo Meridian; thence along the following courses:

1. Meander the centerline of the San Joaquin River southeasterly upstream to its junction with the jurisdictional boundary of Columbia Canal Company;
2. West and south on the jurisdictional boundary of Columbia Canal Company to its intersection with the San Joaquin River;
3. Meander said centerline of the San Joaquin River easterly to its intersection with the center point of the Mendota Pool;
4. Meander the centerline of the Fresno Slough channel southerly to its intersection with the centerline of the Firebaugh Canal Water District Main Lift;
5. West southwest on the centerline of said Main Lift to its intersection with the centerline of the Firebaugh Canal Water District Third Lift Canal;
6. Northwesterly and westerly on the boundary of Westlands Water District, as defined by said district, to its intersection with the southern drainage boundary of Capita Canyon;
7. Meander on said drainage boundary of Capita Canyon southwesterly to its intersection with the southern drainage boundary of Moreno Gulch;
8. Meander on said drainage boundary of Moreno Gulch westerly to its intersection with southern drainage boundary of Little Panoche Creek;
9. Meander on said drainage boundary of Little Panoche Creek northwesterly to its intersection with the county line between Fresno and San Benito counties where the county line crosses the southern boundary of Section 31, Township 14 South, Range 11 East, Mount Diablo Meridian;
10. Northwesterly on the San Benito County line to its intersection with the crest of the Coast Range;
11. Meander on the crest of the Coast Range north-northwesterly to its intersection with the peak of Mustang Peak, where the drainage divide between Orestimba Creek and Garzas Creek diverges from crest of the Coast Range;
12. Meander on said drainage boundary of Garzas Creek westerly to point where the drainage of Garzas Creek and Bennett Valley diverge;
13. Meander said southern boundary of Bennett Valley and associated watersheds to its intersection with the centerline of Eastin Road in Merced County;
14. North on centerline of said Eastin Road to its intersection with the centerline of the first and southern-most of the associated creeks of Bennett Valley, just south of its junction with Moorehead Road;
15. Meander centerline of said creek northeasterly to its intersection with the centerline of Central California Irrigation District's Main Canal;
16. Meander centerline of said Main Canal northwesterly to its intersection with the centerline of the Newman Wasteway;
17. East on centerline of said Newman Wasteway to its junction with the centerline of the San Joaquin River and the point of beginning of this description.

Merced River Subarea

BEGINNING at the intersection of the centerline of the Merced River and the centerline of River Road lying in Section 3, Township 7 South, Range 9 East, Mount Diablo Meridian; thence along the following courses:

1. West on centerline of said River Road to its intersection with the centerline of Kelley Road;
2. North on centerline of said Kelley Road to its intersection with the centerline of an unnamed, unpaved road approximately 4000 feet north of the intersection of Kelley Road and River Road;
3. Meander centerline of said unnamed road to its intersection with the centerline of an unnamed lateral pumped from the Merced River;
4. Southeast on the centerline of said unnamed lateral to its intersection with the centerline of the Merced River;
5. Meander centerline of the Merced River to the discharge point of an unnamed aqueduct located less than one fifth of a mile upstream of the pump on said unnamed lateral;
6. Easterly on centerline of said aqueduct to its intersection with the centerline of Stevinson Lower Lateral;

7. Meander centerline of said Stevinson Lower Lateral northwesterly to its junction with the centerline of Turlock Irrigation District Lateral Number 7;
8. Meander centerline of said Lateral No. 7 northeasterly to its junction with the centerline of Turlock Irrigation District Lateral Number 6;
9. Meander centerline of said Lateral No. 6 northeasterly to its intersection with the drainage divide between Turlock Irrigation District Cross Ditch Number 1 and Turlock Irrigation District Cross Ditch Number 2 at the junction of the centerlines of Turlock Main Canal, Turlock Irrigation District Lateral Number 5 (Harding Drain), and said Lateral No. 6;
10. Meander said drainage northeasterly to its intersection with the centerline of Highline Canal approximately 0.33 miles southwest of the intersection of Santa Fe Drive with the Merced County line;
11. Meander centerline of said Highline Canal north to its junction with the centerline of Turlock Main Canal;
12. Meander drainage boundary of unnamed creeks draining easterly toward Highline Canal and to the Merced River via said canal southeasterly to its intersection with the drainage boundary of Sand Creek;
13. Meander said drainage boundary of Sand Creek southwesterly to its intersection with the centerline of Highline Canal approximately 2000 feet upstream of the intersection with Keyes Road;
14. Meander centerline of said Highline Canal southerly to its intersection with the southern drainage boundary of Sand Creek, approximately one half mile southeast of the intersection of Hickman Road and Monte Vista Avenue in Stanislaus County;
15. Meander said drainage boundary of Sand Creek easterly to its junction with the unnamed interior drainage basin west of Turlock Lake;
16. Meander said interior drainage basin northeasterly to its junction with the southern drainage boundary of Turlock Lake;
17. Meander said drainage boundary of Turlock Lake northeasterly to its junction with the southern drainage boundary of Peaslee Creek;
18. Meander said drainage boundary of Peaslee Creek northeasterly to its junction with the southern drainage boundary of Evans Creek;
19. Meander said drainage boundary of Evans Creek northeasterly to its junction with the southern drainage boundary of Vizard Creek;
20. Meander said drainage boundary of Vizard Creek easterly to its intersection with the Stanislaus County line, near the four-corner intersection of Stanislaus, Tuolumne, Merced, and Mariposa counties;
21. Southeast on said Stanislaus County line to its intersection with the Merced County line;
22. Southeasterly on the Merced County line to its intersection with the drainage boundary between Merced River and Burns Creek;
23. Meander said drainage boundary of Burns Creek southwesterly to its junction with the drainage boundary of Black Rascal Creek;
24. Meander said drainage boundary of Black Rascal Creek northwesterly to its junction with the drainage boundary of Stoney Creek;
25. Meander said drainage boundary of Stoney Creek northerly to its intersection with the centerline of the Merced River;
26. Meander centerline of said Merced River westerly to its junction with the centerline of the Merced Irrigation District Main Canal;
27. Meander centerline of said Main Canal southwesterly, excluding any creeks or canals flowing into it, to its intersection with the southern drainage boundary of Edendale Creek;
28. Meander said drainage boundary of Edendale Creek southwesterly to its junction with the drainage boundary of Canal Creek;
29. Meander said drainage boundary of Canal Creek southerly to its intersection with the centerline of Bellevue Road near Castle Airport in Merced County;
30. West on centerline of said Bellevue road to its intersection with the centerline of Canal Creek, were it extended to intersect said creek;
31. Southerly on the centerline of said Canal Creek to the point of divergence between Canal Creek and Livingston Canal;
32. Meander centerline of said Livingston Canal westerly to its junction with a small, unnamed creek south of Castle Gardens, approximately 1000 feet downstream of Buhach Road in Merced County;

33. Meander centerline of said unnamed creek southerly to its intersection with northern boundary of Section 7, Township 7 South, Range 13 East, Mount Diablo Meridian;
34. West on said section boundary to its intersection with the centerline of Sierra Madre Drive in the City of Atwater in Merced County, were it extended to intersect said section;
35. North on centerline of said Sierra Madre Drive to its junction with the centerline of Juniper Avenue in the City of Atwater in Merced County;
36. West on centerline of said Juniper Avenue to its junction with the centerline of Shaffer Road in the City of Atwater in Merced County;
37. North on centerline of said Shaffer Road to its junction with the centerline of Bellevue Road in the City of Atwater in Merced County;
38. West on centerline of said Bellevue Road to its intersection with the southeast corner of the subdivision boundary near the intersection with Bellevue Road and 5th Street in the City of Atwater in Merced County;
39. North on boundary of said subdivision to its intersection with the centerline Fruitland Avenue in the City of Atwater in Merced County, near its intersection with Chardonnay Way;
40. West on centerline of said Fruitland Avenue to its intersection with the western boundary of the subdivision lying south of said avenue;
41. South on the boundary of said subdivision to its intersection with the centerline of Bellevue Road in the City of Atwater in Merced County, near its intersection with 7th Street;
42. West on centerline of said Bellevue Road to its junction with the centerline of Winton Way in the City of Atwater in Merced County;
43. North on centerline of said Winton Way to its junction with the centerline of Fruitland Avenue in the City of Atwater in Merced County;
44. Meander centerline of said Fruitland Avenue northwesterly to its junction with the centerline of Vine Avenue in Merced County;
45. North on centerline of said Vine Avenue to its intersection with the centerline of the Livingston Canal;
46. Meander centerline of said Livingston Canal northwesterly to its junction with the centerline of Arena Canal;
47. Meander centerline of said Arena Canal southeasterly to the point of divergence between Arena Canal and the Wakefield Lateral on the west side of the intersection between Arena Canal and Cressy Way in Merced County;
48. Meander drainage divide between said Arena Canal and Wakefield Lateral westerly to its intersection with the centerline of the Hammatt Lateral;
49. Meander southern drainage boundary of Garibaldi Lateral southwesterly to its intersection with the centerline of Magnolia Avenue in Merced County;
50. West on centerline of said Magnolia Avenue to its junction with the centerline of Howard Avenue in Merced County;
51. Southwest to the junction of the centerlines of West Side Boulevard and Weir Avenues;
52. West on centerline of said West Side Boulevard to its intersection with the centerline of River Road, were it extended to intersect said road;
53. Southwesterly on centerline of said River Road to point that said road makes a ninety degree bend to the south in Section 4, Township 7 South, Range 14 East, Mount Diablo Meridian;
54. Due West to the intersection with the centerline of the East Side Canal;
55. Meander centerline of said East Side Canal southwesterly to its intersection with the centerline of River Road in Merced County;
56. West on centerline of said River Road to its intersection with the centerline of the Merced River and the point of beginning of this description.

Northwest Side Subarea

BEGINNING at the intersection of the centerline of the San Joaquin River and the centerline of the Airport Way Bridge lying in Section 13, Township 3 South, Range 6 East, Mount Diablo Meridian; thence along the following courses:

1. Southeasterly on centerline of said San Joaquin River to its junction with the centerline of the Newman Wasteway;

2. Southwesterly on centerline of said Newman Wasteway to its intersection with the centerline of Central California Irrigation District's Main Canal;
3. Southeasterly on centerline of said Main Canal to its junction with the centerline of the discharge point of an unnamed creek approximately 2200 feet downstream of the Newman Wasteway;
4. Southwesterly on centerline of said unnamed creek to its intersection with Eastin Road in Stanislaus County;
5. South on centerline of said Eastin Road to its intersection with the southern drainage boundary of the unnamed creek approximately 500 feet south of said road's junction with Pete Miller Road in Stanislaus County;
6. Meander said southern drainage boundary of unnamed creek southwesterly to its junction with the drainage boundary of Garzas Creek;
7. Meander said drainage boundary of Garzas Creek to its intersection with Mustang Peak, at which point the drainage boundary and Garzas Creek becomes the crest of the Coast Range;
8. Meander said crest of the Coast Range northwesterly to its intersection with the drainage boundary of Hospital Creek;
9. Meander said drainage boundary of Hospital Creek northerly to its intersection with the drainage boundary of Lone Tree Creek;
10. Meander drainage boundary of Lone Tree Creek northeasterly, excluding Lone Tree Creek, to its intersection with the centerline of Bird Road in San Joaquin County;
11. North on centerline of said Bird Road to its intersection with the centerline of Lone Tree Creek;
12. Northerly on the centerline of Lone Tree Creek to its intersection with the centerline of Vernalis Road in San Joaquin County;
13. East on centerline of said Vernalis Road to its intersection with a known underground gas pipeline approximately 2700 feet east of Koster Avenue;
14. Northeast on said gas pipeline to its intersection with the centerline of Durham Ferry Road in San Joaquin County;
15. Northeast on said centerline of Durham Ferry Road to its intersection with the centerline of the San Joaquin River at the Airport Way Bridge and the point of beginning of this description.

Greater Orestimba Minor Subarea

BEGINNING at the centerline of the San Joaquin River at the intersection with the centerline of the Las Palmas Avenue Bridge lying in Section 15, Township 05 South, Range 08 East, Mount Diablo Meridian; thence along the following courses:

1. Southeasterly on centerline of said San Joaquin River to its junction with the centerline of the Newman Wasteway;
2. Southwesterly on centerline of said Newman Wasteway to its intersection with the centerline of Central California Irrigation District's Main Canal;
3. Southeasterly on centerline of said Main Canal to its junction with the centerline of the discharge point of an unnamed creek approximately 2200 feet downstream of the Newman Wasteway;
4. Southwesterly on centerline of said unnamed creek to its intersection with Eastin Road in Merced County;
5. South on centerline of said Eastin Road to its intersection with the southern drainage boundary of the unnamed creek approximately 500 feet south of said road's junction with Pete Miller Road in Merced County;
6. Meander said southern drainage boundary of unnamed creek southwesterly to its junction with the drainage boundary of Garzas Creek;
7. Meander said drainage boundary of Garzas Creek to its intersection with Mustang Peak, the point at which said drainage of Garzas Creek intersects the crest of the Coast Range;
8. Meander said crest of the Coast Range northwesterly to its intersection with the northern drainage boundary of Orestimba Creek;
9. Meander said drainage boundary of Orestimba Creek easterly to its intersection with the drainage boundary of Little Salado Creek near Oaks Flat Ranch;
10. Meander said drainage boundary of Little Salado Creek northeasterly to its intersection with the centerline of Elfers Road at its intersection with the centerline of Del Puerto Avenue in Stanislaus County near Patterson;

11. East on centerline of said Elfers Road to its intersection with the centerline of Highway 33;
12. Northwest on centerline of said Highway 33 to its intersection with the centerline of Patterson Main Canal;
13. Northeast on centerline of said Patterson Main Canal to its intersection with the centerline of Las Palmas Avenue in Stanislaus County;
14. Northeast on centerline of said Las Palmas Avenue to its intersection with the centerline of the San Joaquin River and the point of beginning of this description.

Vernalis North Minor Subarea

BEGINNING at the intersection of the centerline of the San Joaquin River and the centerline of the Airport Way Bridge lying in Section 13, Township 3 South, Range 6 East, Mount Diablo Meridian; thence along the following courses:

1. Southeasterly on centerline of said San Joaquin River to its intersection with the centerline of an unnamed, unpaved road approximately 250 feet south of Maze Boulevard in Stanislaus County, north of the El Solyo Lift, were said unnamed, unpaved road extended to intersect the centerline of the San Joaquin River;
2. Southwest on centerline of said unnamed, unpaved road to its junction with the centerline of McCracken Road in Stanislaus County near Vernalis;
3. South on centerline of said McCracken Road to its junction with the centerline of Blewett Road in San Joaquin County;
4. West on centerline of said Blewett Road to its intersection with the centerline of Lone Tree Creek;
5. Northerly on the centerline of Lone Tree Creek to its intersection with the centerline of Vernalis Road in San Joaquin County;
6. East on centerline of said Vernalis Road to its intersection with a known underground gas pipeline approximately 2700 feet east of Koster Avenue;
7. Northeast on said gas pipeline to its intersection with the centerline of Durham Ferry Road in San Joaquin County;
8. Northeast on said centerline of Durham Ferry Road to its intersection with the centerline of the San Joaquin River at the Airport Way Bridge and the point of beginning of this description.

Westside Creeks Minor Subarea

BEGINNING at the centerline of the San Joaquin River at the Maze Boulevard Bridge lying in Section 29, Township 3 South, Range 7 East, Mount Diablo Meridian; thence along the following courses:

1. Meander centerline of said San Joaquin River southeasterly to its intersection with the centerline of Las Palmas Avenue in Stanislaus County near Patterson;
2. Southwesterly on centerline of said Las Palmas Avenue to its intersection with the centerline of the Patterson Main Canal;
3. Southwesterly on centerline of said Patterson Main Canal to its intersection with the centerline of Highway 33 in Stanislaus County near Patterson;
4. Southeast on centerline of said Highway 33 to its intersection with the centerline of Elfers Road;
5. West on centerline of said Elfers Road to its intersection with the centerline of Del Puerto Avenue;
6. Meander the drainage boundary of Little Salado Creek southwesterly to its intersection with drainage boundary of Orestimba Creek;
7. Meander said drainage boundary of Orestimba Creek southwesterly to its intersection with intersects the hydrologic divide of the San Joaquin River basin in the Coast Range, heretofore referred to as the crest of the Coast Range;
8. Meander said crest of the Coast Range northwesterly to its intersection with the northern drainage boundary of Hospital Creek;
9. Meander said drainage boundary of Hospital Creek northerly to its intersection with the drainage boundary of Lone Tree Creek;
10. Meander drainage boundary of Lone Tree Creek northwesterly to its intersection with the centerline of Blewett Road in San Joaquin County;
11. East on centerline of said Blewett Road to its junction with the centerline of McCracken Road in Stanislaus County near Vernalis;
12. North on McCracken Road to its junction with an unnamed, unpaved road approximately 1000 feet north of said Blewett Road;

13. Norteasterly on said unnamed, unpaved road to its intersection with the centerline of the San Joaquin River, were it extended to intersect said river;
14. Northerly on said San Joaquin River to its intersection with the centerline of Maze Boulevard in Stanislaus County and the point of beginning of this description;

San Joaquin River Upstream of Salt Slough Subarea

BEGINNING at the centerline of the San Joaquin River at its intersection with the centerline of Lander Avenue (Highway 165) in Merced County lying in Section 27, Township 07 South, Range 10 East, Mount Diablo Meridian; thence along the following courses:

1. Northeasterly on the drainage boundary of the San Joaquin River upstream of its intersection with Lander Avenue (Highway 165) to its intersection with the centerline of the East Side Irrigation Canal near said canal's junction with Howard Lateral;
2. Meander the drainage boundary of Bear Creek northeasterly to its intersection with centerline of Arena Canal at its junction with Hammatt Lateral near Livingston;
3. Meander to drainage divide between Arena Canal and Wakefield Lateral easterly to its intersection with the centerline of Arena Canal at the point of divergence between said canal and lateral near the intersection of Arena Canal and Cressy Way in Merced County;
4. Meander centerline of Arena Canal northwesterly to its junction with the centerline of Livingston Canal;
5. Meander centerline of Livingston Canal southeasterly to its intersection with the centerline of Vine Avenue in Merced County near Atwater;
6. South on centerline of said Vine Avenue to its junction with the centerline of Fruitland Avenue in the City of Atwater in Merced County;
7. Meander centerline of Fruitland Avenue southeasterly to its intersection with the centerline of Winton Way in the City of Atwater in Merced County;
8. South on centerline of said Winton Way to its junction with the centerline of Bellevue Road in the City of Atwater in Merced County;
9. East on centerline of said Bellevue Road to its intersection with the southwest corner of a subdivision near said road's intersection with 7th Street in the City of Atwater in Merced County;
10. North on the boundary of said subdivision to its intersection with the centerline of Fruitland Avenue in the City of Atwater in Merced County;
11. East on centerline of said Fruitland Avenue to its intersection with the eastern boundary of the subdivision lying south of said avenue, near the intersection with Chardonnay Way;
12. South on boundary of said subdivision to its intersection with the centerline of Bellevue Road in the City of Atwater in Merced County, near said road's intersection with 5th Street;
13. East on centerline of said Bellevue Road to its junction with the centerline of Shaffer Road in the City of Atwater in Merced County;
14. South on the centerline of said Shaffer Road to its junction with the centerline of Juniper Avenue in the City of Atwater in Merced County;
15. East on the centerline of said Juniper Avenue to its junction with the centerline of Sierra Madre Drive in the City of Atwater in Merced County;
16. South on the centerline of said Sierra Madre Drive to its intersection with the northern boundary of Section 7, Township 7 South, Range 13 East, Mount Diablo Maridian;
17. East on said section boundary to its intersection with the centerline of an unnamed creek about 750 feet before said section boundary intersects Buhach Road;
18. Meander centerline of said unnamed creek northerly to its junction with the centerline of the Livingston Canal;
19. Meander centerline of said Livingston Canal easterly to the point of divergence between Canal Creek and said canal;
20. Northerly on centerline of said Canal Creek to its intersection with the centerline of Bellevue Road in Merced County near Castle Airport;
21. East on centerline of said Bellevue Road to its intersection with the drainage boundary of Canal Creek near the intersection of Franklin Road and Bellevue Road in Merced County near Castle Airport;
22. Meander said drainage boundary of Canal Creek northerly to its junction with the drainage boundary of Edendale Creek;
23. Meander said drainage boundary of Edendale Creek northeasterly to its intersection with the centerline of Merced Irrigation District's Main Canal;

24. Meander centerline of said Main Canal northeasterly to its junction with the centerline of the Merced River, including any creeks and canals flowing into it along that length;
25. Meander centerline of said Merced River easterly to its intersection with the drainage boundary of Stoney Creek;
26. Meander said drainage boundary of Stoney Creek southerly to its junction with the drainage boundary of Black Rascal Creek;
27. Meander said drainage boundary of Black Rascal Creek southeasterly to its junction with the drainage boundary of Burns Creek;
28. Meander said drainage boundary of Burns Creek northeasterly to its intersection with the Merced County line;
29. Southeasterly on said Merced County line to its junction with Madera County line and Calwater 654530000 (Berenda Creek Hydrologic Area);
30. Southeasterly on the boundary of Calwater 654530000 (Berenda Creek Hydrologic Area) to its intersection with the centerline of the San Joaquin River at Friant Dam;
31. Southwesterly on centerline of said San Joaquin River to its intersection with the jurisdictional boundary of Columbia Canal Company;
32. Northwesterly on said boundary of Columbia Canal Company to its intersection with the centerline of the San Joaquin River;
33. Northwesterly on said San Joaquin River to its intersection with the centerline of Lander Avenue (Highway 165) and the point of beginning of this description.

Bear Creek Minor Subarea

BEGINNING at the centerline of the San Joaquin River at its intersection with the centerline of Lander Avenue (Highway 165) in Merced County lying in Section 27, Township 07 South, Range 10 East, Mount Diablo Meridian; thence along the following courses:

1. Northeasterly on the drainage boundary of the San Joaquin River upstream of its intersection with Lander Avenue (Highway 165) to its intersection with the centerline of the East Side Irrigation Canal near said canal's junction with Howard Lateral;
2. Meander the drainage boundary of Bear Creek northeasterly to its intersection with centerline of Arena Canal at its junction with Hammatt Lateral near Livingston;
3. Meander to drainage divide between Arena Canal and Wakefield Lateral easterly to its intersection with the centerline of Arena Canal at the point of divergence between said canal and lateral near the intersection of Arena Canal and Cressy Way in Merced County;
4. Meander centerline of Arena Canal northwesterly to its junction with the centerline of Livingston Canal;
5. Meander centerline of Livingston Canal southeasterly to its intersection with the centerline of Vine Avenue in Merced County near Atwater;
6. South on centerline of said Vine Avenue to its junction with the centerline of Fruitland Avenue in the City of Atwater in Merced County;
7. Meander centerline of Fruitland Avenue southeasterly to its intersection with the centerline of Winton Way in the City of Atwater in Merced County;
8. South on centerline of said Winton Way to its junction with the centerline of Bellevue Road in the City of Atwater in Merced County;
9. East on centerline of said Bellevue Road to its intersection with the southwest corner of a subdivision near said road's intersection with 7th Street in the City of Atwater in Merced County;
10. North on the boundary of said subdivision to its intersection with the centerline of Fruitland Avenue in the City of Atwater in Merced County;
11. East on centerline of said Fruitland Avenue to its intersection with the eastern boundary of the subdivision lying south of said avenue, near the intersection with Chardonnay Way;
12. South on boundary of said subdivision to its intersection with the centerline of Bellevue Road in the City of Atwater in Merced County, near said road's intersection with 5th Street;
13. East on centerline of said Bellevue Road to its junction with the centerline of Shaffer Road in the City of Atwater in Merced County;
14. South on the centerline of said Shaffer Road to its junction with the centerline of Juniper Avenue in the City of Atwater in Merced County;
15. East on the centerline of said Juniper Avenue to its junction with the centerline of Sierra Madre Drive in the City of Atwater in Merced County;

16. South on the centerline of said Sierra Madre Drive to its intersection with the northern boundary of Section 7, Township 7 South, Range 13 East, Mount Diablo Maridian;
17. East on said section boundary to its intersection with the centerline of an unnamed creek about 750 feet before said section boundary intersects Buhach Road;
18. Meander centerline of said unnamed creek northerly to its junction with the centerline of the Livingston Canal;
19. Meander centerline of said Livingston Canal easterly to the point of divergence between Canal Creek and said canal;
20. Northerly on centerline of said Canal Creek to its intersection with the centerline of Bellevue Road in Merced County near Castle Airport;
21. East on centerline of said Bellevue Road to its intersection with the drainage boundary of Canal Creek near the intersection of Franklin Road and Bellevue Road in Merced County near Castle Airport;
22. Meander said drainage boundary of Canal Creek northerly to its junction with the drainage boundary of Edendale Creek;
23. Meander said drainage boundary of Edendale Creek northeasterly to its intersection with the centerline of Merced Irrigation District's Main Canal;
24. Meander centerline of said Main Canal northeasterly to its junction with the centerline of the Merced River, including any creeks and canals flowing into it along that length;
25. Meander centerline of said Merced River easterly to its intersection with the drainage boundary of Stoney Creek;
26. Meander said drainage boundary of Stoney Creek southerly to its junction with the drainage boundary of Black Rascal Creek;
27. Meander said drainage boundary of Black Rascal Creek southeasterly to its junction with the drainage boundary of Burns Creek;
28. Meander said drainage boundary of Burns Creek northeasterly to its intersection with the Merced County line;
29. Meander said Merced County line southeasterly to its intersection with the northern drainage boundary of the Chowchilla River;
30. Westerly on said drainage boundary of Chowchilla River to its intersection with the centerline of Marguerite Road;
31. West on centerline of said Marguerite Road to its intersection with the jurisdictional boundary of Chowchilla Water District, as defined by said water district, were said road extended to intersect Chowchilla Water District jurisdictional boundary;
32. Meander said Chowchilla Water District jurisdictional boundary to its intersection with the jurisdictional boundary of El Nido Irrigation District (now operated by Merced Irrigation District) as it existed at the time it changed hands;
33. Meander said jurisdictional boundary of El Nido Irrigation District to its intersection with the centerline of Vineyard Road in Merced County near El Nido;
34. South on centerline of said Vineyard Road to its intersection with the centerline of West Washington Road, were both roads extended such that they would make an intersection;
35. West on centerline of said West Washington Road to its intersection with the centerline of the San Joaquin River at the bridge where Indiana Road intersects from the opposite direction;
36. Northwesterly on centerline of said San Joaquin River to its intersection with the centerline of Lander Avenue (Highway 165) and the point of beginning of this description.

Fresno-Chowchilla Minor Subarea

BEGINNING at the centerline of the San Joaquin River at its intersection the centerline of West Washington Road in Merced County lying in Section 31, Township 9 South, Range 13 East, Mount Diablo Meridian; thence along the following courses:

1. West on centerline of said West Washington Road to its intersection with the jurisdictional boundary of El Nido Irrigation District (now operated by Merced Irrigation District) as it existed at the time it changed hands;

2. Meander said jurisdictional boundary of El Nido Irrigation District to its intersection with the jurisdictional boundary of Chowchilla Water District, as defined by said water district;
3. Meander said jurisdictional boundary of Chowchilla Water District to its intersection with the centerline of Harvey Petit Road in Merced County near Le Grande;
4. East on centerline of said Harvey Petit Road to its intersection with the northern drainage boundary of the Chowchilla River, were said road extended to intersect the drainage boundary of the Chowchilla River;
5. Meander said drainage boundary of the Chowchilla River northeasterly to its intersection with the Merced County line;
6. Meander Merced County line southeasterly to its intersection with the Madera County line;
7. Southeasterly on the boundary of Calwater 654530000 (Berenda Creek Hydrologic Area) to its intersection with the centerline of the San Joaquin River at Friant Dam;
8. Southwesterly on centerline of said San Joaquin River to its intersection with the jurisdictional boundary of Columbia Canal Company;
9. Northwesterly on said boundary of Columbia Canal Company to its intersection with the centerline of the San Joaquin River;
10. Northwesterly on said San Joaquin River to its intersection with the land boundary south of the confluence with Mariposa Slough in Merced County that denotes the beginning of agricultural production south of said confluence with Mariposa Slough, were the land boundary extended to said centerline of the San Joaquin River, and the point of beginning of this description.

Stanislaus River Subarea

BEGINNING at the centerline of the parking slip of Campsite number 24 in Caswell Memorial State Park lying in Section 02, Township 03 South, Range 07 East, Mount Diablo Meridian, at its intersection with the centerline of the Stanislaus River, were the centerline of said parking slip extended to intersect the Stanislaus River; thence along the following courses:

1. Southwesterly on centerline of said parking slip to its intersection with the centerline of the main road connecting the campsites with the park entrance, were the centerline of said parking slip extended to said main road;
2. Westerly on centerline of said main park road to its intersection with the centerline of the north levee of the Stanislaus River, were the centerline of said main park road extended to intersect the centerline of the levee;
3. Meander centerline of said Stanislaus River levee northeasterly to its intersection with the centerline of Mohler Road at the point where said road bends west to become Moncure Road in San Joaquin County near Ripon, were the centerline of Mohler Road extended to intersect the centerline of said levee;
4. North on centerline of said Mohler Road to its intersection with the centerline of an unnamed canal underground a short distance south of the location at which Mohler Road bends to the east toward Ripon;
5. Meander centerline of said unnamed canal northerly to its junction with an unnamed canal approximately one quarter mile south of the intersection of Highland Avenue and Kamps Way in the City of Ripon in San Joaquin County;
6. Meander centerline of said unnamed canal northeasterly to its junction with the centerline of South San Joaquin Main District Canal;
7. Meander centerline of said Main District Canal northeasterly to its intersection with the centerline of Campbell Lateral;
8. Meander centerline of said Campbell Lateral southeasterly to its junction with the centerline of Tulloch Lateral;
9. Meander centerline of said Tulloch Lateral easterly to its intersection with the drainage boundary of Lone Tree Creek, approximately 3500 feet upstream of said lateral's intersection with Valley Home Road in Stanislaus County near Oakdale;
10. Meander said drainage boundary of Lone Tree Creek northeasterly to its intersection with the centerline of Twentysix Mile Road in Stanislaus County near Oakdale, approximately one half mile north of said road's intersection with Tulloch Lateral;
11. North on said Twentysix Mile Road to its intersection with the centerline of Young Lateral;

12. Easterly on centerline of said Young Lateral to its junction with the centerline of the Cometa Lateral;
13. Southerly on centerline of said Cometa Lateral to its intersection with the drainage boundary of an unnamed watershed north of this location approximately one quarter mile downstream of said lateral's intersection with Frankenheimer Road in Stanislaus County near the Woodward Reservoir;
14. Meander said drainage boundary of unnamed watershed northerly to its junction with the northern drainage boundary of the Cometa Lateral;
15. Meander said drainage boundary of Cometa Lateral northwesterly to its intersection with the centerline of Cometa Lateral approximately 1000 feet upstream of said lateral's intersection with Dodd Road in Stanislaus County near the Woodward Reservoir;
16. Northerly on centerline of said Cometa Lateral to its intersection with the South San Joaquin Water District's Main District Canal;
17. Meander centerline of said Main District Canal northeasterly to its junction with Woodward Reservoir;
18. Meander natural drainage boundary between Woodward Reservoir and Littlejohn's Creek easterly to its intersection with the centerline of Oakdale Irrigation District's North Main Canal, excluding Simmons Creek at the intersection of said North Main Canal and South San Joaquin Water District's Main District Canal;
19. Meander centerline of said North Main Canal easterly to its intersection with Little John's Dam;
20. Meander drainage boundary of Little John's Creek and its tributaries northeasterly to its intersection with the Stanislaus County line;
21. Southeast on said Stanislaus County line to its intersection with the southern drainage boundary of Wildcat Creek;
22. Meander said drainage boundary of Wildcat Creek southwesterly to its junction with the drainage boundary of Cashman Creek;
23. Meander said drainage boundary of Cashman Creek upstream of Cashman Dam southwesterly to its intersection with the centerline of Oakdale South Main Canal;
24. Meander centerline of said Oakdale South Main Canal southwesterly to its intersection with Sierra Railroad near Arnold Hill, approximately 1.25 miles northwest of said railroad's intersection with Fogarty Road in Stanislaus County;
25. Meander drainage boundary east of said Main Canal southeasterly to its intersection with the drainage boundary of Kearney Lateral;
26. Meander said drainage boundary of Kearney Lateral to its intersection with the centerline of Oakdale South Main Canal;
27. Meander centerline of said Oakdale South Main Canal westerly to its junction with the centerline of Claribel Lateral;
28. South on centerline of said Claribel Lateral to its junction with the centerline of Albers Lateral;
29. Meander centerline of said Albers Lateral southwesterly to its junction with the centerline of Stowell Lateral;
30. Meander centerline of said Stowell Lateral southwesterly to its junction with the centerline of Thompson Lateral;
31. Meander centerline of said Thompson Lateral southerly to its junction with the centerline of Modesto Irrigation District's Main Canal;
32. Meander centerline of said Modesto Main Canal northwesterly to its junction with the centerline of Modesto Irrigation District Lateral Number 6;
33. Meander centerline of said Lateral No. 6 westerly to its intersection with the centerline of the south bank levee of the Stanislaus River;
34. Meander said south bank levee westerly to its intersection with the crest of the ridge bordering the Stanislaus River on the peninsula opposite Caswell Memorial State Park;
35. Northwest on said crest to its intersection with a line due east from the intersection of the extension of the centerline of the slip of Campsite number 24 with the centerline of the Stanislaus River;
36. West on said line to its intersection with the centerline of the Stanislaus River and the point of beginning of this description.

Tuolumne River Subarea

BEGINNING at the intersection of the centerline of the Tuolumne River and the centerline of Shiloh Road in Stanislaus County lying in Section 7, Township 04 South, Range 08 East, Mount Diablo Meridian; thence along the following courses:

1. North on centerline of said Shiloh Road to its intersection with the centerline of Paradise Road in Stanislaus County near Grayson;
2. East on centerline of said Paradise Road to its intersection with the centerline of Hart Road in Stanislaus County near Modesto;
3. North on centerline of said Hart Road to its intersection with the centerline of Modesto Irrigation District Lateral Number 5;
4. Meander centerline of said Lateral No. 5 northeasterly to its intersection with the centerline of Locust Avenue in Stanislaus County, were it extended west to intersect the centerline of said Lateral No. 5;
5. East on centerline of said Locust Avenue to its intersection with the centerline of Franklin Street;
6. North on centerline of said Franklin Street to its intersection with the boundary of the Ninth Street Stormdrain Basin, as defined by the City of Modesto in Modesto;
7. Meander boundary of said Ninth Street Stormdrain Basin to its intersection with the boundary of the McHenry Avenue Stormdrain Basin, as defined by the City of Modesto, in Modesto;
8. Meander boundary of said McHenry Avenue Stormdrain Basin to its intersection with the centerline of Modesto Irrigation District Lateral Number 4;
9. Meander centerline of said Lateral No. 4 northeast to its junction with the centerline of Modesto Irrigation District Lateral Number 3;
10. Meander centerline of said Lateral No. 3 to its junction with the centerline of Modesto Irrigation District Main Canal;
11. Meander centerline of said Main Canal southeasterly to its intersection with the centerline of Dry Creek;
12. Meander centerline of Dry Creek easterly to its junction with the centerline of Claribel Latereal;
13. Meander centerline of said Claribel Lateral northerly to its junction with the centerline of Oakdale South Main Canal;
14. Meander centerline of said Oakdale South Main Canal easterly to its intersection with the centerline of Kearney Lateral;
15. Meander drainage boundary of Kearney Lateral southeasterly to the point of divergence of the Kearny Lateral drainage boundary and the Oakdale South Main Canal;
16. Meander said drainage boundary of Oakdale South Main Canal downstream of its intersection with Sierra Railroad northeasterly to its intersection with the centerline of Oakdale South Main Canal at its intersection with the centerline of Sierra Railroad approximately one and one quarter mile northwest of said railroad's intersection with Fogarty Road in Stanislaus County near Oakdale;
17. Meander said Main Canal northeasterly to its intersection with Cashman Dam;
18. Meander drainage boundary of Cashman Creek upstream of Cashman Dam southeasterly to its intersection with the drainage boundary of Wildcat Creek;
19. Meander said drainage boundary of Wildcat Creek northeasterly to its intersection with the Stanislaus County line;
20. Southeast on said Stanislaus County line to its intersection with the drainage boundary of Vizard Creek;
21. Meander said drainage boundary of Vizard Creek southwesterly to its intersection with the drainage boundary of Goodwin Creek;
22. Meander said drainage boundary of Goodwin Creek southwesterly to its intersection with the drainage boundary of Evans Creek;
23. Meander said drainage boundary of Evans Creek southwesterly to its intersection with the drainage boundary of Peaslee Creek;
24. Meander said drainage boundary of Peaslee Creek southwesterly to its intersection with the drainage boundary of Turlock Lake;
25. Meander said drainage of Turlock Lake southwesterly to its intersection with the drainage boundary of an unnamed interior drainage area west of the Turlock Lake drainage basin;
26. Meander said unnamed drainage boundary southwesterly to its intersection with the drainage boundary of Sand Creek;

27. Meander said drainage boundary of Sand Creek northwesterly to its intersection with the drainage boundary of unnamed creeks draining easterly toward Highline Canal and to the Merced River via said canal;
28. Meander said drainage boundary of unnamed creeks to its intersection with the centerline of Turlock Irrigation District Main Canal;
29. Meander centerline of said Turlock Main Canal westerly to its junction with the centerline of Ceres Main Canal;
30. Meander centerline of said Ceres Main Canal westerly to its junction with the centerline of Turlock Irrigation District Lateral Number 1;
31. Meander centerline of said Lateral No. 1 southwesterly to its junction with the centerline of Turlock Irrigation District Lower Lateral Number 2;
32. Meander centerline of said Lateral No. 2 to the point at which said lateral bends from northwest to southwest approximately three quarters of one mile upstream of its intersection with Grayson Road;
33. Meander said drainage boundary of the Tuolumne River to its intersection with the centerline of Shiloh Road in Stanislaus County at the location where Shiloh Road makes a ninety degree turn to the west 1.5 miles south of its intersection with Paradise Road;
34. North on centerline of said Shiloh Road to its intersection with the centerline of the Tuolumne River and the point of beginning of this description.

This Appendix lists the Sacramento-San Joaquin Delta Waterways (Delta Waterways)(1) to which the site-specific diazinon and chlorpyrifos water quality objectives and implementation and monitoring provisions apply. The following are distinct, readily identifiable waterbodies within the boundaries of the "Legal" Delta that are hydrologically connected by surface water flows (not including pumping) to the Sacramento and/or San Joaquin rivers. Figures 1 and 2 show the locations of the Delta Waterways.

1. Alamo Creek
2. Babel Slough
3. Barker Slough
4. Bear Creek
5. Bear Slough
6. Beaver Slough
7. Big Break
8. Bishop Cut
9. Black Slough
10. Broad Slough
11. Brushy Creek
12. Burns Cutoff
13. Cabin Slough
14. Cache Slough
15. Calaveras River
16. Calhoun Cut
17. Clifton Court Forebay
18. Columbia Cut
19. Connection Slough
20. Cosumnes River
21. Crocker Cut
22. Dead Dog Slough
23. Dead Horse Cut
24. Deer Creek
    (Tributary to Marsh Creek)
25. Delta Cross Channel
26. Disappointment Slough
27. Discovery Bay
28. Donlon Island
29. Doughty Cut
30. Dry Creek
    (Marsh Creek tributary)
31. Dry Creek
    (Mokelumne River tributary)
32. Duck Slough
33. Dutch Slough
34. Elk Slough
35. Elkhorn Slough
36. Emerson Slough
37. Empire Cut
38. Fabian and Bell Canal
39. False River
40. Fisherman's Cut
41. Fivemile creek
42. Fivemile Slough
43. Fourteenmile Slough
44. Franks Tract
45. French Camp Slough
46. Georgiana Slough
47. Grant Line Canal
48. Grizzly Slough
49. Haas Slough
50. Hastings Cut
51. Hog Slough
52. Holland Cut
53. Honker Cut
54. Horseshoe Bend
55. Indian Slough
56. Italian Slough
57. Jackson Slough
58. Kellogg Creek
59. Latham Slough
60. Liberty Cut
61. Lindsey Slough
62. Little Connection Slough
63. Little Franks Tract
64. Little Mandeville Cut
65. Little Potato Slough
66. Little Venice Island
67. Livermore Yacht Club
68. Lookout Slough
69. Lost Slough
70. Main Canal
    (Duck Slough tributary)
71. Main Canal
    (Italian Slough tributary)
72. Marsh Creek
73. Mayberry Cut
74. Mayberry Slough
75. Middle River
76. Mildred Island
77. Miner Slough
78. Mokelumne River
79. Mormon Slough
80. Morrison Creek
81. Mosher Slough
82. Mountain House Creek
83. North Canal
84. North Fork Mokelumne River
85. North Victoria Canal
86. Old River
87. Paradise Cut
88. Piper Slough
89. Pixley Slough
90. Potato Slough
91. Prospect Slough
92. Red Bridge Slough
93. Rhode Island
94. Rock Slough
95. Sacramento Deep Water Channel

96. Sacramento River
97. Salmon Slough
98. San Joaquin River
99. Sand Creek
100. Sand Mound Slough
101. Santa Fe Cut
102. Sevenmile Slough
103. Shag Slough
104. Sheep Slough
105. Sherman Lake
106. Short Slough
107. Smith Canal
108. Snodgrass Slough
109. South Fork Mokelumne River
110. Steamboat Slough
111. Stockton Deep Water Channel
112. Stone Lakes
113. Sugar Cut
114. Sutter Slough
115. Sweany Creek
116. Sycamore Slough
117. Taylor Slough
(Elkhorn Slough tributary)
118. Taylor Slough
(near Franks Tract)
119. Telephone Cut
120. The Big Ditch
121. The Meadows Slough
122. Three River Reach
123. Threemile Slough
124. Toe Drain
125. Tom Paine Slough
126. Tomato Slough
127. Trapper Slough
128. Turner Cut
129. Ulatis Creek
130. Upland Canal
(Sycamore Slough Tributary)
131. Victoria Canal
132. Walker Slough
133. Walthall Slough
134. Washington Cut
135. Werner Dredger Cut
136. West Canal
137. Whiskey Slough
138. White Slough
139. Winchester Lake
140. Woodward Canal
141. Wright Cut
142. Yosemite Lake
143. Yolo Bypass (not labeled)(2)
144. Deuel Drain
145. Dredger Cut
146. Highline Canal

Footnotes:
(1) The Delta Waterways include only those reaches that are located within the "Legal" Delta, as defined in Section 12220 of the California Water Code.

(2) When flooded, the entire Yolo Bypass is a Delta Waterway. When the Yolo Bypass is not flooded, the Toe Drain is the only Delta Waterway within the Yolo Bypass.

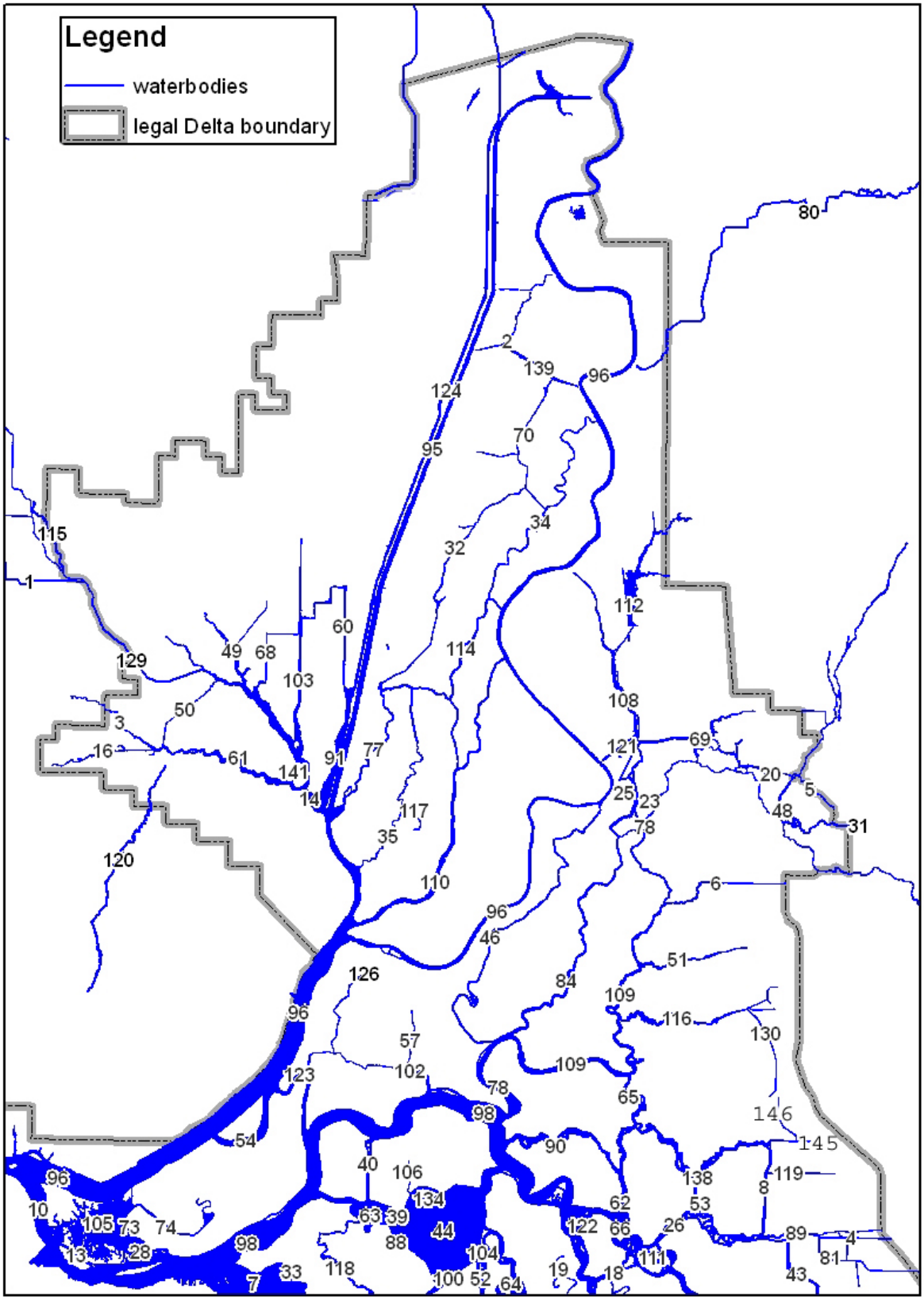


Figure 1. Delta Waterways, Northern Panel

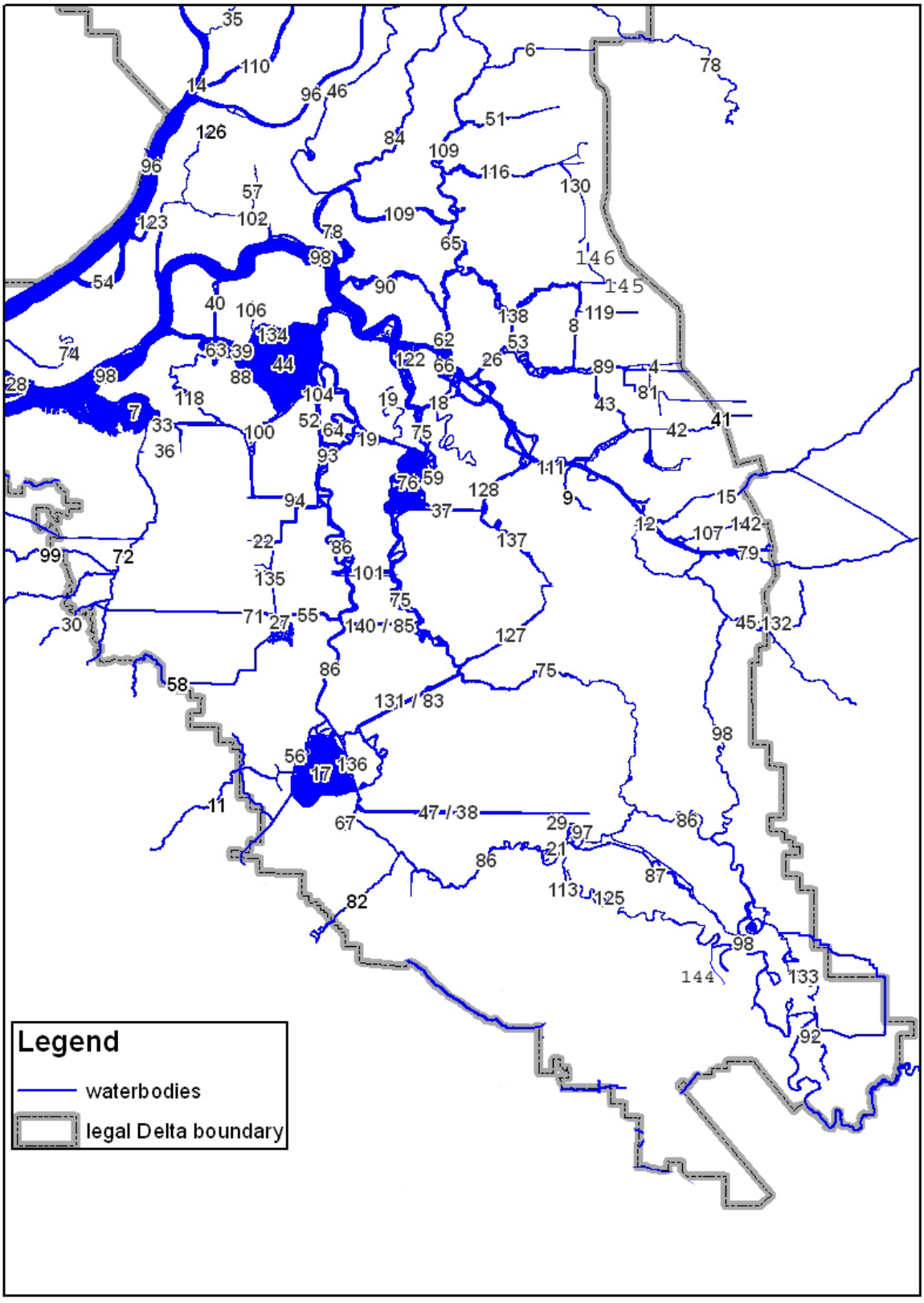


Figure 2. Delta Waterways, Southern Panel

Table A43-1 lists the Sacramento-San Joaquin Delta waterways and the Yolo Bypass waterways within the Delta and north of the legal Delta boundary to which the COMM beneficial use, site-specific methylmercury fish tissue objectives, Delta mercury control implementation program, and monitoring provisions apply. The list contains distinct, readily identifiable water bodies within the boundaries of the "Legal" Delta (as defined in California Water Code section 12220) that are hydrologically connected by surface water flows (not including pumping) to the Sacramento and/or San Joaquin rivers. The list also includes Knights Landing Ridge Cut, Putah Creek, and Tule Canal in the Yolo Bypass north of the legal Delta boundary. Figures A43-1, A43-2, and A43-3 show the locations of these waterways.

The methylmercury allocations set forth in the Delta methylmercury control program are specific to Delta subareas, which are shown on Figure A43-4. Table A43-2 lists the waterways within each of the subareas.

TABLE A43-1: DELTA AND YOLO BYPASS WATERWAYS

Map Label #	Waterway Name	Map Label #	Waterway Name
1.	Alamo Creek	44.	Franks Tract
2.	Babel Slough	45.	French Camp Slough
3.	Barker Slough	46.	Georgiana Slough
4.	Bear Creek	47.	Grant Line Canal
5.	Bear Slough	48.	Grizzly Slough
6.	Beaver Slough	49.	Haas Slough
7.	Big Break	50.	Hastings Cut
8.	Bishop Cut	51.	Hog Slough
9.	Black Slough	52.	Holland Cut
10.	Broad Slough	53.	Honker Cut
11.	Brushy Creek	54.	Horseshoe Bend
12.	Burns Cutoff	55.	Indian Slough
13.	Cabin Slough	56.	Italian Slough
14.	Cache Slough	57.	Jackson Slough
15.	Calaveras River	58.	Kellogg Creek
16.	Calhoun Cut	59.	Latham Slough
17.	Clifton Court Forebay	60.	Liberty Cut
18.	Columbia Cut	61.	Lindsey Slough
19.	Connection Slough	62.	Little Connection Slough
20.	Cosumnes River	63.	Little Franks Tract
21.	Crocker Cut	64.	Little Mandeville Cut
22.	Dead Dog Slough	65.	Little Potato Slough
23.	Dead Horse Cut	66.	Little Venice Island
24.	Deer Creek (Tributary to Marsh Creek)	67.	Livermore Yacht Club
25.	Delta Cross Channel	68.	Lookout Slough
26.	Disappointment Slough	69.	Lost Slough
27.	Discovery Bay	70.	Main Canal (Duck Slough tributary)
28.	Donlon Island	71.	Main Canal (Italian Slough tributary)
29.	Doughty Cut	72.	Marsh Creek
30.	Dry Creek (Marsh Creek tributary)	73.	Mayberry Cut
31.	Dry Creek (Mokelumne River tributary)	74.	Mayberry Slough
32.	Duck Slough	75.	Middle River
33.	Dutch Slough	76.	Mildred Island
34.	Elk Slough	77.	Miner Slough
35.	Elkhorn Slough	78.	Mokelumne River
36.	Emerson Slough	79.	Mormon Slough
37.	Empire Cut	80.	Morrison Creek
38.	Fabian and Bell Canal	81.	Mosher Slough
39.	False River	82.	Mountain House Creek
40.	Fisherman's Cut	83.	North Canal
41.	Fivemile Creek	84.	North Fork Mokelumne River
42.	Fivemile Slough	85.	North Victoria Canal
43.	Fourteenmile Slough	86.	Old River

TABLE A43-1: DELTA AND YOLO BYPASS WATERWAYS, *Continued*

Map Label # / Waterway Name	Map Label # / Waterway Name
87. Paradise Cut	120. The Big Ditch
88. Piper Slough	121. The Meadows Slough
89. Pixley Slough	122. Three River Reach
90. Potato Slough	123. Threemile Slough
91. Prospect Slough	124. Toe Drain
92. Red Bridge Slough	125. Tom Paine Slough
93. Rhode Island	126. Tomato Slough
94. Rock Slough	127. Trapper Slough
95. Sacramento Deep Water Channel	128. Turner Cut
96. Sacramento River	129. Ulatis Creek
97. Salmon Slough	130. Upland Canal (Sycamore Slough tributary)
98. San Joaquin River	
99. Sand Creek	131. Victoria Canal
100. Sand Mound Slough	132. Walker Slough
101. Santa Fe Cut	133. Walthall Slough
102. Sevenmile Slough	134. Washington Cut
103. Shag Slough	135. Werner Dredger Cut
104. Sheep Slough	136. West Canal
105. Sherman Lake	137. Whiskey Slough
106. Short Slough	138. White Slough
107. Smith Canal	139. Winchester Lake
108. Snodgrass Slough	140. Woodward Canal
109. South Fork Mokelumne River	141. Wright Cut
110. Steamboat Slough	142. Yosemite Lake
111. Stockton Deep Water Channel	143. Yolo Bypass
112. Stone Lakes	144. Deuel Drain
113. Sugar Cut	145. Dredger Cut
114. Sutter Slough	146. Highline Canal
115. Sweany Creek	147. Cache Creek Settling Basin Outflow
116. Sycamore Slough	148. Knights Landing Ridge Cut
117. Taylor Slough (Elkhorn Slough tributary)	149. Putah Creek
118. Taylor Slough (near Franks Tract)	150. Tule Canal
119. Telephone Cut	

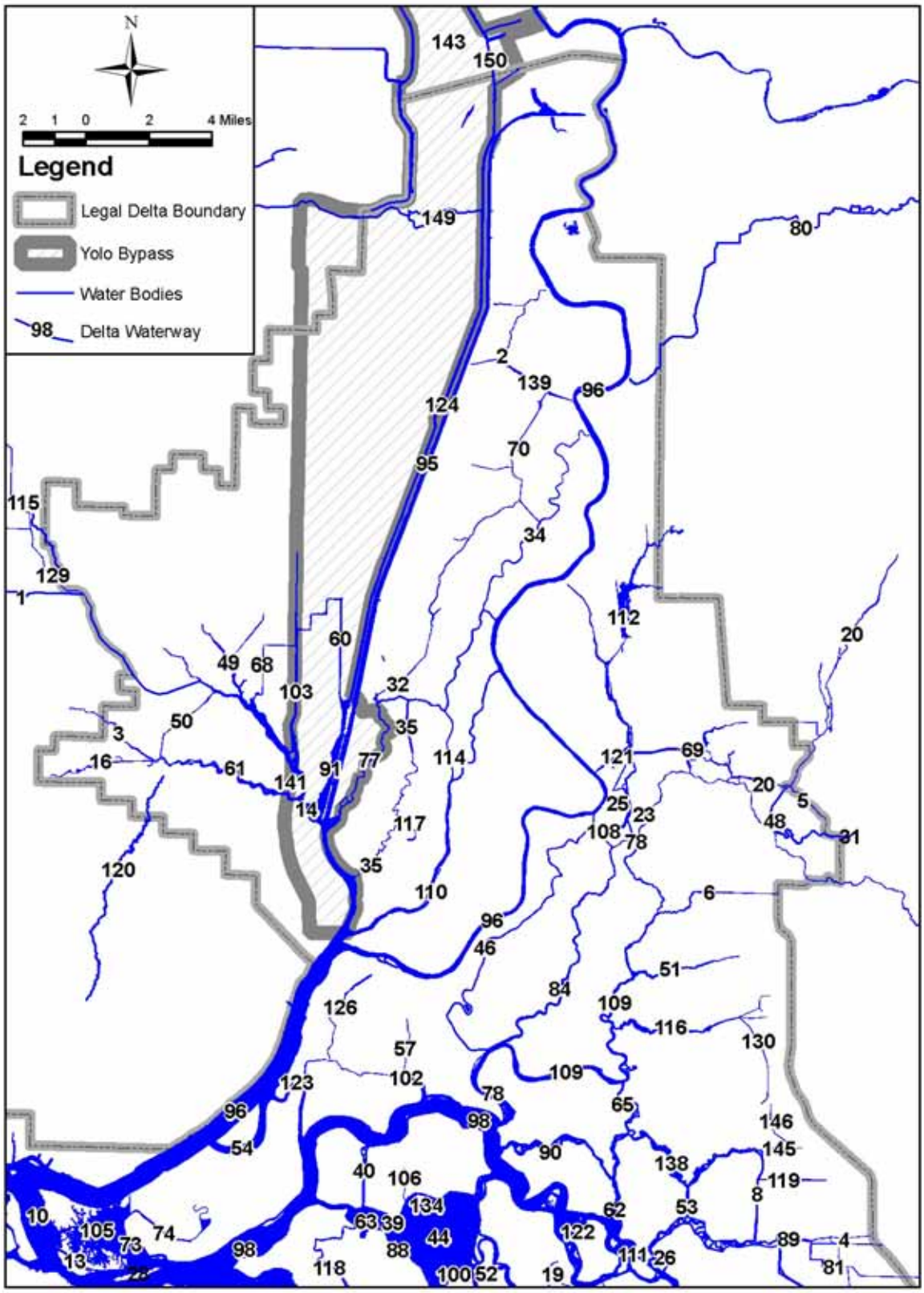


Figure A43-1: Delta Waterways (Northern Panel)

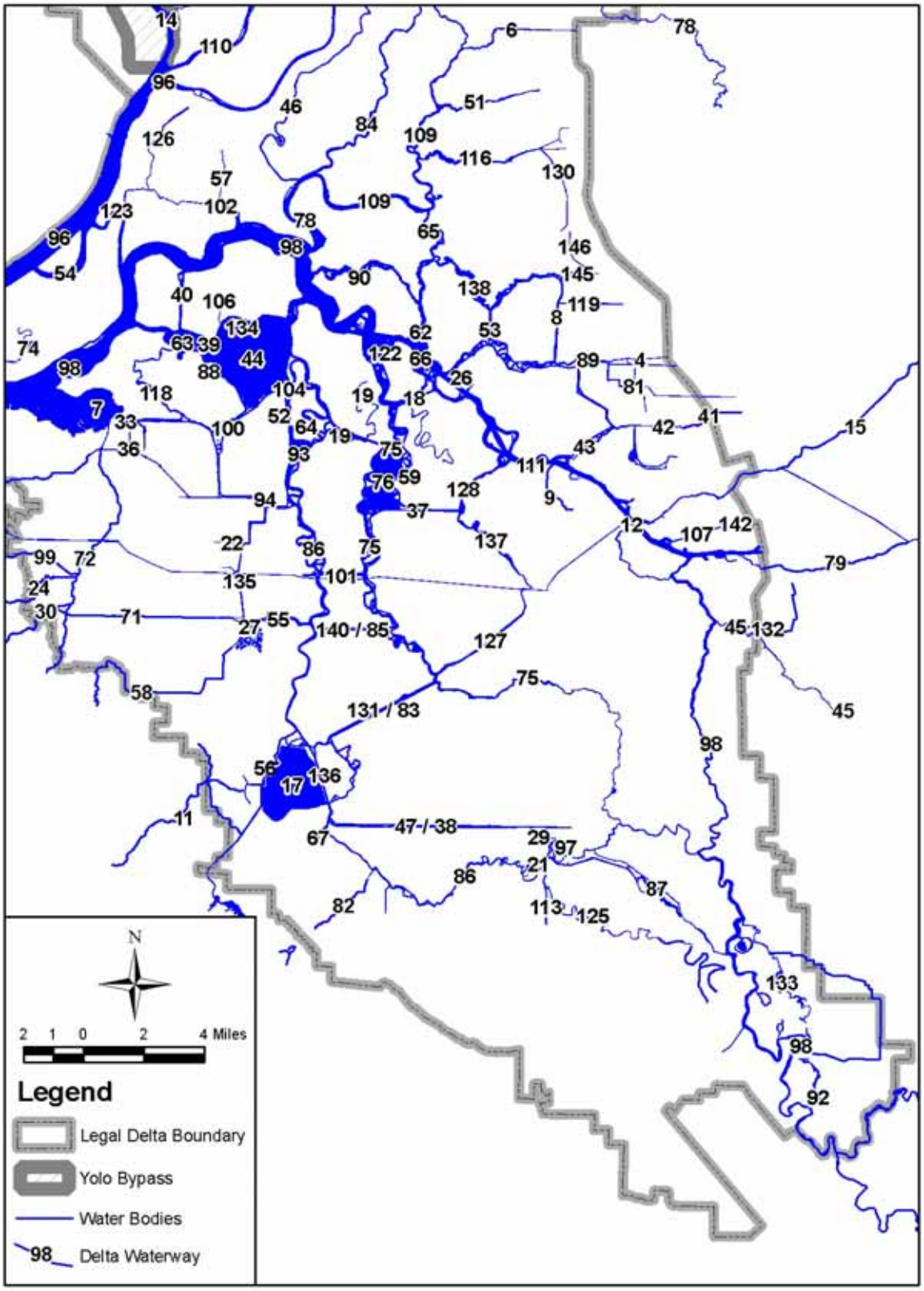


Figure A43-2: Delta Waterways (Southern Panel)

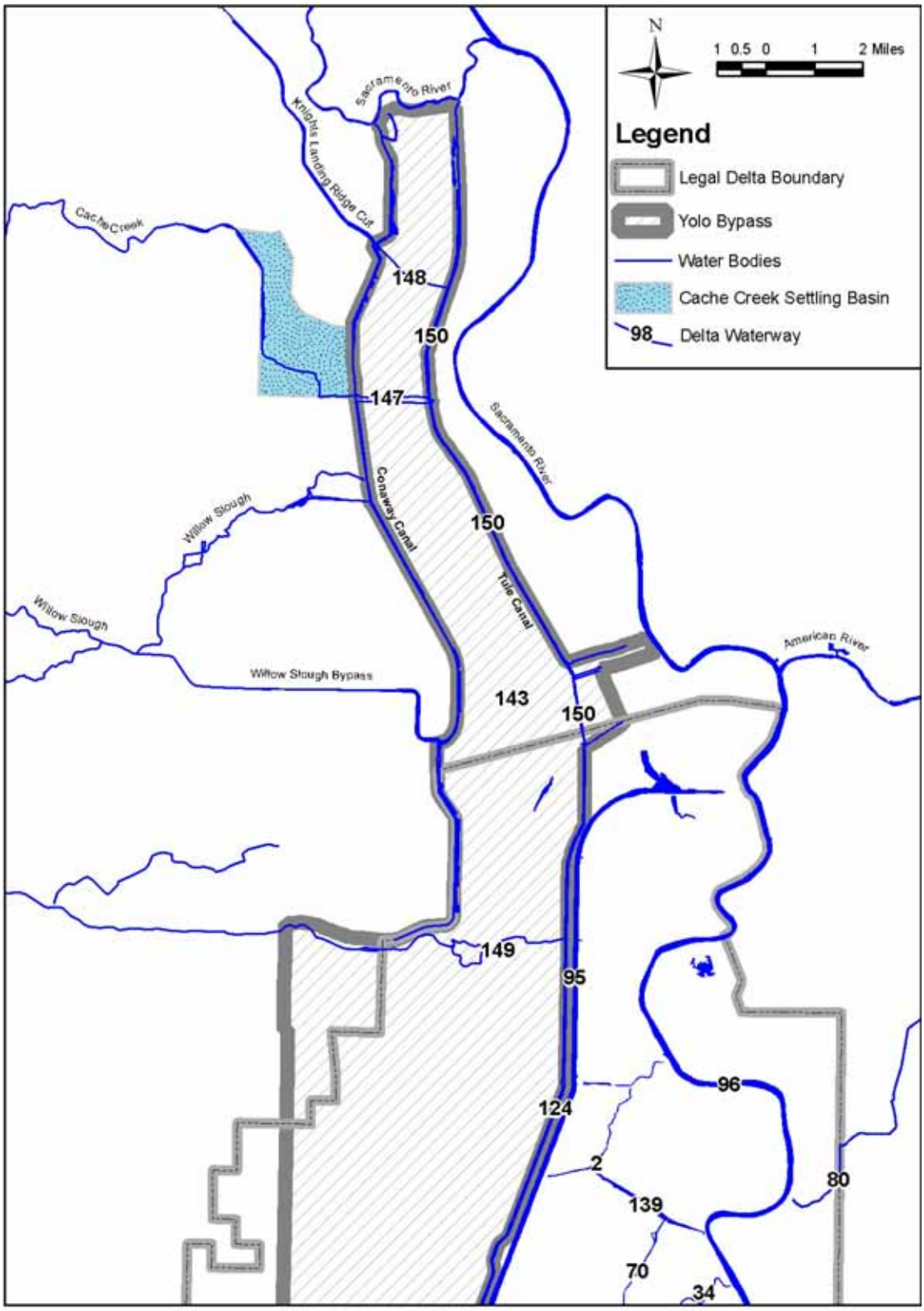


Figure A43-3: Northern Yolo Bypass

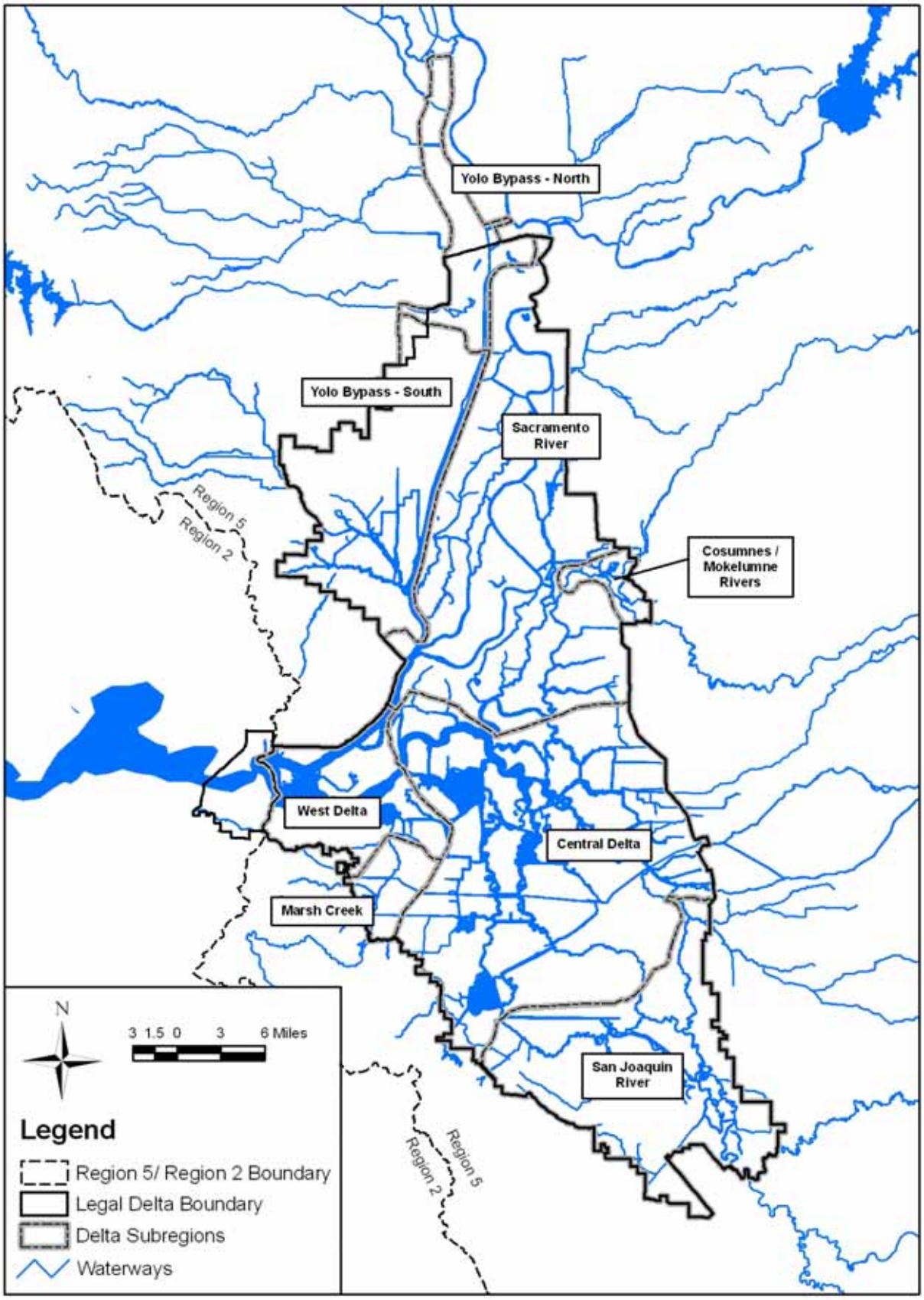


Figure A43-4: Subareas for the Delta Methylmercury Control Program

TABLE A43-2: DELTA AND YOLO BYPASS WATERWAYS BY METHYLMERCURY ALLOCATION SUBAREA

Waterway Name [Map Label #]	Waterway Name [Map Label #]	Waterway Name [Map Label #]
CENTRAL DELTA		
Bear Creek [4]	Indian Slough [55]	San Joaquin River [98]
Bishop Cut [8]	Italian Slough [56]	Sand Mound Slough [100]
Black Slough [9]	Jackson Slough [57]	Santa Fe Cut [101]
Brushy Creek [11]	Kellogg Creek [58]	Sevenmile Slough [102]
Burns Cutoff [12]	Latham Slough [59]	Sheep Slough [104]
Calaveras River [15]	Little Connection Slough [62]	Short Slough [106]
Clifton Court Forebay [17]	Little Franks Tract [63]	Smith Canal [107]
Columbia Cut [18]	Little Mandeville Cut [64]	Stockton Deep Water Channel [111]
Connection Slough [19]	Little Potato Slough [65]	Taylor Slough [nr Franks Tract] [118]
Dead Dog Slough [22]	Little Venice Island [66]	Telephone Cut [119]
Disappointment Slough [26]	Livermore Yacht Club [67]	Three River Reach [122]
Discovery Bay [27]	Main Canal [Indian Slough trib.] [71]	Threemile Slough [123]
Dredger Cut [145]	Middle River [75]	Tomato Slough [126]
Empire Cut [37]	Mildred Island [76]	Trapper Slough [127]
Fabian and Bell Canal [39]	Mokelumne River [78]	Turner Cut [128]
False River [39]	Mormon Slough [79]	Upland Canal [Sycamore Slough tributary] [130]
Fisherman's Cut [40]	Mosher Slough [81]	
Fivemile Creek [41]	North Canal [83]	Victoria Canal [131]
Fivemile Slough [42]	North Victoria Canal [85]	Washington Cut [134]
Fourteenmile Slough [43]	Old River [86]	Werner Dredger Cut [135]
Franks Tract [44]	Piper Slough [88]	West Canal [136]
Grant Line Canal [47]	Pixley Slough [89]	Whiskey Slough [137]
Highline Canal [146]	Potato Slough [90]	White Slough [138]
Holland Cut [52]	Rhode Island [93]	Woodward Canal [140]
Honker Cut [53]	Rock Slough [94]	Yosemite Lake [142]
MOKELUMNE/COSUMNES RIVERS		
Bear Slough [5]	Dry Creek [Mokelumne R. trib.] [31]	Lost Slough [69]
Cosumnes River [20]	Grizzly Slough [48]	Mokelumne River [78]
MARSH CREEK		
Deer Creek [24]	Main Canal [Indian Slough trib.] [71]	Rock Slough [94]
Dry Creek [Marsh Creek trib.] [30]	Marsh Creek [72]	Sand Creek [99]
Kellogg Creek [58]		
SACRAMENTO RIVER		
Babel Slough [2]	Little Potato Slough [65]	Stone Lakes [112]
Beaver Slough [6]	Lost Slough [69]	Sutter Slough [114]
Cache Slough [14]	Main Canal [Duck Slough trib.] [70]	Sycamore Slough [116]
Dead Horse Cut [23]	Miner Slough [77]	Taylor Slough [Elkhorn Slough tributary] [117]
Delta Cross Channel [25]	Mokelumne River [78]	
Duck Slough [32]	Morrison Creek [80]	The Meadows Slough [121]
Elk Slough [34]	North Mokelumne River [84]	Tomato Slough [126]
Elkhorn Slough [35]	Sacramento River [96]	Upland Canal [Sycamore Slough tributary] [130]
Georgiana Slough [46]	Snodgrass Slough [108]	
Hog Slough [51]	South Mokelumne River [109]	Winchester Lake [139]
Jackson Slough [57]	Steamboat Slough [110]	

TABLE A43-2: DELTA AND YOLO BYPASS WATERWAYS BY METHYLMERCURY ALLOCATION SUBAREA, *Continued*

Waterway Name [Map Label #]	Waterway Name [Map Label #]	Waterway Name [Map Label #]
SAN JOAQUIN RIVER		
Crocker Cut [21]	Middle River [75]	San Joaquin River [98]
Deuel Drain [144]	Mountain House Creek [82]	Sugar Cut [113]
Doughty Cut [29]	Old River [86]	Tom Paine Slough [125]
Fabian and Bell Canal [38]	Paradise Cut [87]	Walker Slough [132]
French Camp Slough [45]	Red Bridge Slough [92]	Walthall Slough [133]
Grant Line Canal [47]	Salmon Slough [97]	
WEST DELTA		
Big Break [7]	Horseshoe Bend [54]	San Joaquin River [98]
Broad Slough [10]	Marsh Creek [72]	Sand Mound Slough [100]
Cabin Slough [13]	Mayberry Cut [73]	Sherman Lake [105]
Donlon Island [28]	Mayberry Slough [74]	Taylor Slough [near Franks Tract] [118]
Dutch Slough [33]	Rock Slough [94]	Threemile Slough [123]
Emerson Slough [36]	Sacramento River [96]	
False River [39]		
YOLO BYPASS-NORTH [(a)]		
Cache Creek Settling Basin Outflow [147]	Toe Drain [124]/Tule Canal [150] Putah Creek [149)]	Sacramento Deep Water Ship Channel [95]
Knights Landing Ridge Cut [148]		
YOLO BYPASS-SOUTH [(a)]		
Alamo Creek [1]	Liberty Cut [60]	Sweany Creek [115]
Babel Slough [2]	Lindsey Slough [61]	Sycamore Slough [116]
Barker Slough [3]	Lookout Slough [68]	The Big Ditch [120]
Cache Slough [14]	Miner Slough [77]	Toe Drain [124]
Calhoun Cut [16]	Prospect Slough [91)]	Ulatis Creek [129]
Duck Slough [32]	Sacramento Deep Water Ship Channel [95]	Wright Cut [141]
Haas Slough [49]		
Hastings Cut [50]	Shag Slough [103]	

(a) Both the "Yolo Bypass-North" and "Yolo Bypass-South" subareas contain portions of the Yolo Bypass flood conveyance channel shown in Figure IV-4. When flooded, the entire Yolo Bypass is a Delta waterway. When the Yolo Bypass is not flooded, the Toe Drain [127] (referred to as Tule Canal [C] for its northern reach), Cache Creek Settling Basin Outflow [A], and Knights Landing Ridge Cut [B] are the only waterways within the Yolo Bypass hydrologically connected to the Sacramento River.

Appendix 44
Water Bodies That Meet One or More of the
Sources of Drinking Water Policy (Resolution 88-63) Exceptions

County	Water Body Name	Description	Approximate GIS Coordinates *(WGS84 Datum)*	
			Starting Location	**Ending Location**
Butte	Cherokee Canal	Cherokee Canal runs southwest from the Richvale area (near Nelson Shippee Road) to Butte Creek, west of the City of Live Oak	(39.537741, -121.707079)	(39.285685, -121.921656)
Butte	Lateral K	Lateral K is part of Reclamation District 833 and starts near 8th Street in the City of Biggs and travels southwest past the City of Bigg's Wastewater Treatment Plant to the Main Drainage Canal	(39.421894, -121.71297)	(39.406837, -121.725361)
Butte	Main Drainage Canal	The Main Drainage Canal (also known as the Main Drain C) is part of Reclamation District 833 and starts on the south end of the City of Biggs near Trent Street and runs southwest to the Cherokee Canal	(39.41041, -121.704258)	39.327924, -121.882067
Colusa	New Ditch (2011)	New Ditch (2011) starts near the south end of the Colusa Wastewater Treatment Plant and runs south, parallel to the unnamed tributary, until the two water bodies join near the effluent outfall and weir.	(39.180224, -122.031358)	(39.174267, -122.031274)
Colusa	Powell Slough	Powell Slough begins just north of Highway 20, downstream of Hopkins Slough, and runs south until its confluence with the Colusa Basin Drain.	(39.211133, -122.062955)	(39.161267, -122.038445)
Colusa	Sulphur Creek	Lower two miles from Schoolhouse Canyon to its confluence with Little Bear Creek.	39.035631, -122.437619	39.040144, -122.408168
Colusa	unnamed tributary (to Powell Slough)	unnamed tributary to Powell Slough starts near Will S. Green Avenue and runs west and southwest to Powell Slough	(39.188028 ,-122.02328)	(39.166857, -122.034722)
Glenn	Ag Drain C	Glenn-Colusa Irrigation District's Ag Drain C (segments also known as North Fork Logan Creek and Logan Creek) runs southeast from Highway 5 near Highway 99W through the Sacramento Wildlife Refuge to the Colusa Basin Drain	(39.498519, -122.199216)	(39.356401, -122.082675)
Sutter	East Interceptor Canal	The East Interceptor Canal starts at Pease Road and runs west until it meets the Wadsworth Canal.	(39.170745, -121.670588)	(39.171003, -121.727014)

Appendix 44
Water Bodies That Meet One or More of the
Sources of Drinking Water Policy (Resolution 88-63) Exceptions

County	**Water Body Name**	**Description**	**Approximate GIS Coordinates** *(WGS84 Datum)*	
			Starting Location	**Ending Location**
Sutter	Lateral 1	Lateral 1 is part of Reclamation District 777 and starts near the City of Live Oak's Wastewater Treatment Plant and runs south and west to the Western Intercepting Canal.	(39.257501, -121.678718)	(39.201248, -121.696329)
Sutter	Lateral 2	Lateral 2 is part of Reclamation District 777. It starts on the south end of the City of Live Oak near Treatment Plant Access Road and runs south and then west past the City of Live Oak's Treatment Plant outfall until it meets Lateral 1.	(39.264739, -121.669314)	(39.257501, -121.678718)
Sutter	Western Intercepting Canal *(not to be confused with West Interceptor Canal)*	Western Interceptor Canal is under shared management between Reclamation District 777 and Reclamation District 2056. It starts south of Sanders Road and runs south until it meets the East Interceptor Canal.	(39.201248, -121.696329)	(39.17092, -121.695374)
Sutter	Wadsworth Canal	The Wadsworth Canal starts just north of Butte House Road and runs southwest until it meets the Sutter Bypass	(39.171003,-121.727014)	(39.113605,-121.768985)