

Attachment A-9

Guidance to Implement Secondary Maximum Contaminant Levels

1.0 Problem Statement

Secondary Maximum Contaminant Levels (SMCL) are secondary drinking water standards. The California Health and Safety Code defines secondary drinking water standards as:

“...standards that specify maximum contaminant levels that, in the judgment of the department, are necessary to protect the public welfare. Secondary drinking water standards may apply to any contaminant in drinking water that may adversely affect the odor or appearance of the water and may cause a substantial number of persons served by the public water system to discontinue its use, or that may otherwise adversely affect the public welfare. Regulations establishing secondary drinking water standards may vary according to geographic and other circumstances and may apply to any contaminant in drinking water that adversely affects the taste, odor, or appearance of the water when the standards are necessary to ensure a supply of pure, wholesome, and potable water.”¹

SMCLs established by Title 22 of the California Code of Regulations (22 CCR)² (the drinking water regulations) are incorporated by reference in the Chemical Constituent sections in the Water Quality Objectives Chapter of the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (SRSJR Basin Plan) and the Water Quality Control Plan for the Tulare Lake Basin (TLB Basin Plan) (collectively referred to hereafter as “Central Valley Basin Plans” or “Basin Plans”). The only portions of 22 CCR related to SMCLs and incorporated into the Basin Plans are Tables 64449-A and 64449-B. Table 64449-B includes “Recommended”, “Upper”, and “Short Term” concentrations for Total Dissolved Solids (TDS) or Specific Conductance (or Electrical Conductivity [EC]), chloride and sulfate. While the SMCLs were included in the Basin Plans for the purpose of protecting drinking water use, neither the text providing context for the tables nor guidance for utilizing the applicable “Recommended”, “Upper”, or “Short Term” concentrations were explicitly included when the 22 CCR tables were adopted as water quality objectives. The lack of guidance on the tiered numeric values in Table 64449-B has led to inconsistent application in waste discharge permits.

Primary MCLs are set at levels to protect public health. In California, the secondary drinking water standards are enforceable and community water systems are required to assess compliance with

¹ California Health and Safety Code, Division 104 Environmental Health, Part 12 Drinking Water, Chapter 4 California Safe Drinking Water Act, Article 1, Section 116275(d)

² California Code of Regulations Title 22 – Social Security; Division 4 – Environmental Health; Chapter 15 – Domestic Water Quality and Monitoring Regulations, Article 16 Secondary Drinking Water Standards.

SMCLs by monitoring their groundwater sources or monitoring their distribution system entry points following source treatment.³

Groundwater undergoes some natural filtration as that water moves through the vadose zone. EPA's drinking water regulations require nearly all surface water sources to be filtered.⁴ Therefore, in most cases, the water used to demonstrate compliance with the SMCLs has been filtered before the representative samples are collected. There is no need for the community water systems to apply any additional filtration to the sample before it is analyzed.

Compliance with the metal constituents in Table 64449-A is evaluated using the Total Recoverable Metal method. This method requires the sample to be acidified before it is analyzed. Acidification will release any trace metal present in the suspended solids so that it can be detected during the analysis. Drinking water is either naturally low in turbidity or has been filtered to remove most of the total suspended solids. Consequently, acidifying the samples, prior to analysis, does not have much impact on the reported concentration of Total Recoverable Metals or interfere with the ability of community water systems to comply with SMCLs.

Wastewater samples collected at the point-of-discharge generally have a much higher concentration of Total Suspended Solids (TSS) and a higher concentration of trace metals that are molecularly bound to these silt particles. Acidification will break that molecular bond and transform all metal present in the sample into a form that is easier to analyze and detect.

For discharges to groundwater, wastewater samples collected at the point-of-discharge have not had an opportunity to undergo the process of natural filtration that occurs as such discharges percolate through the vadose zone before reaching the aquifer. Filtering such samples, prior to acidifying and analyzing the sample, is intended to mimic the natural filtration process that is expected to occur before these discharges to groundwater might be pumped from a downgradient well by a community water system.

For discharges to surface water, wastewater samples should be subjected to the same filtration requirements that community water systems are required to meet before such samples are acidified and analyzed to determine compliance with the SMCLs for trace metals. Requiring dischargers to use an unfiltered sample improperly assumes that the wastewater will be used as a drinking water supply with no additional natural or man-made treatment between the point-of-discharge and the entry point to the municipal water distribution system. As both a practical and legal matter, that is never the case.

The purpose of this recommended SNMP Policy is to clarify in the Basin Plans how SMCLs are to be interpreted and used as water quality objectives in Central Valley Regional Water Quality Control Board (Central Valley Water Board) actions that implement the water quality objectives, such as when the Board is developing Waste Discharge Requirements (WDRs)⁵ or Conditional Waivers⁶ ("Waivers")

³ 22 CCR §64449(b)

⁴ US EPA. *National Primary Drinking Water Regulations: Long Term 2 Enhanced Surface Water Treatment Rule*. 71 FR 654. January 5, 2006. Exceptions are sometimes granted for community water systems that rely that rely protected watersheds (ex. Hetch-Hetchy reservoir).

⁵ Water Code, §13263; this includes National Pollutant Discharge Elimination System (NPDES) permits

⁶ Water Code, §13269

that authorize discharges to surface water or groundwater. In general, there are two types of SMCLs addressed in this recommended policy: Those associated with salinity (e.g., TDS or EC) in Table 64449-B, and those associated with other types of constituents (e.g., organics, metals, and other general constituents) in Table 64449-A. The salinity based SMCLs are expressed in ranges and the proposed policy describes how the values in the various ranges in Table 64449-B should be applied to waters of the state when used as water quality objectives. The proposed policy also describes how to evaluate compliance with the metal parameters identified in Table 64449-A when these SMCLs are being applied in WDRs.

1.1 Existing Regulatory Requirements

Chemical Constituents Water Quality Objective

The Central Valley Basin Plans state the following with regards to chemical constituents and the protection of surface and ground waters designated with a Municipal and Domestic Supply (MUN) beneficial use:⁷

At a minimum, water designated...MUN shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect...The Regional Water Board acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations on the consumption of surface waters under specific circumstances. To protect all beneficial uses the Regional Water Board may apply limits more stringent than MCLs.⁸

The above referenced SMCL tables, Tables 64449-A and 64449-B from 22 CCR are provided below. Table 64449-A and 64449-B from 22 CCR are provided below. These tables list the chemical constituents along with their respective maximum contaminant levels for Table 64449-A or “Recommended”, “Upper”, and “Short Term” level ranges for Table 64449-B.

⁷ (a) Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (SRSJR Basin Plan). Fourth Edition. Central Valley Water Quality Control Board. Revised October 2011. See p. III-3.00 for inland waters and p. III-10.00 for groundwater; (b) Water Quality Control Plan for the Tulare Lake Basin (TLB Basin Plan). Second Edition. Central Valley Water Quality Control Board. Revised October 2011. See p. III-3 for inland waters and p. III-7 for groundwater.

⁸ The last sentence regarding consumption of surface waters is found only in the Chemical Constituent water quality objectives section for inland waters.

Table 64449-A - Secondary Maximum Contaminant Levels; “Consumer Acceptance Contaminant Levels”

Constituents	Maximum Contaminant Levels/Units
Aluminum	0.2 mg/L
Color	15 Units
Copper	1.0 mg/L
Foaming Agents (MBAS)	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Methyl- <i>tert</i> -butyl ether (MTBE)	0.005 mg/L
Odor – Threshold	3 Units
Silver	0.1 mg/L
Thiobencarb	0.001 mg/L
Turbidity	5 Units
Zinc	5.0 mg/L

Table 64449-B - Secondary Maximum Contaminant Levels; “Consumer Acceptance Contaminant Level Ranges”

Constituents, Units	Recommended	Upper	Short Term
Total Dissolved Solids (TDS), mg/L, or Specific Conductance, $\mu\text{S}/\text{cm}^{\circ}$	500	1,000	1,500
	900	1,600	2,200
Chloride, mg/L	250	500	600
Sulfate, mg/L	250	500	600

While the 22 CCR §64449 tables are referenced in the Central Valley Basin Plans, all of the associated text, which provides context for implementing the tabular values, is not currently included or referenced in the Basin Plans. Attachment A to this policy provides the full text of §64449.

Additionally, for surface waters, text in the Basin Plans as provided above references the applicability of state and federal drinking water regulations to water served for human consumption, but provides no guidance on its implementation.

Related Water Quality Objectives

In addition to the TDS and EC values included in Table 64449-B,¹⁰ additional potentially relevant water body-specific salinity-related water quality objectives include:

- SRSJR Basin Plan establishes water body-specific objectives for EC and TDS in Table III-3. Per the SRSJR Basin Plan, where any conflict exists between the Table III-3 objectives and chemical

⁹ For the purposes of this policy, Specific Conductance is expressed as Electrical Conductivity.

¹⁰ Values for SMCLs for salinity may be expressed as TDS or EC.

constituents water quality objectives, as referenced in 22 CCR Table 64449-B, the more stringent objectives shall apply.¹¹

- TLB Basin Plan establishes water body-specific objectives for EC in Tables III-2 and III-3.¹² All of these water body-specific objectives are lower than the SMCLs referenced in Table 64449-B.¹³
- The Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary contains water quality objectives for chloride and EC to protect the MUN and agricultural beneficial uses in the Delta.¹⁴

The proposed recommendations in this policy would not affect the applicability of the above water body-specific objectives, and the SNMP does not propose to make any recommendations otherwise that would affect the water body-specific objectives for TDS or EC as established in the Basin Plans.

Other Relevant Regulatory Requirements

Natural Background Concentrations

Consideration of the natural background concentration of a constituent relative to a water quality objective is addressed in each Basin Plan as follows:

- The TLB Basin Plan states that, *“The objectives of this plan do not require improvement over naturally occurring background concentrations.”*¹⁵ This finding applies to both inland surface water and groundwater quality objectives.¹⁶
- The SRSJR Basin Plan states that, *“These objectives do not require improvement over naturally occurring background concentrations.”*¹⁷
- Both the SRSJR and TLB Basin Plans include the following text within Chapter 4 of the Basin Plans (Policy for Application of Water Quality Objectives): *However, the water quality objectives do not require improvement over naturally occurring background concentrations. In cases where the natural background concentration of a particular constituent exceeds an applicable water quality objective, the natural background concentration will be considered to comply with the objective.*¹⁸

Per the above Basin Plan statements, natural background should be considered when establishing WDRs. Consideration of natural background concentrations of TDS or EC is important in many areas of the Central Valley. The TLB Basin Plan also includes specific salinity implementation provisions in Chapter 4 governing consumptive use and controlled degradation. In particular:

¹¹ SRSJR Basin Plan. See p. III-6.02 and Table III-3 on p. III-7.00

¹² TLB Basin Plan. pp. III-5 and III-6

¹³ Table III-3 in the SRSJR Basin Plan and Tables III-2 and III-3 in the TLB Basin Plan include explanatory text or table notes that provide additional information regarding application of water body-specific objectives. These notations are critical for making a determination of compliance with a water body-specific objective.

¹⁴ Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, State Water Board, December 13, 2006.

¹⁵ TLB Basin Plan, p. III-2

¹⁶ This Basin Plan language is superseded by the State Implementation Plan, which specifies how to derive effluent limitations for NPDES dischargers for priority pollutants in surface waters. Also, for surface waters the EPA only allows consideration of natural background for aquatic life constituents and not human health constituents.

¹⁷ SRSJR Basin Plan, p. III-9.00

¹⁸ SRSJR Basin Plan, p. IV-17.00; TLB Basin Plan, p. IV-21

- Discharges to Navigable Waters “...shall not exceed the quality of the source water plus 500 micromhos per centimeter or 1,000 micromhos per centimeter, whichever is more stringent...”¹⁹
- For Discharges to Land “...maximum EC shall not exceed the EC of the source water plus 500 micromhos/cm.”²⁰
- Water quality objectives for groundwater salinity are based on a maximum average annual increase measured as electrical conductivity, recognizing that, “no proven means exist at present that will allow ongoing human activity in the Basin and maintain ground water salinity at current levels in the Basin.”²¹

State Water Quality Control Board Policies

Statement of Policy with Respect to Maintaining High Quality of Waters in California (State Antidegradation Policy, Resolution 68-16)

The State Water Resources Control Board’s (State Water Board) Antidegradation Policy applies to both surface waters and groundwaters.²² This policy generally prohibits the Central Valley Water Board from authorizing discharges that will degrade “high quality waters,” unless the Central Valley Water Board first finds that that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies. The discharge will be required to meet waste discharge requirements which result in the best practicable treatment or control of the discharge necessary to assure that a pollution or nuisance will not occur and (1) the highest water quality consistent with the maximum benefit to people of the state will be maintained. High quality waters are those waters that are generally better than applicable water quality objectives. A determination of high quality is made on a constituent-by-constituent basis.

*Sources of Drinking Water Policy (Resolution 88-63)*²³

The Sources of Drinking Water Policy established a policy whereby all waters are considered suitable or potentially suitable to support the MUN beneficial use, with certain exceptions.²⁴ The Central Valley Basin Plans implement this policy by generally assigning an existing or potential MUN beneficial use to all surface waters and groundwaters in the Central Valley unless those waters have already been identified as not supporting the MUN use in the Basin Plans.²⁵ Under existing regulations, exceptions to the MUN beneficial use can only be made in the Basin Plans themselves based on criteria in the policy. One of the exception criteria is that TDS exceeds 3,000 mg/L (5,000 µS/cm, EC) in the water body and it is not reasonably expected by a Regional Board that the water body would be used as a source of water to be supplied to the public by a community water system. These TDS or EC exception

¹⁹ TLB Basin Plan, p. IV-10. (describing “effluent limits” for point source discharges from wastewater treatment facilities)

²⁰ TLB Basin Plan, p. IV-11. (describing “effluent limits: for point source discharges from wastewater treatment facilities)

²¹ TLB Basin Plan, p. IV-20

²² State Water Board Resolution 68-16. Statement of Policy with Respect to Maintaining High Quality of Waters in California (Antidegradation Policy). 1968.

²³ State Water Board Resolution No. 88-63. Sources of Drinking Water Policy, May 19, 1988, as revised by Resolution No. 2006-0008.

²⁴ Exceptions are described on pg. II-3.0 of the SRSJR Basin Plan and pg. II-3 of the TLBP.

²⁵ The Central Valley Regional Board amended the Tulare Lake Basin Plan to include most of the substantive provisions of the statewide Sources of Drinking Water Policy as Resolution No. 98-098 in May of 1989.

criteria are much higher than the range of acceptable SMCLs for TDS or EC in Table 64449-B (“Short Term” acceptable contaminant level of 1,500 mg/L TDS or 2,200 μ S/cm EC), and would be unacceptable for drinking water without treatment.

Human Right to Water as a Core Value and Directing Its Implementation in Water Board Programs and Activities (Resolution 2016-0010).

In 2012, the state legislature approved Assembly Bill 685 which amended the California Water Code to declare that:

“...every human being has the right to safe, clean, affordable and accessible water adequate for human consumption, cooking and sanitary purposes. All relevant state agencies, including the Department of Water Resources, the State Water Resources Control Board, and the State Department of Public Health, shall consider this state policy when revising, adopting or establishing policies, regulations, and grant criteria when these policies, regulations and criteria are pertinent to the uses of water described in this section.”²⁶

To ensure statewide implementation and consideration of the Human Right to Water, the State Water Board in February of 2016 adopted Resolution 2016-0010.

The Central Valley Water Board recently followed suit and adopted Resolution 2016-0018,²⁷ similarly directing implementation of the Human Right to Water in its programs and activities.

1.2 Challenges with Application of Existing Basin Plan Language

In the mid-1990s, the Central Valley Water Board modified its Chemical Constituents objective language in the Basin Plan, which incorporates water quality objectives for salinity, either as TDS or EC (Specific Conductance in Table 64449-B), to protect the MUN beneficial use. As described above, this new objective was established by reference to the full range of SMCL drinking water standards identified in 22 CCR Table 64449-B. None of the other associated text from §64449, i.e., §64449(d) or (e), explaining how the SMCLs were supposed to be implemented, was incorporated with the range of values shown in the tables. For example, 22 CCR Table 64449-B indicates three “Consumer Acceptance Contaminant Level Ranges”. For TDS, the “Recommended” value is 500 mg/L, but per the associated text found in 22 CCR §64449(d)(2), concentrations ranging up to an “Upper” value of 1,000 mg/L are also “acceptable,” if it is neither reasonable nor feasible to provide more suitable waters.²⁸ However, this unintentional omission was considered a non-substantive drafting error and, from 1994 to 2009, the Regional Board authorized WDRs using the entire range of acceptable TDS concentrations in a manner consistent with the full text of §64449.

In September 2007, the Central Valley Water Board issued a WDR and a Master Reclamation Permit to the City of Lodi.²⁹ Subsequently, in October 2007, the California Sportfishing Protection Alliance (CALSPA) filed a petition with the State Water Board seeking review of the aforementioned permit.

²⁶ Assembly Bill No. 685 added §106.3 to the California Water Code. Signed by Gov. Brown on September 25, 2012.

²⁷ Central Valley Water Board Resolution, adopted April 21, 2016

²⁸ 22 CCR §64449(d)(2)

²⁹ Central Valley Water Board Order No. R5-2007-0113; NPDES No. CA0079243.

In June 2009, the Central Valley Water Board submitted written comments to the State Water Board opposing CALSPA's claim that only the "Recommended" values at the lower end of the range of SMCLs for drinking water³⁰ can be used as water quality objectives when developing WDRs or effluent limits. The Central Valley Water Board noted that such an approach would be more stringent than, and inconsistent with, the manner in which the California Department of Health Services (now the Division of Drinking Water [DDW]) implements these same standards for treated drinking water systems. The Central Valley Water Board also stated that there should be some exception made when the natural background concentration of one or more constituents in the receiving water exceeds the SMCL.

In July 2009, the State Water Board adopted Order WQ 2009-0005,³¹ which remanded in part the Lodi permit, and directed the Central Valley Water Board to consider further if releases of wastewater from the unlined storage ponds have caused groundwater to exceed applicable Basin Plan objectives for nitrate³² and electrical conductivity.³³ In the adopted order, the State Water Board noted that the Chemical Constituents narrative water quality objective in the SRSJR Basin Plan³⁴ incorporates only the SMCL numeric values and does not specifically reference the monitoring, reporting, waiver or other provisions that provide context for application of the values in those tables (e.g., see Attachment A to this policy, in particular the provisions contained in §64449(d) and (e)). It should be noted that the State Water Board was not opposed to using the entire range of SMCL values. But, in order to do so, the State Board determined that the Basin Plan must provide more explicit authority to the Regional Board and describe how the range of values should be applied.

The State Water Board also found that the "Short Term" value of 2,200 $\mu\text{S}/\text{cm}$ EC (1,500 mg/L TDS) is not appropriate (as an applicable water quality objective) because it is "intended to apply only on a temporary basis pending construction of water treatment facilities or the development of new water sources".³⁵

While the focus of the State Water Board decision was on the SRSJR Basin Plan, the TLB Basin Plan also provides limited additional context for application of the relevant 22 CCR §64449 tables.

Consequently, neither of the Central Valley Basin Plans provides much guidance or policy on implementation when the Central Valley Water Board is developing WDRs to implement these particular objectives. Without this information, implementation of the water quality objectives for chemical constituents in Table 64449-B as related to SMCLs creates significant challenges for the following reasons:

- In the State Water Board's Rancho Caballero decision, the State Water Board declared that when receiving water quality already exceeds a particular water quality objective, and there is no assimilative capacity available, discharge limits must be set to a concentration at or below the

³⁰ See "Recommended" column in Table 64449-B from 22 CCR.

³¹ Order WQ 2009-0005 was later amended by Order WQ 2012-0001. The amendments adopted to Order WQ 2009-0005 were unrelated to the salinity provisions discussed herein. However, to ensure proper citations to the relevant order, we have provided citations to Order WQ 2009-0005, as amended by Order WQ 2012-0001.

³² Note that nitrate has a primary maximum contaminant level (22 CCR §64431, Table 64431-A) and is not affected by this policy.

³³ State Water Board Order WQ 2012-0001, p. 23

³⁴ SRSJR Basin Plan, see Pg. III-3.00 for inland surface waters and Pg. III-10.00 for groundwater

³⁵ State Water Board Order WQ 2012-0001, p. 15

objective contained in the Water Quality Control Plan.³⁶ Therefore, restricting the TDS objective to only the "Recommended" SMCL value in Table 64449-B, severely limits the amount of assimilative capacity available and obligates the Regional Board to impose WDRs that may be more stringent than necessary to protect the MUN use. For example, where TDS (or EC) in the receiving water exceeds 500 mg/L TDS (900 μ S/cm EC), the Central Valley Water Board may not allow discharges to those receiving waters to exceed 500 mg/L (or 900 EC) even if the TDS concentration in the discharge is actually less than the TDS concentration in the receiving water and would improve receiving water quality.³⁷ Restoring the Regional Boards authority to consider the entire acceptable range of salinity concentrations shown in Table 64449-B would provide greater regulatory flexibility to develop WDRs most appropriate for the site-specific conditions.

- The CV-SALTS Initial Conceptual Model (ICM) project³⁸ provided a preliminary estimate of the median TDS concentration in the upper (shallower) portion of the 22 Central Valley Initial Analysis Zones (IAZs) based on water quality data recorded for the period 2003 to 2012 (see Section 3.2 of the SNMP).³⁹ The ICM work was supplemented by an updated groundwater analysis⁴⁰ of TDS in IAZs and California Department of Water Resources designated groundwater basins/subbasins in the Central Valley Region.⁴¹ This study summarized TDS water quality for the upper zone, lower zone and production zone⁴² of each groundwater basin/subbasin in the valley floor and the basin as a whole for those basins outside the valley floor. See Section 3.3 for a summary of findings, in particular groundwater basins/subbasins that exceed 500 mg/L TDS (900 μ S/cm EC) or 1,000 mg/L TDS (1,600 μ S/cm EC) thresholds. In general, using 500 mg/L as the threshold, 14 DWR Basins lack assimilative capacity for TDS in the production zone. If 1000 mg/L is used as the threshold, then only 7 DWR Basins lack assimilative capacity for TDS in the Production Zone, respectively.
- CV-SALTS completed a water quality analysis of existing surface water quality conditions to support the Antidegradation Analysis completed for the SNMP. Water quality analyses were conducted on available data from California Environmental Data Exchange Network and United States Geological Survey databases. Following is a summary of existing water quality conditions for various SMCL-related constituents (see Section 4.2.2 in Attachment C-3):
 - *Electrical Conductivity* - EC observations are well below the "Recommended" EC level of 900 μ S/cm EC in the Sacramento River and major tributaries; the highest values were observed in the Colusa Drain above Knights Landing where the median is less than 900 μ S/cm EC, but individual observations may exceed this value. In the San Joaquin River basin median EC

³⁶ State Water Board Order 73-4, p. 7

³⁷ Note that in groundwater the objective applies at the groundwater table; changes to water quality may occur between the surface and first encountered groundwater, e.g., as a result of soil interactions.

³⁸ *Initial Conceptual Model Final Report: Task 7 and 8 - Salt and Nitrate Analysis for the Central Valley Floor and a Focused Analysis of Modesto and Kings Subregions*. Larry Walker Associates et al. Report prepared for CV-SALTS. December 2013.

³⁹ See previous footnote reference; Table 7-7 also shows how the estimate of available assimilative capacity would likely change if the water quality objective is set to 700 mg/L or 1,000 mg/L.

⁴⁰ Luhdorff & Scalmanini Consulting Engineers and Larry Walker Associates. 2016. *Region 5: Updated Groundwater Quality Analysis and High Resolution Mapping for Central Valley Salt and Nitrate Management Plan*. Report prepared for CV-SALTS. June 2016.

⁴¹ California Department of Water Resources. 2003. *California's Groundwater*. DWR Bulletin 118. California Department of Water Resources. <http://www.water.ca.gov/groundwater/bulletin118/index.cfm>.

⁴² See Section 3.3.1.1 of the SNMP

values are at or above the “Recommended” 900 $\mu\text{S}/\text{cm}$ EC threshold level at some mainstem river and western tributary locations. At one location, Mud Slough near Gustine, the median value exceeds 2,000 $\mu\text{S}/\text{cm}$ EC. At the few available monitoring locations in the Tulare Lake region, median EC values are well below the 900 $\mu\text{S}/\text{cm}$ EC threshold at all but one site (Main Drain Canal near Hwy 46) where the median EC value is at the 900 $\mu\text{S}/\text{cm}$ EC threshold. Finally, in the Delta Region, median EC values are well below the 900 $\mu\text{S}/\text{cm}$ EC threshold.

- *Other Salinity-Related Constituents* – Median total chloride and total sulfate concentrations are typically well below the “Recommended” threshold level of 250 mg/L, e.g., the highest median value for all hydrologic regions was 32.2 mg/L for chloride in the Tulare Lake region and 6.6 mg/L for sulfate in the Sacramento River region.
- *Aluminum* – Water quality data for total aluminum were only available from the Sacramento River basin; the median concentration of all data is 130.7 $\mu\text{g}/\text{L}$, below the SMCL of 200 $\mu\text{g}/\text{L}$. Median concentrations for dissolved aluminum range from 9.5 $\mu\text{g}/\text{L}$ in the San Joaquin River basin to 12.9 $\mu\text{g}/\text{L}$ in the Sacramento River basin.
- *Manganese* – Median concentrations for total manganese range from 14.2 $\mu\text{g}/\text{L}$ (Tulare Lake basin) to 32.5 $\mu\text{g}/\text{L}$ (Sacramento River basin). These values are well below the SMCL of 50 $\mu\text{g}/\text{L}$. Median concentrations for dissolved manganese range from 1.7 $\mu\text{g}/\text{L}$ in the Tulare Lake basin to 4.3 $\mu\text{g}/\text{L}$ in the Sacramento River basin.
- *Iron* - Median concentrations for total iron range from 145 $\mu\text{g}/\text{L}$ (Tulare Lake basin) to 415.5 and 572 $\mu\text{g}/\text{L}$ in the San Joaquin and Sacramento River basins, respectively. The values for the San Joaquin and Sacramento River basins are above the SMCL of 300 $\mu\text{g}/\text{L}$. Median concentrations for dissolved iron range from 18.6 $\mu\text{g}/\text{L}$ in the Tulare Lake basin to 55.7 $\mu\text{g}/\text{L}$ in the Sacramento River basin.
- *Copper* - Median concentrations for total copper range from 3.4 $\mu\text{g}/\text{L}$ (Sacramento River basin) to 5.3 $\mu\text{g}/\text{L}$ (Tulare Lake basin). These values are well below the SMCL of 1,000 $\mu\text{g}/\text{L}$. Median concentrations for dissolved copper range from 1.5 $\mu\text{g}/\text{L}$ in the Tulare Lake basin to 2.1 $\mu\text{g}/\text{L}$ in the Sacramento River basin.
- *Silver* - Median concentrations for total silver in the Sacramento and San Joaquin River basins are around 0.004 $\mu\text{g}/\text{L}$ well below the SMCL of 100 $\mu\text{g}/\text{L}$. Median concentrations for dissolved silver are around 0.001 $\mu\text{g}/\text{L}$ in these same basins.
- *Zinc* - Median concentrations for total zinc range from 4.9 $\mu\text{g}/\text{L}$ (Sacramento River basin) to 7.1 $\mu\text{g}/\text{L}$ (Tulare Lake basin). These values are well below the SMCL of 5,000 $\mu\text{g}/\text{L}$. Median concentrations for dissolved zinc range from 1.0 $\mu\text{g}/\text{L}$ in the San Joaquin River basin to 2.1 $\mu\text{g}/\text{L}$ in the Sacramento River basin.
- *Turbidity* – Median concentrations for turbidity range from 3 Nephelometric Turbidity Units (NTU) (Tulare Lake basin) to 5.6 and 13.5 NTU in the Sacramento and San Joaquin River basins, respectively. The observed values for the San Joaquin and Sacramento River basins are above the SMCL of 5 NTU.
- *Other SMCL-related Constituents* – Concentrations of Thiobencarb are well below the SMCL of 1 $\mu\text{g}/\text{L}$ in all basins; similarly foaming agents are well below the SMCL of 500 $\mu\text{g}/\text{L}$.

- Relying exclusively on the “Recommended” concentration of 500 mg/L TDS (900 $\mu\text{S}/\text{cm}$ EC) (Table 64449-B) at the point of compliance for the purpose of establishing WDRs makes it nearly impossible to recharge groundwater basins with recycled water unless there is significant assimilative capacity available in the aquifer because the average TDS concentration in most high quality recycled water is >500 mg/L (900 $\mu\text{S}/\text{cm}$ EC). When there is no assimilative capacity available, prior precedential orders by the State Water Board (74-4 & 81-5) require effluent limits no higher than the applicable water quality objective. This complicates and inhibits statewide efforts to promote the use of recycled water for landscape irrigation and to recharge groundwater storage – water management strategies that are particularly important during times of regional or statewide drought.
- The current regulatory approach that relies solely on the “Recommended” TDS concentration of 500 mg/L (900 $\mu\text{S}/\text{cm}$ EC) (22 CCR Table 64449-B) for the purpose of establishing WDRs also poses significant challenges for agricultural discharges. Assuming a relatively common leaching fraction of 15%, agricultural operators must start with a TDS concentration no greater than 80 mg/L in the irrigation supply water in order to ensure percolation below the root zone does not exceed 500 mg/L (900 $\mu\text{S}/\text{cm}$ EC) when it reaches the groundwater table. Similarly, to avoid discharging TDS at concentrations greater than 1,000 mg/L (1,600 $\mu\text{S}/\text{cm}$ EC) at the groundwater table, TDS in the irrigation supply water must be less than 165 mg/L.⁴³
- Similarly, applying the “Recommended” TDS value of 500 mg/L as an annual average value immediately below the root zone at the groundwater table discourages the use of high efficiency drip irrigation systems with very low leaching fractions. This unintended outcome conflicts with statewide efforts to promote greater water conservation through more efficient irrigation practices.

Finally, it is important to consider that the State Water Board has established a policy that all surface and ground waters of the state should be presumed to support an existing or potential MUN use unless the water body meets one of the exception criteria established in the Sources of Drinking Water Policy.⁴⁴ The exception criterion relevant to this policy is criterion 1(a), which states that a basis for not designating or removing the MUN use from a surface water or groundwater is the TDS exceeds 3,000 mg/L (or 5,000 $\mu\text{S}/\text{cm}$, EC) and the water body is not reasonably expected by a Regional Board to supply a public water system. These TDS and EC values exceed even the “Short Term” “Consumer Acceptance Contaminant Level Ranges” (1,500 mg/L TDS or 2,200 $\mu\text{S}/\text{cm}$ EC) established in Table 64449-B, yet it is State policy that waters with TDS or EC concentrations up to these high values may still be considered suitable to supply public water system and should be protected as such.

In addition to the need to acknowledge the original context for appropriate application of the Table 64449-B values, this recommended policy is also intended to provide clarity to the application of the chemical constituent water quality objectives in the following areas:

⁴³ These are provided as examples only as the actual concentration of TDS or EC at the point of compliance at the groundwater table is influenced many factors, e.g., the type of irrigation system used and precipitation.

⁴⁴ State Water Board Resolution No. 88-63. Sources of Drinking Water Policy, May 19, 1988, as revised by Resolution No. 2006-0008. This policy was subsequently adopted directly into both Central Valley Basin Plans.

- *Measuring Compliance with SMCLs* - The Basin Plans do not provide guidelines with regard to the appropriate sampling method for evaluating WDR compliance with the SMCLs in Tables 64449-A and 64449-B. Historically, drinking water suppliers and wastewater dischargers have complied with SMCLs using the total recoverable metals in a sample that undergoes no additional filtration after it has been collected. This approach is inconsistent with federal law that requires most community water systems to filter surface water prior to delivery.⁴⁵ Per 22 CCR and federal regulations,⁴⁶ SMCLs are intended to apply to finished water delivered to a community water system after treatment, if treatment is required. The SMCLs are primarily intended to protect public welfare by addressing qualities such as odor, taste, and appearance. SMCLs also minimize risk of corrosion of pipes, fixtures, valves, other plumbing materials, and household appliances; they are not intended to address human health concerns.⁴⁷ For wastewater dischargers to continue to rely on unfiltered samples to assess compliance with SMCLs in the receiving water may overestimate the potential aesthetic impact on the actual quality of downstream drinking water delivered to consumers after treatment. In addition, for discharges to groundwater, filtration through natural soils or man-made systems significantly reduces the concentration of total suspended solids, including aesthetically objectionable minerals such as iron, manganese, and aluminum. Evaluating SMCL compliance using an unfiltered sample collected near the point of discharge fails to take into consideration the natural soil filtration that will occur as water percolates through the vadose zone. Analyzing a filtered sample, collected near the discharge, more accurately characterizes groundwater quality as it will likely appear when it is later extracted for public water supply.
- *Consideration of Natural Background* - Some areas in the Central Valley have natural background TDS or EC concentrations that exceed the “Recommended” or higher values in Table 64449-B. While both the SRSJB and TLB Basin Plans contain provisions for considering natural background concentrations when applying water quality objectives in general, the means for implementing these provisions in WDRs with regards to SMCLs has not always been clear notwithstanding the Water Code’s requirement in §13242 to have implementation plans for all water quality objectives.
- *“Specific Treatment Requirements” - Language for Inland Surface Waters* - As noted above, the existing Chemical Constituents water quality objective for inland surface waters includes the following statement: “*The Regional Water Board acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations on the consumption of surface waters under specific circumstances.*”⁴⁸ While the Basin Plans acknowledge that specific treatment requirements are imposed by state and federal drinking water regulations, the Basin Plans provide no implementation provisions for this text.
- *Compliance Assessment Time Period* – Per 22 CCR §64449(b)(1), compliance with SMCLs in Tables 64449-A and 64449-B for drinking water systems varies depending on the source, with groundwater sources based on a single triennial sample and surface water sources based on a

⁴⁶ Federal Register 44, July 19, 1979, page 42199

⁴⁷ <https://www.epa.gov/dwstandardsregulations/secondary-drinking-water-standards-guidance-nuisance-chemicals>

⁴⁸ SRSJR Basin Plan, page III-3.00, and TLB Basin Plan, page III-3

single annual sample. If values exceed the SMCLs for constituents in Table 6449-A, then water systems must initiate quarterly monitoring under 22 CCR §64449 (c)(1), which states that compliance with Table 64449-A constituents shall be determined based on a running annual average of four quarterly samples. 22 CCR §64449 does not provide a compliance assessment time period for Table 64449-B constituents. The Basins Plans currently do not provide guidelines for an appropriate compliance assessment time period for the SMCLs incorporated by reference from 22 CCR.

2.0 New Regulatory Approach to Implement SMCLs as Chemical Constituents

The proposed changes apply only for the purpose of interpreting and implementing the SMCLs. Some SMCL constituents (e.g., priority pollutants) have separate water quality objectives intended to protect aquatic life. The SNMP is not proposing to change these other objectives or the manner in which compliance with these objectives is currently assessed.

The unintentional omission of contextual information inadvertently and unnecessarily constrained the Central Valley Water Board's discretion to develop appropriate WDRs based on the full range of values enumerated in Table 64449-B. Construing the "Recommended" levels specified in Table 64449-B as "not-to-exceed" values in WDRs and NPDES permit limits is not consistent with the full text of §64449(d), which states:

"(d) For the constituents shown on Table 64449-B, no fixed consumer acceptance contaminant level has been established.

(1) Constituent concentrations lower than the Recommended contaminant level are desirable for a higher degree of consumer acceptance.

(2) Constituent concentrations ranging to the Upper contaminant level are acceptable if it is neither reasonable nor feasible to provide more suitable waters.

(3) Constituent concentrations ranging to the Short Term contaminant level are acceptable only for existing community water systems on a temporary basis pending construction of treatment facilities or development of acceptable new water sources."

Thus, the numeric values were not intended as fixed maximums even for treated drinking water served directly to consumers. Given the importance of the contextual information contained in 22 CCR §64449(d), the Central Valley Water Board should consider the full range of "Consumer Acceptance Contaminant Levels" described in Table 64449-B when establishing reasonable and appropriate WDRs to protect existing or potential water supplies that may be affected by the discharge.⁴⁹ This would include use of the "Short Term" level on a temporary basis in those situations where construction of new facilities or connection to new water sources is pending as specified in 22 CCR §64449(d)(3). Accordingly, the Central Valley Region Basin Plans should be amended to incorporate implementation provisions recognizing the contextual information in 22 CCR, Division 4, Chapter 15, Article 16, especially §64449 and §64449.2 (see Attachment A), as appropriate to support this policy. Additional findings that support these potential Basin Plan amendments include:

⁴⁹ It should be noted that reference to "full range" includes potential use of "Short Term" levels, but per §64449(d)(3), these levels are acceptable only on a temporary basis pending other actions to establish an acceptable new water source.

- 22 CCR §64449(a) specifies that: “The secondary MCLs shown in Tables 64449-A and 64449-B shall not be exceeded in the water supplied to the public by community water systems.” Compliance is evaluated by requiring such systems to monitor their “groundwater sources or distribution system entry points representative of the effluent of source treatment every three years and its approved surface water sources or distribution system entry points representative of the effluent of source treatment annually....”⁵⁰ Revising the Basin Plans to incorporate the provisions associated with the implementation of 22 CCR §64449 and §64449.2 will allow the Central Valley Water Board, when developing appropriate WDRs for the SMCLs, to continue taking into consideration any dilution or other attenuation that may occur between the point of discharge and any intake to a downstream (surface water) or down-gradient (groundwater) water supply system with allowance for an adequate buffer to ensure that the groundwater water supply system is adequately protected. The Board may determine that compliance is measured at the end of a mixing zone for surface water discharges. The Board is not necessarily obligated to authorize the full waste assimilation capacities of the receiving waters.⁵¹ However, the recommended Basin Plan amendments will preserve the Board’s discretion to regulate SMCL constituents based on what is necessary, reasonable, and feasible to protect community water systems just as it was doing prior to the Lodi decision.
- Federal and state regulations do not require adoption of the SMCLs as formal water quality objectives. Several other California Regional Water Quality Control Boards have not adopted SMCLs as water quality objectives in their respective Basin Plans.⁵² Instead, these other Boards rely on narrative water quality objectives to regulate mineral concentrations where necessary to protect water supply systems that may be adversely affected by a given discharge. The values shown in 22 CCR Tables 64449-A and 64449-B, along with the associated text in §64449, are used to inform the process of translating narrative objectives into appropriate WDRs.
- The SMCLs are primarily intended to protect public welfare by addressing aesthetic qualities, such as odor, taste, or minimize risk of corrosion of pipes, fixtures, valves, other plumbing materials, and household appliances; they are not intended to address human health concerns.⁵³ However, elevated concentrations of some SMCL constituents may adversely affect the public's willingness to drink such water. Consumer acceptance is highly subjective and complicated by factors such as the form and combination of specific constituents (e.g., sodium-sulfate vs. calcium-sulfate) and the presence or absence of other major anions and cations.⁵⁴ The current numeric water quality objectives for SMCLs do not adequately account for the influence of these other variables.⁵⁵ Revising the Basin Plans will afford the Central Valley Water Board more flexibility to consider all

⁵⁰ 22 CCR §64449(b).

⁵¹ See §13263(b) of the California Water Code.

⁵² See Basin Plans for the Regional Water Quality Control Boards in Region 3 (Central Coast Water Board); Region 6 (Lahontan Water Board); Region 7 (Colorado River Water Board); Region 8 (Santa Ana Water Board); and Region 9 (San Diego Water Board).

⁵³ <https://www.epa.gov/dwstandardsregulations/secondary-drinking-water-standards-guidance-nuisance-chemicals>

⁵⁴ See CV-SALTS White Paper: *Salinity Effects on MUN-Related Uses of Water*; <http://www.cvsalinity.org/index.php/docs/committee-document/technical-advisory-docs/water-quality-objective-reviews/3618-cvsalts-final-mun-tech-memo-120116/file.html>

⁵⁵ See Federal Register 44:42195, July 19, 1979 for establishment of SMCLs; page 42201 for discussion of sulfate.

relevant factors that may affect consumer acceptance of these constituents in drinking water where raw water supplies may be influenced by wastewater discharges.

- The SRSJR and TLB Basin Plans establish site-specific water quality objectives for selected water bodies (see Section 1.1 of this policy). Incorporation of the full range of “Consumer Acceptance Contaminant Levels,” as described in 22 CCR Table 64449-B, into the Basin Plans does not supersede or replace these site-specific water quality objectives.
- Water recycling, industrial discharges, and groundwater recharge provide important water supply sources, but may increase the concentration of mineral salts. Using the lowest value from the range of consumer acceptance levels to establish numeric water quality objectives for TDS or EC (see 22 CCR Table 64449-B) often preclude dischargers from increasing the use of recycled water or implementing groundwater recharge projects. Moreover, such barriers can occur even where the discharges may actually improve overall quality in the receiving water. The Central Valley Water Board should have the legal flexibility to develop WDRs that balance the public benefits of water recycling, continued discharges to support industry, and groundwater recharge against any potential aesthetic impact on receiving water quality, provided that public health is protected.
- The Central Valley Water Board’s on-going obligation to issue WDRs consistent with State Water Board Resolution No. 68-16⁵⁶ and §13370 of the California Water Code provides adequate protection against water quality degradation for the constituents identified in 22 CCR Tables 64449-A and 64449-B. Lowering water quality for high quality waters is only permissible where the Board has issued, through the proscribed public process, waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained. Amending the Basin Plans does not create a license to discharge the SMCL constituents at will or authorize public nuisance. These amendments will, however, clarify the Board's full range of authority to regulate these constituents in a manner consistent with the original purpose and intent of 22 CCR §64449.

Section 1.2 above identified four areas where clarification is recommended with regard to implementation of the chemical constituents water quality objectives for surface waters and groundwater:

- *Measuring Compliance with SMCLs* – The Basin Plans should be amended to include language that describes how compliance with SMCLs in Table 64449-A and 64449-B will be determined. Specifically, and except as provided below, compliance would be determined from a filtered sample for all constituents in Table 64449-B and for the following selected constituents in Table 64449-A: Aluminum, Color, Copper, Iron, Manganese, Silver Turbidity and Zinc. All of these constituents can be natural elements in the environment or are a characteristic of water influenced by the presence of these elements (i.e., color or turbidity). Compliance with the remaining SMCLs in Table 64449-A, including: foaming agents (MBAs; surfactants), Methyl-tert-butyl ether (MTBE) (gasoline additive), Odor Threshold and Thiobencarb (pesticide) would be determined from a non-filtered sample. None of these constituents, except odor, is an element or

⁵⁶ State Water Board Resolution 68-16. *Statement of Policy with Respect to Maintaining High Quality of Waters in California* (Antidegradation Policy).

quality found in the natural environment. In addition, for discharges to receiving waters from water supply systems that have been legally exempted from filtration requirements in the Enhanced Surface Water Treatment Rule, compliance with all SMCLs will be evaluated using an unfiltered sample.

- *Consideration of Natural Background* - The Basin Plans should be amended to make the language in both Basin Plans consistent and clarify that the language applies to both surface and ground waters. In addition, the Basin Plans should be amended to include language for the Chemical Constituents water quality objective section for cases where the natural background concentration of a particular chemical constituent exceeds the maximum contaminant level specified in 22 CCR Table 64449-A or “Recommended” level specified in Table 64449-B. In such cases, the water body shall not exceed that natural background concentration due to controllable anthropogenic sources. The Basin Plan should include language that states that constituents ranging to the “Upper” level in Table 64449-B may be authorized if it is neither reasonable nor feasible to meet the “Recommended” level and constituents ranging to the “Short Term” level in Table 64449-B may be authorized on a temporary basis consistent with the provisions of 22 CCR §64449(d)(3), which may include drought conditions when normal water supplies are not available. It may be prudent to develop guidelines in the future in conjunction with the Division of Drinking Water and affected stakeholders regarding how this determination would be made.
- *“Specific Treatment Requirements” Language for Inland Surface Waters* – It may be appropriate to develop guidelines in conjunction with the Division of Drinking Water and affected stakeholders in the future to support the Basin Plans to describe how the following existing Basin Plan language would be considered when developing WDRs for discharges to inland surface waters: *“The Regional Water Board acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations on the consumption of surface waters under specific circumstances.”*
- *Compliance Assessment Time Period* – Language should be added to the implementation section of the Basin Plans to state that an evaluation of compliance with SMCLs in Tables 64449-A and 64449-B shall be at a minimum based on an annual average of collected samples from all analytical results collected from where compliance is determined. This approach is similar to 22 CCR §64449(c)(1) as it applies to Table 64449-A. 22 CCR §64449 does not provide a compliance determination approach for Table 64449-B constituents; however, the same compliance assessment approach is recommended for the constituents in both Table 64449-A and 64449-B constituents.

3.0 Implementation of SMCLs in Discharge Permits

As noted in the previous section, to implement this SMCL policy, it is recommended that all of the relevant supporting regulatory language at 22 CCR §64449, especially subsections (d) and (e) and §64449.2, be incorporated into the SRSJR and TLB Basin Plans. This outcome will allow the Central Valley Water Board to consider the full range of “Consumer Acceptance Contaminant Levels” described in Table 64449-B when establishing reasonable and appropriate WDRs to protect water bodies designated MUN that may be affected by a proposed discharge. In addition, when developing discharge permit language:

- The Central Valley Water Board shall consider a number of site-specific factors when developing appropriate WDRs including, but not limited to:
 - The availability of assimilative capacity in the receiving water and compliance with the antidegradation policies;
 - Naturally occurring background concentrations;
 - Background concentrations due to prior anthropogenic activities where it is not feasible or practicable to remediate the effect of these past discharges;
 - The net effect of discharges that are expected to improve receiving water quality;
 - The presence or absence of other minerals (e.g., anion-cation balance) that may mitigate or aggravate aesthetic acceptability;
 - The application of appropriate long-term averaging periods, that are consistent with those specified in 22 CCR §64449, to evaluate compliance with WDR monitoring requirements;
 - The potential impact on downstream beneficial uses (MUN-designated surface water and groundwater), including potential to impact water quality at the nearest downstream intakes for a community water system;
 - Evaluation of downstream or down-gradient community water system(s) to determine if a waiver under 22 CCR §64449.2 has been obtained or if the provisions of §64449.4 are being met.
 - Economic factors including the practicality and feasibility of achieving compliance with the SMCLs at the point-of-discharge (including consideration of cost for achieving compliance, the availability of alternative water supplies for drinking water, ability to pay, and cost of non-compliance);
 - The ability of drinking water treatment processes to remove contaminants and the potential effect on drinking water treatment costs for downstream and down-gradient community water systems;
 - Consideration of other regional salinity management requirements, including the ability to meet existing downstream salinity-related water quality objectives in the SRSJR and TLB Basin Plans and Bay Delta Plan⁵⁷ and policies, recommendations or regulations resulting from implementation of the CV-SALTS Salinity Management Strategy (see SNMP Attachment A-3);
 - Potential for the permitted discharge to affect the concentration of constituents identified in 22 CCR Tables 64449-A and 64449-B at downstream and downgradient community water systems and to adversely affect the ability of those community water systems to maintain compliance with the SMCLs in the drinking water supplied to their customers.
 - Need for additional monitoring to track the net effect of permitted discharges at locations upgradient of downgradient well locations where groundwater is extracted for water supply and to determine the need for additional management requirements to protect the supply.
 - The long-term cumulative impact of all discharges to the same receiving water.

⁵⁷ Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, State Water Board, December 13, 2006.

- Modeling and any reduction in contaminants due to factors such as dilution and soil adsorption; and
- Other environmental considerations.
- The Central Valley Water Board shall consider the State Water Board’s Recycled Water Policy and the Central Valley SNMP’s goals to increase the use of recycled water, increase stormwater use, and increase water conservation as mechanisms to increase drought protection when determining how to implement the range of TDS or EC values provided in 22 CCR Table 64449-B.
- Title 22 CCR §64449(d)(2) states that TDS concentrations up to 1,000 mg/L TDS (or 1,600 µS/cm EC) are “acceptable if it is neither reasonable nor feasible to provide more suitable waters”. Accordingly, the Central Valley Water Board should be able to implement the range of TDS or EC values provided in 22 CCR Table 64449-B in the same manner as currently implemented for water supply agencies by referencing the full text and tables of 22 CCR §64449 and §64449.2. However, granting the authority to allow TDS concentrations up to 1,000 mg/L in a discharge (or 1,600 µS/cm EC) or higher⁵⁸ is not an automatic authorization for such discharges to occur.⁵⁹ All of the normal antidegradation requirements (Resolution No. 68-16), as they apply to high quality waters, would continue to apply when developing WDRs and effluent limitations for TDS or EC. If a discharge is likely to lower downstream water quality, it will still be necessary to demonstrate that any such change in high quality water quality:⁶⁰
 - Will be consistent with maximum benefit to the people of the State;
 - Will not unreasonably affect present and anticipated beneficial uses of such water; and
 - Will not result in water quality less than that prescribed by state policies (e.g., water quality objectives established in the Basin Plans).
- Where waste discharges have the potential to adversely affect source water quality at water supply intakes/wells located downstream/downgradient in MUN designated water bodies or groundwater basins, the Central Valley Water Board may require a discharger, or dischargers collectively if in an approved management zone or as part of general order,⁶¹ to develop a more detailed fate and transport analysis prior to authorizing a permit.⁶² The purpose of this analysis is to determine how the permitted discharge to surface water or groundwater affects the concentration of constituents identified in 22 CCR Tables 64449-A and 64449-B at water supply intakes or water supply wells.
- If being allocated assimilative capacity of a high quality water, dischargers individually, or collectively within a management zone, or discharging to the same surface water body, will still be required to meet WDRs resulting in the best practicable treatment or control (BPTC) of the discharge necessary to assure that (a) a condition of pollution or nuisance will not occur; and (b)

⁵⁸ 22 CCR §64449(e) allows for application of “short term” “Consumer Acceptance Contaminant Levels” where specific criteria have been met (see Attachment A to this policy).

⁵⁹ Note that any authorized upper limit would be based on an averaging period as appropriate and determined by the Central Valley Water Board staff considering site-specific factors.

⁶⁰ Questions and Answers, State Water Resources Control Board Resolution No. 68-16; February 16, 1995.

⁶¹ See Groundwater Management Zone Policy (SNMP Attachment A-1) for more information regarding management zones.

⁶² A request for additional information prior to authorizing a permit shall be consistent with CWC §13627.

the highest water quality consistent with maximum benefit to the people of the State will be maintained. To the extent practicable, given the facts known at the time that the WDR is developed, the Central Valley Water Board also should consider the long-term cumulative impact of all discharges to the same receiving water (and any other significant influences and/or trends) before authorizing a discharge that may further lower water quality. In addition, even if TDS or EC in the upper SMCL range is acceptable, it is also desirable to manage water resources toward attaining the recommended SMCL range where feasible, practicable, and reasonable to do so.

- Since the TDS and EC values shown in 22 CCR Table 64449-B are drinking water standards, for groundwater, it is appropriate to track the net effect of permitted discharges at well locations that are downgradient of the discharge but upgradient of where groundwater is extracted for domestic and municipal drinking water use. The potential to impact groundwater extracted for domestic and municipal drinking water use may trigger additional management activities.

4.0 Proposed Modifications to the Basin Plans to Support SNMP Implementation

To implement this SMCL Policy, the Central Valley Water Board should adopt changes to the SRSJR and TLB Basin Plans as summarized in the subsections below.

4.1 Chapter II - Existing and Potential Beneficial Uses

No changes to this section of the SRSJR and TLB Basin Plans are anticipated.

4.2 Chapter III - Water Quality Objectives

Following is a summary of proposed changes to the Water Quality Objective Chapter of each Central Valley Water Board Basin Plan.

Water Quality Control Plan for the Sacramento River and San Joaquin River Basins

To implement this SMCL Policy, the following changes to *Chapter III. Water Quality Objectives* will be made to the SRSJR Basin Plan:

- Page III-3.00, Chemical Constituents section will be modified as follows (*Note: Additions to the existing text are indicated by underline and deletions of existing text are indicated by ~~strikeout~~*):

Chemical Constituents

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

At a minimum, surface water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, and Table 64444-A (Organic Chemicals) of Section 64444., ~~and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) and of Section 64449.~~ This incorporation-by-reference is

prospective, including future changes to the incorporated provisions as the changes take effect.

In addition, for surface waters designated MUN the concentration of chemical constituents shall not exceed the “maximum contaminant level” specified in 22 CCR Table 64449-A or the “Upper” level specified in 22 CCR Table 64449-B, unless otherwise authorized by the Regional Water Board in accordance with the provisions of 22 CCR Section 64449 et seq. Constituent concentrations ranging to the “Upper” level in Table 64449-B are acceptable if it is neither reasonable nor feasible to provide more suitable waters; in addition, constituents ranging to the “Short Term” level in Table 64449-B may be authorized on a temporary basis consistent with the provisions of §64449(d)(3). In cases where the surface water natural background concentration of a particular chemical constituent exceeds the maximum contaminant level specified in 22 CCR Table 64449-A or “Upper” level specified in Table 64449-B, the surface water shall not exceed that natural background concentration due to controllable anthropogenic sources, unless the Regional Board authorizes it consistent with State Antidegradation Policy”.

- Page III-10.00, Chemical Constituents section will be modified as follows (*Note: Additions to the existing text are indicated by underline and deletions of existing text are indicated by ~~strikeout~~*):

Chemical Constituents

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

At a minimum, ground waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, and Table 64444-A (Organic Chemicals) of Section 64444. ~~, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels Ranges) of Section 64449.~~ This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect.

In addition, for ground waters designated MUN, concentration of chemical constituents shall not exceed the “maximum contaminant level” specified in 22 CCR Table 64449-A or the “Upper” level specified in 22 CCR Table 64449-B unless otherwise authorized by the Regional Water Board in accordance with the provisions of 22 CCR Section 64449 et seq. Constituent concentrations ranging to the “Upper” level in Table 64449-B are acceptable if it is neither reasonable nor feasible to provide more suitable waters; in addition, constituents ranging to the “Short Term” level in Table 64449-B may be authorized on a temporary basis consistent with the provisions of §64449(d)(3). In cases where the natural background concentration of a particular chemical constituent exceeds the maximum contaminant level specified in 22 CCR Table 64449-A or “Upper” level specified in Table 64449-B, the ground water shall not exceed that natural background concentration due to

controllable anthropogenic sources, unless the Regional Board authorizes it consistent with State Antidegradation Policy.

Water Quality Control Plan for the Tulare Lake Basin

To implement this SMCL Policy, the following changes to *Chapter III. Water Quality Objectives* will be made to the TLB Basin Plan:

- Page III-3, Chemical Constituents section will be modified as follows (*Note: Additions to the existing text are indicated by underline and deletions of existing text are indicated by ~~strikeout~~*):

Chemical Constituents

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

At a minimum, surface water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, and Table 64444-A (Organic Chemicals) of Section 64444., ~~and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449.~~ This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect.

In addition, for surface waters designated MUN, concentration of chemical constituents shall not exceed the “maximum contaminant level” specified in 22 CCR Table 64449-A or the “Upper” level specified in 22 CCR Table 64449-B unless otherwise authorized by the Regional Water Board in accordance with the provisions of 22 CCR Section 64449 et seq. Constituent concentrations ranging to the “Upper” level in Table 64449-B are acceptable if it is neither reasonable nor feasible to provide more suitable waters; in addition, constituents ranging to the “Short Term” level in Table 64449-B may be authorized on a temporary basis consistent with the provisions of §64449(d)(3). In cases where the surface water natural background concentration of a particular chemical constituent exceeds the maximum contaminant level specified in 22 CCR Table 64449-A or “Upper” level specified in Table 64449-B, the surface water shall not exceed that natural background concentration due to controllable anthropogenic sources, unless the Regional Board authorizes it consistent with State Antidegradation Policy.

- Page III-7, Chemical Constituents section will be modified as follows (*Note: Additions to the existing text are indicated by underline and deletions of existing text are indicated by ~~strikeout~~*):

Chemical Constituents

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

At a minimum, ground waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum

contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, and Table 64444-A (Organic Chemicals) of Section 64444., and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect.

In addition, for ground waters designated MUN, concentration of chemical constituents shall not exceed the “maximum contaminant level” specified in 22 CCR Table 64449-A or the “Upper” level specified in 22 CCR Table 64449-B unless otherwise authorized by the Regional Water Board in accordance with the provisions of 22 CCR Section 64449 et seq. Constituent concentrations ranging to the “Upper” level in Table 64449-B are acceptable if it is neither reasonable nor feasible to provide more suitable waters; in addition, constituents ranging to the “Short Term” level in Table 64449-B may be authorized on a temporary basis consistent with the provisions of §64449(d)(3). In cases where the natural background concentration of a particular chemical constituent exceeds the maximum contaminant level specified in 22 CCR Table 64449-A or “Upper” level specified in Table 64449-B, the ground water shall not exceed that natural background concentration due to controllable anthropogenic sources, unless the Regional Board authorizes it consistent with State Antidegradation Policy.

4.3 Chapter IV - Implementation

Following is a summary of proposed changes to the Implementation Chapter of each Central Valley Water Board Basin Plan.

Water Quality Control Plan for the Sacramento River and San Joaquin River Basins

To implement this SMCL Policy, the following changes to *Chapter IV. Implementation of the SRSJR Basin Plan* are proposed:

- To support implementation of SMCLs, the following paragraphs are proposed for addition to the SRSJR Basin Plan's *Chapter IV. Implementation* at a location in the Chapter to be determined. (Note: Additions to the existing text are indicated by underline and deletions of existing text are indicated by ~~strikeout~~):

For the chemical constituents identified in 22 CCR §64449 (Table B) the water quality objectives shall be set as described in Chapter III-3.0 of this water quality control plan. Lower concentrations of these chemical constituents are desirable for promoting greater consumer confidence and acceptance of water supplied by community water systems, and, where it is reasonable and feasible to do so, WDRs should consider the “Recommended” values in 22 CCR §64449 (Table B). These “Recommended” concentrations are not water quality objectives per se but should be considered water resource management goals similar to other public policy goals established by the Regional Water Board and State Water Board to encourage greater water conservation, increased use of recycled water, more stormwater harvesting, additional groundwater

recharge and storage, better drought protection, and to allow agricultural and wastewater dischargers to continue to discharge to groundwater basins and surface water bodies.

To implement the SMCLs in the Chemical Constituents section of the surface water and groundwater quality objectives, the Regional Water Board shall consider, as appropriate, a number of site-specific factors when developing WDRs, including, but not limited to:

- The availability of assimilative capacity in the receiving water and compliance with the antidegradation policies;
- Naturally occurring background concentrations;
- Background concentrations due to prior anthropogenic activities where it is not feasible or practicable to remediate the effect of these past discharges;
- The net effect of discharges that improve receiving water quality;
- The presence or absence of other minerals (e.g., anion-cation balance) that may mitigate or aggravate aesthetic acceptability;
- The application of appropriate long-term averaging periods to evaluate compliance with WDR monitoring requirements;
- The potential impact on downstream beneficial uses (MUN-designated surface water and groundwater), including potential to impact water quality at the nearest downstream intakes for a community water system;
- Evaluation of downstream or down-gradient community water system(s) to determine if a waiver under 22 CCR §64449.2 has been obtained or if the provisions of §64449.4 are being met.
- Economic factors including the practicality and feasibility of achieving compliance with the SMCLs at the point-of-discharge (including consideration of cost for achieving compliance, the availability of alternative water supplies for drinking water, ability to pay, and cost of non-compliance);
- The ability of drinking water treatment processes to remove contaminants and the potential effect on drinking water treatment costs for downstream and down-gradient community water systems;
- Consideration of other regional salinity management requirements, including the ability to meet existing downstream salinity-related water quality objectives in the SRSJR and TLB Basin Plans and Bay Delta Plan⁶³ and policies, recommendations or regulations resulting from implementation of the CV-SALTS Salinity Management Strategy (see SNMP Attachment A-3);
- Potential for the permitted discharge to affect the concentration of constituents identified in 22 CCR Tables 64449-A and 64449-B at downstream and downgradient community water systems to ensure a safe drinking water supply for users.
- Need for additional monitoring to track the net effect of permitted discharges at locations upgradient of downgradient well locations where groundwater is extracted for water supply and to determine the need for additional management requirements to protect the supply.

⁶³ Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, State Water Board, December 13, 2006.

- The State Water Board’s Recycled Water Policy and the Central Valley SNMP’s goals to increase the use of recycled water, increase stormwater use, and increase water conservation as mechanisms to increase drought protection.
- The long-term cumulative impact of all discharges to the same receiving water.
- Modeling and any reduction in contaminants due to factors such as dilution and soil adsorption; and
- Other environmental considerations.

Compliance with any chemical constituent in Tables 64449-A of 64449-B shall be determined from the annual average of sample results based on the techniques in (a) and (b) below.

(a) Compliance with the chemical constituent water quality objective shall be determined from a filtered water sample for the following constituents identified in 22 CCR §64449 (Table A): Aluminum, Color, Copper, Iron, Manganese, Silver Turbidity and Zinc.

(b) Compliance with the chemical constituent water quality objective shall be determined from an unfiltered water sample for the following constituents identified in 22 CCR §64449 (Table A): Foaming Agents (MBAs), Methyl-tert-Butyl Ether (MTBE), Odor-Threshold and Thiobencarb.

(c) For receiving waters that have been deemed exempt from surface water filtration requirements, compliance with chemical constituent water quality objectives for all parameters identified in §64449-Tables A and B shall be determined using an unfiltered water sample.⁶⁴

Water Quality Control Plan for the Tulare Lake Basin

To implement this SMCL Policy, the following change to *Chapter IV. Implementation Plan* will be made to the TLB Basin Plan:

- To support implementation of SMCLs, the following text will be added to the TLB Basin Plan's *Chapter IV. Implementation Plan* at a location to be determined, but potentially in association with “Policy for Application of Water Quality Objectives (Pg. IV-21 ff.) (*Note: Additions to the existing text are indicated by underline and deletions of existing text are indicated by ~~strikeout~~*):

For the chemical constituents identified in 22 CCR §64449 (Table B) the water quality objectives shall be set as described in Chapter III-10.0 of this water quality control plan. Lower concentrations of these chemical constituents are desirable for promoting greater consumer confidence and acceptance of water supplied by community water systems, and, where it is reasonable and feasible to do so, WDRs should consider the “Recommended” values in 22 CCR §64449 (Table B). These “Recommended” concentrations are not water quality objectives per se but, rather, should be considered water resource management goals similar to other public policy goals established by the

⁶⁴ USEPA. *National Primary Drinking Water Regulations: Long Term 2 Enhanced Surface Water Treatment Rule*. 71 Federal Register: 654-786. January 5, 2006.

Regional Water Board and State Water Board to encourage greater water conservation, increased use of recycled water, more stormwater harvesting, additional groundwater recharge and storage, better drought protection, and to allow agricultural and wastewater dischargers to continue to discharge to groundwater basins and surface water bodies.

To implement the SMCLs in the Chemical Constituents section of the surface water and groundwater quality objectives, the Regional Water Board shall consider, as appropriate, a number of site-specific factors when developing WDRs, including, but not limited to:

- The availability of assimilative capacity in the receiving water and compliance with the antidegradation policies;
- Naturally occurring background concentrations;
- Background concentrations due to prior anthropogenic activities where it is not feasible or practicable to remediate the effect of these past discharges;
- The net effect of discharges that improve receiving water quality;
- The presence or absence of other minerals (e.g., anion-cation balance) that may mitigate or aggravate aesthetic acceptability;
- The application of appropriate long-term averaging periods to evaluate compliance with WDR monitoring requirements;
- The potential impact on downstream beneficial uses (MUN-designated surface water and groundwater), including potential to impact water quality at the nearest downstream intakes for a community water system;
- Evaluation of downstream or down-gradient community water system(s) to determine if a waiver under 22 CCR §64449.2 has been obtained or if the provisions of §64449.4 are being met.
- Economic factors including the practicality and feasibility of achieving compliance with the SMCLs at the point-of-discharge (including consideration of cost for achieving compliance, the availability of alternative water supplies for drinking water, ability to pay, and cost of non-compliance);
- The ability of drinking water treatment processes to remove contaminants and the potential effect on drinking water treatment costs for downstream and down-gradient community water systems;
- Consideration of other regional salinity management requirements, including the ability to meet existing downstream salinity-related water quality objectives in the SRSJR and TLB Basin Plans and Bay Delta Plan⁶⁵ and policies, recommendations or regulations resulting from implementation of the CV-SALTS Salinity Management Strategy (see SNMP Attachment A-3);
- Potential for the permitted discharge to affect the concentration of constituents identified in 22 CCR Tables 64449-A and 64449-B at downstream and downgradient community water systems to ensure a safe drinking water supply for users.

⁶⁵ Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, State Water Board, December 13, 2006.

- Need for additional monitoring to track the net effect of permitted discharges at locations upgradient of downgradient well locations where groundwater is extracted for water supply and to determine the need for additional management requirements to protect the supply.
- The State Water Board's Recycled Water Policy and the Central Valley SNMP's goals to increase the use of recycled water, increase stormwater use, and increase water conservation as mechanisms to increase drought protection.
- The long-term cumulative impact of all discharges to the same receiving water.
- Modeling and any reduction in contaminants due to factors such as dilution and soil adsorption; and
- Other environmental considerations.

Compliance with any chemical constituent in Tables 64449-A of 64449-B shall be determined from the annual average of sample results based on the techniques in (a) and (b) below.

- (a) Compliance with the chemical constituent water quality objective shall be determined from a filtered water sample for the following constituents identified in 22 CCR §64449 (Table A): Aluminum, Color, Copper, Iron, Manganese, Silver Turbidity and Zinc.
- (b) Compliance with the chemical constituent water quality objective shall be determined from an unfiltered water sample for the following constituents identified in 22 CCR §64449 (Table A): Foaming Agents (MBAs), Methyl-tert-Butyl Ether (MTBE), Odor-Threshold and Thiobencarb.
- (c) For receiving waters that have been deemed exempt from surface water filtration requirements, compliance with chemical constituent water quality objectives for all parameters identified in §64449-Tables A and B shall be determined using an unfiltered water sample.⁶⁶

⁶⁶ USEPA. *National Primary Drinking Water Regulations: Long Term 2 Enhanced Surface Water Treatment Rule*. 71 Federal Register: 654-786. January 5, 2006.

Supporting Information on Secondary Maximum Contaminant Levels Attachment A

Title 22. Social Security

Division 4. Environmental Health

Chapter 15. Domestic Water Quality and Monitoring Regulations

Article 16. Secondary Drinking Water Standards

§64449. Secondary Maximum Contaminant Levels and Compliance.

(a) The secondary MCLs shown in Tables 64449-A and 64449-B shall not be exceeded in the water supplied to the public by community water systems.

Table 64449-A
Secondary Maximum Contaminant Levels
“Consumer Acceptance Contaminant Levels”

Constituents	Maximum Contaminant Levels/Units
Aluminum	0.2 mg/L
Color	15 Units
Copper	1.0 mg/L
Foaming Agents (MBAS)	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Methyl- <i>tert</i> -butyl ether (MTBE)	0.005 mg/L
Odor – Threshold	3 Units
Silver	0.1 mg/L
Thiobencarb	0.001 mg/L
Turbidity	5 Units
Zinc	5.0 mg/L

Table 64449-B
Secondary Maximum Contaminant Levels
“Consumer Acceptance Contaminant Level Ranges”

Constituents, Units	Recommended	Upper	Short Term
Total Dissolved Solids, mg/L or Specific Conductance, μ S/cm	500	1,000	1,500
	900	1,600	2,200
Chloride, mg/L	250	500	600
Sulfate, mg/L	250	500	600

(b) Each community water system shall monitor its groundwater sources or distribution system entry points representative of the effluent of source treatment every three years and its approved surface water sources or distribution system entry points representative of the effluent of source treatment annually for the following:

- (1) Secondary MCLs listed in Tables 64449-A and 64449-B; and
- (2) Bicarbonate, carbonate, and hydroxide alkalinity, calcium, magnesium, sodium, pH, and total hardness.

(c) If the level of any constituent in Table 64449-A exceeds an MCL, the community water system shall proceed as follows:

- (1) If monitoring quarterly, determine compliance by a running annual average of four quarterly samples;
- (2) If monitoring less than quarterly, initiate quarterly monitoring and determine compliance on the basis of an average of the initial sample and the next three consecutive quarterly samples collected;
- (3) If a violation has occurred (average of four consecutive quarterly samples exceeds an MCL), inform the State Board when reporting pursuant to Section 64469;
- (4) After one year of quarterly monitoring during which all the results are below the MCL and the results do not indicate any trend toward exceeding the MCL, the system may request the State Board to allow a reduced monitoring frequency.

(d) For the constituents shown on Table 64449-B, no fixed consumer acceptance contaminant level has been established.

- (1) Constituent concentrations lower than the Recommended contaminant level are desirable for a higher degree of consumer acceptance.
- (2) Constituent concentrations ranging to the Upper contaminant level are acceptable if it is neither reasonable nor feasible to provide more suitable waters.
- (3) Constituent concentrations ranging to the Short Term contaminant level are acceptable only for existing community water systems on a temporary basis pending construction of treatment facilities or development of acceptable new water sources.

(e) New services from community water systems serving water which carries constituent concentrations between the Upper and Short Term contaminant levels shall be approved only:

- (1) If adequate progress is being demonstrated toward providing water of improved mineral quality.
- (2) For other compelling reasons approved by the State Board.

(f) A community water system may apply to the State Board for a waiver from the monitoring frequencies specified in subsection (b), if the system has conducted at least three rounds of monitoring (three periods for groundwater sources or three years for approved surface water sources)

and these analytical results are less than the MCLs. The water system shall specify the basis for its request. A system with a waiver shall collect a minimum of one sample per source while the waiver is in effect and the term of the waiver shall not exceed one compliance cycle (i.e., nine years).

(g) Nontransient-noncommunity and transient-noncommunity water systems shall monitor their sources or distribution system entry points representative of the effluent of source treatment for bicarbonate, carbonate, and hydroxide alkalinity, calcium, iron, magnesium, manganese, pH, specific conductance, sodium, and total hardness at least once. In addition, nontransient-noncommunity water systems shall monitor for the constituents in Tables 64449-A and B at least once.

§64449.2. Waivers for Secondary MCL Compliance.

(a) If the average of four consecutive quarters of sample results for a constituent that does not have a primary MCL is not greater than three times the secondary MCL or greater than the State Notification Level, an existing community water system is eligible to apply for a nine-year waiver of a secondary MCL in Table 64449-A, for the following:

- (1) An existing source; or
- (2) A new source that is being added to the existing water system, as long as:
 - (A) The source is not being added to expand system capacity for further development; and
 - (B) The concentration of the constituent of concern in the new source would not cause the average value of the constituent's concentration at any point in the water delivered by the system to increase by more than 20%.

(b) To apply for a waiver of a secondary MCL, the community water system shall conduct and submit a study to the State Board within one year of violating the MCL that includes the following:

- (1) The water system complaint log, maintained pursuant to section 64470(a), along with any other evidence of customer dissatisfaction, such as a log of calls to the county health department;
- (2) An engineering report, prepared by an engineer registered in California with experience in drinking water treatment, that evaluates all reasonable alternatives and costs for bringing the water system into MCL compliance and includes a recommendation for the most cost-effective and feasible approach;
- (3) The results of a customer survey distributed to all the water system's billed customers that has first been approved by the State Board based on whether it includes:
 - (A) Estimated costs to individual customers of the most cost-effective alternatives presented in the engineering report that are acceptable to the State Board based on its review of their effectiveness and feasibility;
 - (B) The query: "Are you willing to pay for (identify constituent) reduction treatment?";
 - (C) The query: "Do you prefer to avoid the cost of treatment and live with the current water quality situation?"

(D) The statement: “If you do not respond to this survey, (insert system name) will assume that you are in support of the reduction treatment recommended by the engineering report.”

(4) A brief report (agenda, list of attendees, and transcript) of a public