Presented below are water quality standards that are in effect for Clean Water Act purposes.

EPA is posting these standards as a convenience to users and has made a reasonable effort to assure their accuracy. Additionally, EPA has made a reasonable effort to identify parts of the standards that are not approved, disapproved, or are otherwise not in effect for Clean Water Act purposes.

ATTACHMENT 1
RESOLUTION NO. R5-2004-0108
AMENDING THE WATER QUALITY CONTROL PLAN FOR THE SACRAMENTO RIVER AND SAN JOAQUIN RIVER BASINS FOR THE CONTROL OF SALT AND BORON DISCHARGES INTO THE LOWER SAN JOAQUIN RIVER

Following are excerpts from Basin Plan Chapters I and IV shown similar to how they will appear after the proposed amendment is adopted. Deletions are indicated as strike-through text (~~deleted text~~) and additions are shown as underlined text (added text). Italicized text (*Notation Text*) is included to locate where the modifications will be made in the Basin Plan. All other text changes are shown accurately, however, formatting and pagination will change.

Under the Chapter I heading: "Basin Description" on page IV-28, make the following changes:

This Basin Plan covers the entire area included in the Sacramento and San Joaquin River drainage basins (see maps in pocket* and Figure II-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 northern boundary of Little Panoche Creek basin~~ 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 Firebuagh 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 Millerton Lake in the Sierra Nevada foothills, 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 III-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.

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 Consumnes 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.

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 Consumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno Rivers. Major reservoirs and lakes include Padre, 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.

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.

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 I-1).

Table I-1 Lower San Joaquin River Subareas

Major Subareas		Minor Subareas	
1	LSJR upstream of Salt Slough	1a	Bear Creek
		1b	Fresno-Chowchilla
2	Grassland	--	--
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, including the Harding Drain and natural drainages, drain 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.

Skip to Chapter IV: Implementation

Under the Chapter IV heading: "Recommended for Implementation by the State Water Board" add new sub-heading and items on page IV-28:

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.

Under the Chapter IV heading: "Continuous Planning For Implementation Of Water Quality Control" and subheading "Agricultural Drainage Discharges in the San Joaquin River Basin" on page IV-30, make the following changes:

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. ~~Additional regulatory steps will be considered based on achievements of water quality goals and securing of adequate resources.~~

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 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, t~~T~~he 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 timed discharge releases, real time monitoring and source control.

Under the Chapter IV heading: "Continuous Planning For Implementation Of Water Quality Control" and after item 16 of the subheading "Agricultural Drainage Discharges in the San Joaquin River Basin" on page IV-32, add the following text:

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 salt load limits to achieve compliance at the Airport Way Bridge near Vernalis with salt and boron water quality objectives for the LSJR. The Regional Board establishes a method for determining the maximum allowable salt loading to the LSJR. Load allocations are established for nonpoint sources and waste load allocations are established for point sources.

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.

The salt and boron control program establishes timelines for: 1) developing and adopting salt and boron water quality objectives for the San Joaquin River upstream of the Airport Way Bridges near Vernalis; 2) a control program to achieve these objectives; and 3) developing and adopting a groundwater control program.

Per the amendment to the Basin Plan for control of salt and boron discharges into the lower San Joaquin River (LSJR) basin, approved by the Regional Board in Resolution No. 2004-0108 and incorporated herein, the Regional Board will take the following actions, as necessary and appropriate, to implement this control program:

1. The Regional 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 315µS/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 Board will adopt a waiver of waste discharge requirements for salinity management, or incorporate into an existing agricultural waiver, the conditions required to participate in a Regional Board approved real-time management program. Load allocations for nonpoint source dischargers participating in a Regional Board approved real-time management program are described in table

IV-8. Additional waiver conditions will include use of Regional Board approved methods to measure and report flow and electrical conductivity. Participation in a Regional Board approved real-time management program and attainment of salinity and boron water quality objectives will constitute compliance with this control program.

4. The Regional 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 a waiver of waste discharge requirements for salinity management. Entities operating under WDRs or that will be required to operate under WDRs in order to comply with other programs, may participate in a Regional Board approved real-time management program in lieu of additional WDRs for salinity if they meet the conditions specified in the waiver of WDRs for salinity management, as described in item 3.

5. Fixed monthly base load allocations and the method use to calculate real-time load allocations are specified in Table IV-8.

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. The Regional Board will revise NPDES permits to incorporate TMDL allocations when the permits are renewed or reopened at the discretion of the Regional 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 IV-8.

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 IV-8.

   The Regional Board will attempt to enter into a Management Agency Agreement (MAA) with the U.S. Bureau of Reclamation to address salt imports from the DMC to the LSJR watershed. The MAA shall include 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 Board shall request a report of waste discharge from the U.S. Bureau of Reclamation to address DMC discharges if a MAA is not established within 2 years from the effective date of this control program.

9. The Regional Board will review and update the load allocations and waste load allocations every 6 years from effective date of this control program. 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 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 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 IV-8.

14. It is anticipated that salinity and boron water quality objectives for the San Joaquin River from Mendota Dam to the Airport Way Bridge near Vernalis will be developed and considered for adoption in the second phase of this TMDL, according to time schedule in Table IV-5.

Table IV-5: Schedule for developing water quality objectives for salt and boron in the LSJR from Mendota Dam to the Airport Way Bridge near Vernalis

Milestone	Date
Staff report on criteria needed to protect beneficial uses	October 2004
Staff report and Regional Board workshop on water quality objectives that can reasonably be achieved	June 2005
Draft second phase TMDL with water quality objectives and program of implementation for LSJR from Mendota Dam to Airport Way Bridge near Vernalis	September 2005
Board Hearing for consideration of adoption	June 2006

15. Salinity and boron water quality objectives for the San Joaquin River from Mendota Dam to the Airport Way Bridge near Vernalis will be implemented using the implementation framework described in this 'Control Program for Salt and Boron Discharges into the Lower San Joaquin River' or other implementation mechanisms, as appropriate.

16. 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.

Implementation Priority

17. The Regional 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 IV-6).

    The priorities established in Table IV-6 will be reviewed every six years from the effective date of this control program.

Table IV-6: 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

Time Schedules for Implementation

18. The Regional Board will incorporate base load allocations into waste discharge requirements and real-time load allocations into conditions of waiver of waste discharge requirements within two years of the effective date of this control program. 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.

19. Existing NPDES point source dischargers are low priority and subject to the compliance schedules for low priority discharges in Table IV-6. New point source discharges that begin discharging after the date of the adoption of this control program must meet waste load allocations upon the commencement of the discharge.

Table IV-7: 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 of this control program

Table IV-8 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 must participate in a Regional 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 thousand tons per month.

Loading Capacity (LC) in thousand 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 thousand 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

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 thousand tons is calculated using the following equation:

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

Table IV-8 Summary of Allocations and Credits (continued)

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 thousand 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 Vernalis in µS/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.

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 a 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 acre-feet per month * 230 µS/cm * 0.8293

Table IV-8 Summary of Allocations and Credits (continued)

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

The following method is used to calculate real-time DMC supply water credits in thousand 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

Table IV-8 Summary of Allocations and Credits (continued)

The following method is used to calculate Real-time LSJR supply water credits in thousand 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

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 thousand 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 Resources Control Board's *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*, May 1995) 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 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 Board as part of the waiver conditions required to participate in a Regional 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 Board as part of the waiver conditions required to participate in a Regional Board approved real-time management program

Under the Chapter IV heading: "Estimated Costs of Agricultural Water Quality Control Programs and Potential Sources of Financing" add new sub-heading and items on page IV-38:

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.

In Appendix: add a new Appendix 41 titled "San Joaquin Area Subarea Descriptions"

The proposed language follows on the next page

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.

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.