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

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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