Appendix L – Part IV. Exhibits of the James Irrigation District Comment Letter on the Draft Mendota Pool Group 20-Year Exchange Program EIS/EIR, Dated January 14, 2019

Appendix L – Exhibit 20B of the James Irrigation District Comment Letter

REGIONAL WATER QUALITY CONTROL BOARD, CENTRAL VALLEY REGION

Amendments To the Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and Tulare Lake Basin

To Incorporate a Central Valley-wide Salt and Nitrate Control Program

Final Staff Report

May 2018

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

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D I S C L A I M E R

This publication is a report by staff of the California Regional Water Quality Control Board, Central Valley Region. This report contains the evaluation of alternatives and technical support for the adoption of amendments to the Water Quality Control Plan for the Sacramento and San Joaquin River Basin and for the Water Quality Control Plan for the Tulare Lake basin (Resolution No. R5-2018-0034). Mention of specific products does not represent endorsement of those products by the Central Valley Water Board.

Amendment
To the
Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and Tulare Lake Basin

To
Incorporate a Central Valley-wide Salt and Nitrate Control Program

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ACKNOWLEDGEMENTS:

Thank you to the participants of the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative who have spent countless hours providing their insight and expertise to craft a management strategy for the future of California. Their commitment to the overall goals of the effort, perseverance through contentious debates and development of innovative solutions have been invaluable to evolution of the proposed salt and nitrate control program and supporting policies.

Disclosures:

The foundation of the proposed amendments, including technical studies, environmental and economic analyses, and case studies were developed as part of the CV-SALTS Salt and Nitrate Management Plan submitted to the Central Valley Water Board in January 2017. Funding for the effort included a combination of Clean-up and Abatement Account funding from the State Water Resources Control Board ($5-million: Project CAA 284) and stakeholder financial and in-kind support (over $17-million as of the February 2016 State Water Board annual report).

EXECUTIVE SUMMARY

This Staff Report provides the justification and supporting documentation for proposed amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins and the Water Quality Control Plan for the Tulare Lake Basin (collectively referred to as Basin Plans) to establish a Central Valley-wide Salt and Nitrate Control Program. The foundation for the proposed amendments is the Central Valley-wide Salt and Nitrate Management Plan (SNMP). The SNMP was developed through the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative and submitted to the Central Valley Water Board in January 2017. The SNMP provides an overarching framework for managing salt and nitrate in the Central Valley and identified 11 proposed strategies, policies, policy changes or clarifications to the Basin Plans to facilitate the implementation of the proposed strategies and policies contained in the SNMP. The SNMP was developed to achieve the following management goals:

- Sustain the Valley's lifestyle
- Support regional economic growth
- Retain a world-class agricultural economy
- Maintain a reliable, high-quality water supply
- Protect and enhance the environment

The Central Valley Water Board adopted Resolution R5-2017-0031 at its March 9, 2017, meeting acknowledging receipt of the SNMP and directed staff to initiate basin planning actions to develop amendments to implement strategies, policies, guidance and revisions to the existing policies to address the salt and nitrate water quality concerns in the Central Valley. These proposed amendments establish a Salt and Nitrate Control Program, and provide specific recommendations for the control and permitting of salt discharges to surface and groundwater and of nitrate discharges to groundwater. They propose new policies, new regulatory tools (or strategies), and recommended clarification to existing policies to facilitate the Central Valley Water Board's efforts to achieve the salt and nitrate management goals. Staff has continued working through the CV-SALTS initiative to refine the original SNMP recommendations and to develop the current proposed recommendations outlined in this staff report.

ISSUE

The Central Valley Water Board's jurisdictional area encompasses nearly 60,000 square miles of area, or approximately 40% of the land area of California. California's Central Valley is home to over 7.8 million or just over 20% of California's population (U.S. Census 2016). The Central Valley is targeted to be the fastest growing region in California, with the predominant growth occurring within 18 counties that encompass the valley floor area (approximately 18,000 square miles of land). According to the California Department of Finance (DOF) Central Valley is projected to grow nearly 6%, 17% and 49% by 2021, 2030 and 2060 respectively. Two major river systems drain and define the northern area of the Central Valley – the Sacramento and San Joaquin Rivers and their tributaries. The south area of the valley is the Tulare Lake Basin. The Tulare Lake Basin is essentially a closed basin, except in extreme storm events.

The Central Valley is home to a significant number of industrial and domestic activities that may impact surface and groundwater quality. It is one of the most productive agricultural regions in the world and is home to over 80 percent of the agricultural lands in California or 7 million acres.

On less than 1 percent of the total farmland in the United States, the Central Valley produces 8 percent of the nation's agricultural output (United States Geological Survey, 2017).

Portions of California's immense Central Valley have salt or nitrate accumulations in the groundwater and soil from both historical and ongoing discharges from legal and accepted agriculture, municipal, and industrial activities. The high nitrate concentrations are impacting drinking water quality and, in some communities, water supply and/or domestic wells do not meet safe drinking water standards. The salt accumulations have resulted in 250,000 acres taken out of production and about 1.5 million acres being salinity impaired. If not addressed, the economic impacts could be staggering. For example, if salt accumulations are not managed, the resulting direct economic costs to the Valley could exceed $1.5-billion per year by 2030. The Valley's economic future depends on addressing these impacts.

In 2006, the Central Valley Water Board initiated a collaborative stakeholder initiative, known as Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS), to develop a Central Valley- wide Salt and Nitrate Management Plan (SNMP). CV-SALTS was tasked with ensuring the SNMP complied with the requirements set forth in the State Water Resources Control Board (State Water Board) Recycled Water Policy. Stakeholder membership included representatives from the Regional and State Water Boards, agriculture, municipalities, industry, water supply, environmental justice, state and federal regulatory agencies and the public. CV-SALTS initiative developed the SNMP that provides a comprehensive regulatory and programmatic approach for the sustainable management of salts and nitrate in groundwater and surface water.

This staff report provides the rationale and supporting documentation for proposed amendments utilizing, in part, technical work completed under the CV-SALTS initiative. The Salt and Nitrate Control Program proposed by these amendments is designed to address both salt and nitrate concerns in surface and groundwaters; however, the primary focus of early actions (first ten years) for nitrate is on groundwater quality and impacts to drinking water supplies, and for salt to conduct a study to develop a long-term strategy to control and manage salt in the valley.

ENVIRONMENTAL SETTING

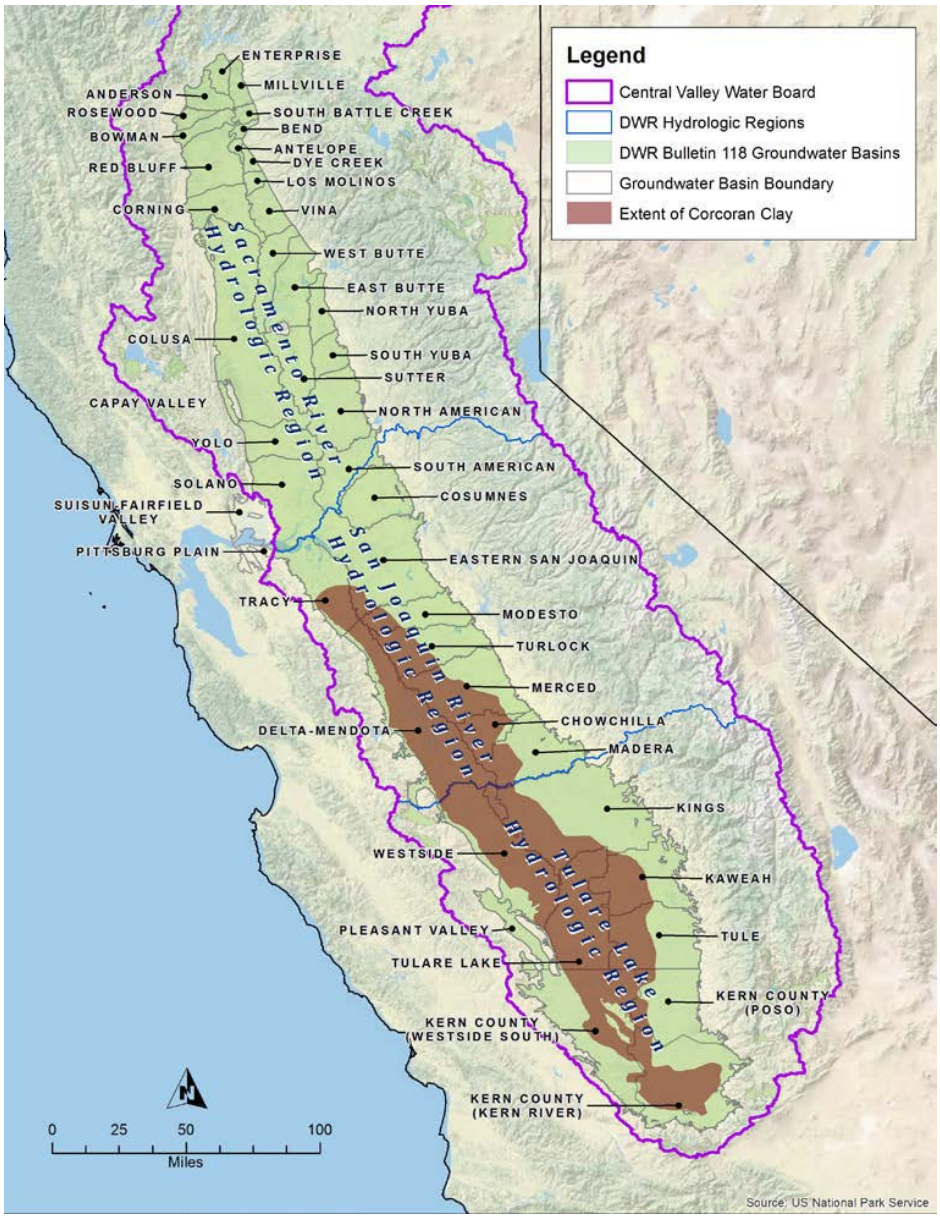
The Salt Control Program applies to discharges to surface and groundwater within the Central Valley Region while the Nitrate Control Program applies to discharges to groundwater. Four distinct hydrologic regions comprise the Central Valley Region with the highly modified hydrology of each influencing the movement and deposition of salt throughout the Valley (Figure ES-1). The Sacramento River Hydrologic Region is approximately 27,200 square miles and covers the majority of northern California (California Department of Water Resources, 2013a) from its source waters in the Cascade Range to Sacramento-San Joaquin Delta. San Joaquin River Hydrologic Region is approximately 15,200 square miles. It begins in the high Sierra Nevada and historically flowed north flowing where it joined the Sacramento River to form the Delta. The Central Valley project diverted the northern reach of the San Joaquin River south into the Tulare Lake Basin. The last 60-miles of the river flows to the Delta. Tulare Lake Hydrologic Region is approximately 17,000 square miles and is located to the south of the San Joaquin River Hydrologic Region. Surface water from the Tulare Lake Hydrologic Region only drains north into the San Joaquin River in years of extreme rainfall. Delta Region is the combined flows of the Sacramento and San Joaquin River basins flow.

Figure ES - 1. Central Valley Hydrologic Regions and Surrounding Geography

Groundwater Basins/Sub-basins

The California Department of Water Resources has defined the groundwater basins/sub-basins for the Central Valley 5 Region both within and outside the Central Valley Floor (California Department of Water Resources, 2003). Within the Central Valley Region, there are 86 groundwater basins and 126 groundwater sub-basins, as defined by DWR Bulletin 118 (California Department of Water Resources 2003) (Figure ES-2). Groundwater basins/sub-basins in the Central Valley Region encompass about 24,100 square miles; in the valley floor, these basins/sub-basins comprise about 20,500 square miles, or about 85% of the total groundwater basins/sub-basins within Region 5 (California Department of Water Resources, 2003).

Figure ES - 2. DWR Bulletin 118 Groundwater Basin and Extent of the Corcoran Clay in the Central Valley Floor



BENEFICIAL USES AND WATER QUALITY OBJECTIVES

The Basin Plans and the San Francisco Bay/Sacramento-San Joaquin Delta Estuary Water Quality Control Plan (Delta Plan) establish beneficial uses for many surface waters and groundwaters in the Central Valley. Studies conducted under CV-SALTS determined that the beneficial uses most broadly impacted by salt and nitrate within the Central Valley were municipal and domestic supply (MUN) and Agricultural Supply (AGR) which encompasses crop irrigation and stock watering. The Basin Plans presumptively assigned the MUN and AGR beneficial use to all water bodies, except where it has been specifically exempted through the Basin Plan.

MUN Water Quality Objectives

The Basin Plans incorporate primary and secondary Maximum Contaminant Levels (MCLs) Tables from Title 22 of the California Code of Regulations ("Title 22") as water quality objectives to protect the MUN beneficial use[1].

For nitrates, the SNMP and this amendment affirms the use of the primary MCL for nitrate as 10 mg/L (nitrate as nitrogen or NO_3-N) as the water quality objective.

For salts, the SNMP and this amendment clarifies that the Board will continue to use the secondary MCLs for salinity as a range for total dissolved solids (TDS) or electrical conductivity (EC) concentrations as established in Table 64449-B of Title 22.

AGR Water Quality Objectives

For nitrate, no numeric water quality objective has been established for nitrate to protect the AGR beneficial use; these Basin Plan Amendments do not change this finding.

For salts, numeric water quality objectives have been established to protect AGR for certain water bodies in the Central Valley. For all other water bodies, no numeric water quality objective has been established for salt to protect the AGR beneficial use. These Basin Plan Amendments do not change these objectives.

SALT AND NITRATE CONDITIONS IN THE CENTRAL VALLEY REGION

Salt and nitrate management requires an understanding of water movement on and beneath the land surface. The direction of surface water and groundwater flow and associated volumes of those flows dictate the movement of salt and nitrate in the subsurface, which has implications for management of these constituents at the surface. To support development of the SNMP and these amendments, CV-SALTS completed assessments of salt and nitrate conditions in Central Valley waters (Table 2-2). In addition to water quality assessments, the CV-SALTS initiative conducted other studies that informed the development of the SNMP strategy and recommendations to address salts and nitrates in the Central Valley (Table 4-1).

Surface Water Quality

Nitrate and salt conditions were assessed for major surface water bodies and tributaries within the Central Valley using existing data available through the California Environmental Data Exchange Network (CEDEN) and USGS Water Quality Portal (WQP). Available water quality

[1] SRSJR Basin Plan, Pg. III-10.0 and TLB Basin Plan, Pg. III-7.

data from 1990 to present were analyzed. Data was analyzed for the hydrologic regions of the Sacramento and San Joaquin Rivers, Tulare Lake and Delta.

Detailed findings of surface water quality are provided in Appendix A, and summarized below.

Nitrate water quality was very good for all the hydrologic regions evaluated. Nitrate concentrations were well below the primary MCL of 10 mg/L (NO_3-N).

Salinity water quality varied based on the hydrologic region. Thirty-three (33) water bodies within the hydrologic regions are listed as impaired for salinity with the greatest number of listings (26) within the San Joaquin River region.

Sacramento River Region - Water Quality is good in this region with relatively few salt impaired areas. However, salt is exported from this region to the Delta and ultimately the San Joaquin and Tulare Lake regions via the water projects.

San Joaquin River Region – Water quality varies by the area within the drainage region. The eastside tributaries have good salinity water quality. The westside tributaries have extensive water quality impairment due to salinity. The main stem water quality varies depending on the water year type and the quality of flows from its tributaries

Tulare Lake Region - Salinity concentrations are elevated in many water bodies but none have been identified as impaired (Provost & Pritchard Consulting Group, 2014).

Delta Region - Several Delta waterways have been listed as exceeding salinity concentrations to protect agricultural supply with some areas also noted as exceeding secondary MCLs.

Groundwater Quality

The Central Valley's major groundwater basins are located on the valley floor. The main source of groundwater in these basins is typically located within the upper 1,000 feet of the subsurface deposits, and was the main focus of the SNMP strategies.

Water quality for salt and nitrate in groundwater water was assessed for: ambient conditions, predicted trends out to 50 years, and potentially available assimilative capacity. The assessment focused on describing salt and nitrate conditions in the "upper," "lower," and "production" zones within each groundwater basin/sub-basin (Figures 2-4 and 2-5).

CV-SALTS developed a database of water quality data from numerous sources that was used to support the various water quality analyses completed to describe salt and nitrate conditions in Central Valley Region. A one square mile grid of the valley floor was used as a base to conduct spatial and aggregate analyses of groundwater quality data.

Aggregate findings by groundwater basin/sub-basin are provided in Appendix B.

Salinity in Groundwater

Salinity water quality data in the production zone was evaluated against threshold concentrations of total dissolved solids (TDS) to determine if a basin was impacted by salts. For AGR, TDS values below 450 mg/L are not anticipated to impact irrigated agriculture while concentrations above 2,000 mg/l are anticipated to have a severe impact (Ayers & Westcot, 1985). For MUN supply, TDS concentrations at or below 500 mg/L are recommended with an upper range of 1,000 mg/L and a short-term range up to 1,500 mg/L to protect human welfare

and provide for consumer acceptance (Title 22 of the California Code of Regulations). Using these thresholds, the SNMP found broad areas along the western side of the valley floor of the San Joaquin River and Tulare Lake Basins and more limited areas within the Sacramento River Basin to have groundwater production zone concentrations exceeding 500 mg/L TDS. The SNMP also found the areas of concern to be broadly dispersed (Figure 2-7).

Nitrate in Groundwater

Nitrate water quality data in the upper zone was evaluated against primary MCL of 10 mg/L nitrate (NO_3-N) to determine if a basin was impacted by nitrates. The SNMP found elevated levels of nitrate to occur toward the eastside and central portions of the valley floor in the San Joaquin and Tulare Basins rather than along the west side. Like salinity, the areas of concern are broadly dispersed (Figure 2-8).

Impacts of Excessive Salt and Nitrates in Groundwater

CV-SALTS evaluated the nature and extent of the nitrate and salinity conditions in the Central Valley and evaluated alternative solutions to address or mitigate the impacts of salt and nitrate.

Salt is conservative. Limited options are available to reduce ambient concentrations once groundwater concentrations are elevated. The CV-SALTS initiative conducted three studies under the Strategic Salt Accumulation and Land Transport Study (CDM Smith, 2013) (CDM Smith, 2014) (CDM Smith, 2016b) to evaluate the extent of the salt issue and evaluate alternative solutions. The conclusions of the studies noted, in part, that maximizing current salt management practices would only address approximately 15% of the salt load with roughly 85% of the accumulating salt remaining unmanaged and continuing to impact beneficial uses of Central Valley groundwaters (Figure 2-10).

The Nitrate Implementation Measures Study (NIMS) conducted by CV-SALTs evaluated means of reducing current ambient nitrate groundwater concentrations to protect and restore beneficial uses. A pilot study test was conducted within a 200- square mile are of an irrigation district within the Tulare Lake Basin that contained groundwater nitrate concentrations exceeding drinking water standards and impacting municipal and domestic supplies (CDM Smith, 2016a).

Using the NIMS findings, an Aggressive Restoration Study was initiated. The study evaluated an 18-square mile area within the same 200-square mile pilot area of the Tulare Lake Basin evaluated in the NIMS. The Aggressive Restoration Study evaluated four (4) alternative scenarios to determine the time and costs required to restore groundwater quality to nitrate levels at or below the primary MCL of 10 mg/L (NO_3-N) (Tables 2-14 and 2-15). The Aggressive Restoration Study found, in part, that a targeted restoration works better in smaller geographic settings and restoration is not likely feasible on the scale of the Central Valley (Luhdorff & Scalmanini and Larry Walker Associates, 2016b).

Proof of Concept

Some of the proposed amendments in this staff report rely on appropriate designation of beneficial uses and level of protection as well as alternative approaches to regulating salt during extended dry periods. Three separate Basin Plan Amendments that are under various levels of approval, were developed under the CV-SALTS initiative as proof of concepts and

serve as models for future basin planning amendment activities to further implement the Salt and Nitrate Control Program.

- Resolution R5-2017-0032 (In effect)*:* Basin Plan Amendment to dedesignate MUN and AGR from a horizontally and vertically delineated portion of the Tulare Lake Bed groundwater basin. This serves as a template to delineate areas that may serve as salt management zones so that salt may be moved out of salt sensitive areas and consolidated*.*

- Resolution R5-2017-0088 (scheduled for State Water Board approval hearing in 2018): Basin Plan Amendment to incorporate a MUN evaluation process for agriculturally dominated water bodies. This allows reuse of limited water supplies without the constraints of requiring dischargers to meet drinking water maximum contaminant levels in constructed ag drains and other facilities with no existing or potential MUN use

- Resolution R5-2017-0062 (approved by State Water Board January 2018 (R5-2018-0002); scheduled for submittal to OAL and USEPA Spring 2018): Basin Plan Amendment to establish salinity objectives in the Lower San Joaquin River upstream of Vernalis. This provides example of process to determine appropriate level of AGR protection as well as considerations for extended dry year and/or conservation policies.

SALT AND NITRATE CONTROL PROGRAM

The amendments in this staff report propose a Salt and Nitrate Control Program intended to facilitate the salt and nitrate implementation strategies recommended in the SNMP. They are designed to address both legacy and ongoing salt and nitrate accumulation issues in surface and groundwater. The over-arching management goals and priorities of the control are:

1. Ensure Safe Drinking Water Supply (short and long term)
2. Achieve Balanced Salt and Nitrate Loading
3. Implement Long-Term, Managed Restoration of Impaired Water Bodies

The Salt and Nitrate Control Program is phased (Figure ES-3) with the primary focus of early actions on nitrate impacts to groundwater drinking water supplies, and establishes specific implementation activities (Table ES-1).

Figure ES - 3. Salt and Nitrate Management Strategy

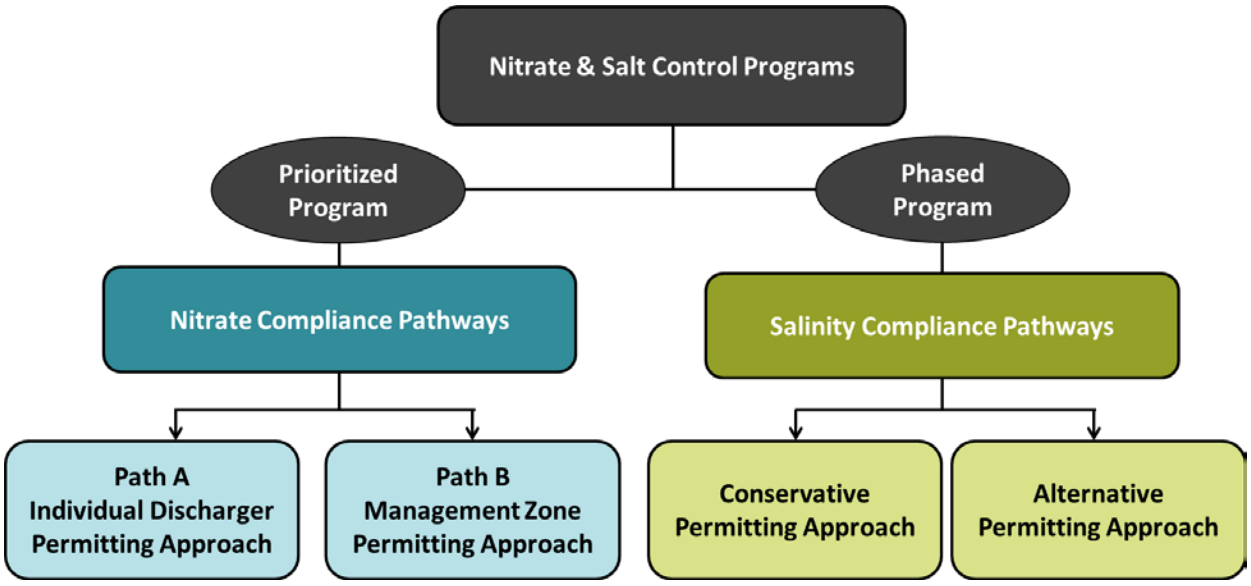


Table ES - 1. Description of Major Components of the Proposed Salt and Nitrate Control Program

Component	Description
Salt Control Program	The Salt Control Program recommends a process for moving forward with a three-phased long-term salinity management program. Each phase is anticipated to have a duration of 10-15 years. • Phase I: Salinity Prioritization and Optimization Study (P&O Study) to convert current conceptual management projects into feasibility studies • Phase II: Project Development and Acquisition of Funds • Phase III: Project Implementation/Construction of Physical Project (e.g. salt management areas; treatment facilities; regulated brine line) Phase I includes adoption of a proposed Interim Salinity Permitting Approach for permittees who discharge salt whereby they may select to be regulated under conservative, source control limits or opt into participating in the funding and development of the P&O Study. A third party entity made up of a coalition of regulated dischargers and other entities will manage and fund the P&O Study. Timelines and milestones are identified.
Prioritized Groundwater Basins for Nitrate Control Program Implementation	Scores were assigned to one square mile grids based on the ambient nitrate as nitrogen concentration in the Upper Zone, for each basin identified in the Central Valley Hydrologic Unit Model (Faunt, 2009)). Based on the aggregate score within the basin boundaries, the basins were prioritized for implementation of the Nitrate Control Program. Permitted dischargers to groundwater within Priority 1 basins will be notified within one year of the effective date of the amendments of their need to comply with the Nitrate Control Program. Permittees in Priority 2 basins will receive notification within two to four years of the effective date. The remaining basins will be prioritized at the discretion of the Central Valley Water Board. The Central Valley Water Board will review the priorities no later than 1 January 2024 after considering water quality-based factors and other relevant information. Nothing in the program prevents interested parties from providing additional information and requesting a review of an area's priority.

Table ES - 1. Description of Major Components of the Proposed Salt and Nitrate Control Program

Component	Description
Groundwater Management Zone Strategy (Nitrate Specific)	The Nitrate Control Program recommends that the Basin Plans be amended to allow and encourage management of nitrate through the establishment of management zones. In general, a management zone would consist of multiple permittees and other local stakeholders working collectively to first ensure safe drinking water, then to manage nitrates to create a balance within the defined management area (where reasonable and feasible), and ultimately to develop and implement a long-term plan for restoration of groundwater (where reasonable, feasible and practicable) to meet applicable water quality objectives. Although the Basin Plans do not currently prevent the management of nitrates through the creation of management zones, the Program defines the characteristics, intent and purpose of a Management Zone as well required components for consideration of approval by the Central Valley Water Board.
Nitrate Control Program	The Nitrate Control Program provides two pathways for compliance for permitted discharges to groundwater. Pathway A is for individual permittees and sets conservative limitations for source control. Requirements are based on categories that take into account nitrate concentrations in the discharge as well as in the Shallow Zone of the aquifer. Pathway B is for permittees proposing to be regulated under a Management Zone. Both Pathways have their own specific milestones and timelines. However, both Pathways require the development of an Early Action Plan (EAP) to identify means of providing short term safe drinking water supplies to users impacted by nitrate concentrations in their groundwater source which falls within the permittee's zone of contribution. When needed, both Pathways also require development of an alternate compliance project to allow continued discharge into a threatened or impaired groundwater basin while the permittee develops a long-term solution to ensure safe drinking water and move toward balanced loading and restoration. The Control Program includes guidance on the minimum requirements for an alternative compliance project which relies in part on the Conditional Exceptions Policy (discussed below).
Conditional Prohibition	A Conditional Prohibition will apply to all permittees discharging salt and nitrate, except permittees regulated under the Board's Irrigated Lands Regulatory Program (ILRP) and potentially other General Orders, from the time the permittee receives a Notice to Comply until such time that the permittees' existing waste discharge requirements are updated or amended through a public hearing to reflect requirements of the Salt and Nitrate Control Program, including incorporation of any proposed Alternate Compliance Project or Management Zone Implementation Plan. The Central Valley Water Board will consider updating ILRP General Orders within 18 months of the effective date of the amendments. Conditions will include meeting Control Program requirements including meeting timelines for response to Notices to Comply, selection of permitting pathway, submittal of justification for pathway selection, implementation of Early Action Plans when needed, and submittal of any needed Alternate Compliance Project or Management Zone Proposal and associated Implementation Plan.
Surveillance and Monitoring	The goals of the Salt and Nitrate Monitoring Program are to: assess the effectiveness of the Control Program; develop statistically-representative ambient water quality determinations and trends; and maximize the use of existing monitoring programs. Information gathered will be consolidated and evaluated by the entity leading the monitoring study. Within two years of the effective date of the Salt and Nitrate Control Program, the lead entity will submit a Work Plan and a Quality Assurance Project Plan for Central Valley Water Board approval. Permittees with salt or nitrate discharges must either gather needed information required by the plan for their area of contribution and provide the information to the lead entity in a readily available format or must demonstrate their support for the lead entity to gather needed information by submitting documentation of such support from the lead entity. An assessment of ambient water quality and trends and a review of the overall progress of the Salt and Nitrate Control Program based on water quality trends will be completed at least once every 5-years or other time schedule is approved by the Central Valley Water Board.

Table ES - 1. Description of Major Components of the Proposed Salt and Nitrate Control Program

Component	Description
Variance Policy	The existing conditional Salinity Variance Program applies to salinity water quality standards for the following constituents: electrical conductivity, total dissolved solids, chloride, sulfate and sodium, and was developed to allow dischargers to continue to meet performance based standard while supporting the CV-SALTS initiative. The current Salinity Variance Program prohibits the Central Valley Water Board from approving any salinity variance after June 30, 2019, because it was intended that any extension, or permanent, long-term Salinity Variance Program should be developed through the CV-SALTS process and that stakeholders needed to make appropriate recommendations for such a policy in the SNMP. The Salt and Nitrate Control Program recommends that the Salinity Variance Program be extended for an additional 15 years to allow permittees to participate in the P&O Study. Permittees who do not participate in the P&O Study are not eligible for a salinity variance.
Exceptions Policy	The existing Salinity Exceptions Policy that only applies to TDS/EC, chloride, sulfate and sodium, prohibits the Central Valley Water Board from authorizing new exceptions or reauthorizing previously approved exceptions after June 30, 2019. This Salt and Nitrate Control Program recommends revising the existing Exceptions Policy by amending the Basin Plans to (a) add nitrate to the list of chemical constituents for which the Central Valley Water Board may authorize an exception; (b) expand/revise conditions or authorization of an exception to reflect the requirements of the Salt and Nitrate Control Program (no separate application for an exception is needed if meeting Phase I Alternative Salinity Compliance requirements and implementation of an approved alternate nitrate compliance project, respectively); (c) remove the existing sunset provision that prohibits the granting of exceptions beyond June 30, 2019; and (d) delete the current provision limiting the term of an exception to no more than 10 years and add a new provision stating that when authorizing an exception, the Central Valley Water Board shall generally not exceed a term of 10-years but may only exceed 50-years if management practices under the exception are resulting in significant and measurable improvements in water quality. Exception application provisions specific to boron are also included.
Drought and Water Conservation Policy	The effects of drought and the implementation of encouraged or mandated water conservation practices can significantly impact effluent quality in discharges to surface water or groundwater and compliance issues for some permittees because of increased TDS/EC and other salinity-related constituents in influent and effluent. Historically, WDRs/Conditional Waivers rarely have included any special provision or consideration for variations in effluent quality, directly or indirectly related to recurrent drought conditions that are beyond the control of the permittee or for ongoing, expanding and sometimes mandated conservation practices. The Salt and Nitrate Control Program proposes interim salinity effluent limits during periods of drought or increased implementation of water conservation practices. During periods of drought the interim effluent limit for electrical conductivity (EC) is not to exceed 2,200 uS/cm as a 30-day running average. The limits may be established in terms of concentration or total dissolved solids (TDS) loading. Interim limits for conservation efforts shall be based on either not exceeding the receiving water concentration and not causing down gradient impacts or maintaining TDS loading consistent with historical load (with consideration given to reasonable increment of use or change in source water salinity concentration while not exceeding the numeric limitations noted above. The Drought and Conservation Policy is proposed to guide interim effluent limits as needed under the Variance Policy during Phase 1 of the Salt Control Program and may become generally applicable during future phases based upon review of the overall program.

Table ES - 1. Description of Major Components of the Proposed Salt and Nitrate Control Program

Component	Description
Offsets Policy	An offset is an alternative means of achieving compliance with a WDR, either alone or in combination with other actions, for a given pollutant or pollutants. An offset allows for the management of other sources and loads (not directly associated with the regulated discharge) so that the combined net effect on receiving water quality from the discharge and the offset is functionally-equivalent to or better than that which would have occurred by requiring the permittee to comply with its WDR at the point-of-discharge. The Salt and Nitrate Control Program includes an Offsets Policy, which recommends that the Basin Plans be amended to provide authority for the Central Valley Water Board to allow the use of offset projects to comply with WDRs, but only for groundwater. In general, offsets are to be utilized in the same groundwater basin/sub-basin where the discharge occurs, however, offsets may also be used to incentivize implementation of some large-scale projects such as a regional regulated brine line. Offsets may be proposed to support a request for either an allocation of available assimilative capacity or an exception but cannot result in unmitigated localized impairments. Offsets must be (1) proposed by permittee (individual or group of permittees) as an Alternative Compliance Project (ACP, see below); (2) approved by the Central Valley Water Board; and (3) enforceable through a WDR or other orders issued by the Board. The approved offset must specify the time period for which it applies, a monitoring and reporting program, and remedial actions that must be undertaken by the permittee if the offset project fails.
Clarified Water Quality Objectives and Guidance to Implement Secondary Maximum Contaminant Levels	The Salt and Nitrate Control Program proposes to incorporate guidance into the Basin Plans to support to clarify implementation of SMCLs (from Title 22) in permits for discharge to surface water and groundwater. These recommendations include: ▪ Under Chapter 3 Water Quality Objectives: incorporate guidance from Title 22 for utilizing the applicable “Recommended”, “Upper”, or “Short Term” concentrations included in Table 64449-B; clarify consideration of natural background concentrations; and specify annual averaging for surface water and appropriate long-term averaging for groundwater. ▪ Under Chapter 4 Implementation: • Consider “Recommended” concentrations as goals and allow concentrations ranging to the “Upper” level if it is demonstrated that it is neither reasonable nor feasible to achieve lower levels. “Short Term” level may be authorized on a temporary basis consistent with Title 22 or with the Drought and Conservation Policy • Clarify the use of filtered samples using a 1.5-micron filter to remove suspended solids to measure compliance for aluminum, color, copper, iron, manganese, silver, turbidity and zinc. The Central Valley Water Board may adjust the filter size where necessary to more accurately represent site-specific conditions based on scientific evidence submitted for their consideration and after consultation with Division of Drinking Water and public comment

Table ES - 1. Description of Major Components of the Proposed Salt and Nitrate Control Program

Component	Description
Guidance for Developing Alternative Compliance Projects (ACP) for Nitrate Discharges	When an individual or group of permittees is unable to demonstrate that their discharge is not individually or collectively causing or contributing to nitrate degradation above the triggers identified in the Nitrate Control Program, they have an opportunity to request either allocation of available assimilative capacity or an exception. In most cases, the request for the granting of assimilative capacity[2] or an exception in these circumstances requires submittal of a proposed ACP. This request may be made as an individual permittee (which includes a third party group subject to a general order) or permittees working collaboratively as part of a groundwater management zone. Any proposed ACPs submitted for consideration must contain specific components; accordingly, guidance is provided that describes the components recommended for submittal of an ACP for approval. At a minimum any proposed ACP must include but is not limited to: • Identification of public water supply and domestic wells within the discharge area zone of contribution that exceed the nitrate water quality objectives • Milestones and timelines to address the drinking water issues (short and long-term) • Milestones and timelines to meet long term management goals of balanced loading and restoration, which may be phased over time
SMCL Considerations when Developing WDRs	Source water protection is a critical component to protect drinking water consumers. Since clarifications are proposed to address the application of SMCLs to protect MUN, guidance is also proposed on considerations when evaluating permit conditions related to SMCLs in order to clarify the current process of evaluating potential individual and cumulative impacts on instream and downstream beneficial uses.
Definitions Specific to Salt and Nitrate Control Program	A series of definitions have been proposed for incorporation as part of the Salt and Nitrate Control Program amendment in order to add clarity and provide consistency in implementation.

Salt Control Program

The Salt Control Program is a three-phased adaptive management approach strategy (Figure S-1 of the Basin Plan Amendment Language) that applies to both surface and ground waters in the Central Valley developed to meet the following goals:

- Control the rate of degradation through a “managed degradation” program;
- Implement salinity management activities to achieve long-term sustainability and prevent continued impacts to salt sensitive areas; and
- Protect beneficial uses by maintaining water quality that meets applicable water quality objectives and pursuing long-term managed restoration where reasonable, feasible and practicable.
- Protect beneficial uses by applying appropriate antidegradation requirements for high quality water

Each of the three phases has a duration of ten years that can be extended up to 15 years with Executive Officer approval. Phase I is the development of a Prioritization and Optimization Study (P&O Study) and will be implemented upon the effective date of this amendment. The Salt Control program is structured to encourage permittees that discharge salt and entities

[2] Conditions with respect to granting of assimilative capacity will vary, depending on how the receiving water is defined for the discharge(s) in question. In some cases, the receiving water will be considered to be shallow groundwater, while in others, it may be the upper zone .

responsible for the movement of salt throughout the Central Valley and those that use Central Valley waters outside of the Central Valley to participate and fund the P&O Study. Level of participation in the P&O Study will be determined by a lead entity. The Central Valley Salinity Coalition (CVSC) is the intended lead of the P&O Study. Development and implementation of the P&O Study will be discussed in an open stakeholder process through the CV-SALTS Executive Committee or similar process approved by the Executive Officer.

Within one year of the effective date of the Basin Plan amendments the Central Valley Water Board will issue a Notice to Comply (NTC) with the Salt Control Program to permittees that discharge salt in the Central Valley Region. The permittees will have two compliance pathways from which to choose to comply with the Salt Control Program. No later than six months after receiving the NTC, permittees shall notify the Central Valley Water Board of its decision of which compliance pathway with documentation to support its decision (Table S-1 of the Basin Plan Amendment Language):

1. *Conservative Salinity Permitting Approach*, utilizes the existing regulatory structure that under Phase I focuses on source control, use of conservative permit limits, and limited use of assimilative capacity and/or compliance time schedules.

2. *Alternative Salinity Permitting Approach*, is an alternative approach to compliance through support of the facilitation and completion of the P&O Study. Discharges of salt to waste management units subject to the containment requirements of Division 2 of Title 27 of the California Code of Regulations are not eligible to be permitted under the Alternative Salinity Permitting Approach.

The conservative salinity permitting approach is the default-permitting pathway. A permittee must elect and notify the Central Valley Water Board to be permitted under the alternative salinity permitting approach.

The Conservative Salinity Permitting Approach assumes a discharge of salt will not degrade the receiving water. In this approach, staff assumes very conservative salinity values for protection of beneficial uses and limits availability of assimilative capacity.

Permittees electing the Alternative Permitting Approach will be required to maintain performance based salt limits when applicable, continue to implement salinity management practices and maintain existing salt discharge concentration or loading levels. Assimilative capacity may be granted for salinity at the discretion of the Central Valley Water Board. Under this approach, dischargers of salt regulated by an NPDES permit are eligible for a conditional salinity variance. For non-NPDES dischargers of salt, compliance with the P&O Study will be deemed as compliance with applicable basin plan requirements.

The P&O study will identify groundwater basins that may serve as salt management areas provided Basin Plan amendments are done to de-designate one or more beneficial uses due to salinity. Permittees with discharges of salt to these locations are required to participate in the Phase I Salt Control Program.

New permittees of salt, or existing permittees seeking permit modifications due to a substantial and/or material change to a facility that negatively impacts its salt discharges, shall indicate in its Report of Waste Discharge how the permittee intends to comply with the Salt Control Program.

The Salt Control Program establishes key milestones and an implementation schedule for the Phase I P&O Study (Table S-2 and Figure S-2 of the Basin Plan Amendment Language). Where key milestones are not met, or where the Central Valley Water Board finds reasonable progress is not being made towards achieving the milestones, the Board will notify all permittees in the

Alternative Salinity Permitting Approach of its findings. Failure to comply with the requirements in the notice will result in all permittees under the Alternative Permitting Approach to be subject to the requirements of the Conservative Salinity Permitting Approach.

At the completion of Phase I and prior to implementation of subsequent Phases, the Central Valley Water Board will re-evaluate the permitting compliance pathways to determine if they should be modified or continued. Basin Plan amendments to implement the determination and notification to the effected dischargers will be completed prior to the initiation of subsequent phases of the Salt Control Program.

The Salt Control Program proposed through this Basin Plan Amendment does not alter, revise or supersede the requirements and standards established through the Bay-Delta Plan that apply to permittees that discharge salt to the Delta. The proposed Salt Control Program does not alter, revise or supersede the Delta Strategic Plan approved by the Central Valley Water Board in 2008 and updated in 2014. The proposed Salt Control Program sets forth a phased control program with adequate measures to ensure controllable sources of salts remain at current levels and are not increased unless the permittee can adequately demonstrate such increases will not impact downstream users or that such discharges are compliant with the Drought and Conservation Policy also proposed by these Amendments.

Nitrate Control Program

The Nitrate Control Program is a prioritized program and applies only to groundwaters designated with the municipal and domestic supply (MUN) beneficial use, and was developed to achieve the following management goals:

Goal 1 – Ensure a Safe Drinking Water Supply;
Goal 2 – Achieve Balanced Salt and Nitrate Loadings; and,
Goal 3 – Implement Managed Aquifer Restoration where reasonable, feasible and practicable.

The Nitrate Control Program is prioritized to first address health risks associated with drinking water that exceeds the nitrate primary maximum contaminant level. Groundwater Basins/Sub-basins[3] have been prioritized based on ambient nitrate conditions (Table N-1 and Figure N-1 of the Basin Plan Amendment Language) and timelines for implementation of the Nitrate Control Program are established. Implementation of the Nitrate Control Program in non-prioritized basins and sub-basins will occur as directed by the Central Valley Water Board's Executive Officer. In areas of the Central Valley where there are no identified groundwater basins or sub-basins, the Nitrate Control Program will apply when the Board's Executive Officer determines it is necessary and appropriate and notifies the permittee accordingly (Table N-2 of the Basin Plan Amendment Language).

No later than 1 January 2024, the Central Valley Water Board will review and may adjust the priorities established through the SNMP after considering water quality-based factors and other relevant information. Basins identified in Priority 1 and 2 have specific timelines for implementation of the Nitrate Control Program requirements. The remaining basins will be prioritized at the discretion of the Central Valley Water Board.

3 The prioritized Groundwater Basins/Sub-basins identified in the public draft, including identification per DWR's Bulletin 118, are from Luhdorff and Scalmanini Consulting Engineers and Larry Walker Associates (2016a), and the Central Valley Water Board may adjust these priorities during a public review process.

This program provides the Central Valley Water Board authority to allow alternative compliance mechanisms in place of traditional permitting determinations. Permittees must request an Alternative Compliance Project (ACP) (Appendix H) approach subject to public review and comment. Implementation and enforcement of the ACP is through a permittee's Waste Discharge Requirements. A fundamental element of any ACP is that it must ensure that safe drinking water is provided to parties impacted by nitrate contaminated drinking water.

To protect groundwaters that are not contaminated by nitrates, the Nitrate Control Program establishes a nitrate trigger value that is 75% of the primary MCL of 10 mg/L (NO_3-N). The nitrate trigger is not a water quality objective but establishes a threshold value that requires additional actions by both the Central Valley Water Board and permittees when trigger levels are exceeded.

The Central Valley Water Board will issue Notices to Comply according to the schedule prescribed in the Nitrate Control Program (Table N-2 of the Basin Plan Amendment Language). The Board's Executive Officer retains discretion to adjust the timelines based on available resources.

For existing permittees of nitrate [4] implementation of the Nitrate Control Program occurs when a Notice to Comply is received from the Central Valley Water Board.

New dischargers of nitrates located in a groundwater basin/sub-basin regardless of priority, or those with a material change to their operation that increases the level of nitrate discharged to groundwater must comply with the Nitrate Control Program. This provision does not apply to dischargers located in areas that are not part of a designated groundwater basin/sub-basin unless notified by the Executive Officer.

Communities that are impacted by nitrates may petition the Central Valley Water Board to request a basin, sub-basin, or portion thereof be required to comply with the Nitrate Control Program. Permittees in priority basins may request that the Central Valley Water Board defer the issuance of a Notice to Comply for a sub-area of the basin to correspond with the schedule for a lower priority basin. Documentation is required for community and/or permittee requests as noted in the Nitrate Control Program under Issuance of Notice to Comply.

Permittees that receive a Notice to Comply with the Nitrate Control Program from the Central Valley Water Board must choose between two compliance pathways *(*Figure N-2 of the Basin Plan Amendment Language*)*:

1. *Path A –Individual Permitting Approach*

   Path A is utilized when an individual discharger (or third-party group subject to a General Order wishing to proceed under Path A) decides to comply with the nitrate requirements as

4 For the purposes of the Nitrate Control Program, the term "existing permitted dischargers" means dischargers subject to individual Waste Discharge Requirements, dischargers regulated as individual facilities under General Waste Discharge Requirements (e.g., facilities regulated under the Waste Discharge Requirements General Order for Existing Milk Cow Dairies), facilities or discharges subject to Conditional Waivers, or dischargers subject to General Waste Discharge Requirements that are regulated through a Third Party (e.g., dischargers regulated under Irrigated Lands Regulatory Program's Third-Party General Orders). For those dischargers that are part of a third party group, notifications required by the Nitrate Control Program may be issued to and received from the Third Party group on behalf of their members, who in turn will be responsible for notifying its members.

an individual/third party, or in circumstances when a management zone is not an available option.

Nitrate discharge impacts to groundwater are assessed in the shallow zone that represents the area of the aquifer available for use by the shallowest domestic wells (Figures 2-4 and 2-5). The Nitrate Control Program establishes conservative methodologies for determining the ambient nitrate concentrations in the shallow zone. The Nitrate Control Program establishes five categories of nitrate discharges (Table N-3 of the Basin Plan Amendment Language) used to determine how a permittee electing Path A will be permitted to discharge. The Central Valley Water Board will determine which nitrate category applies.

Existing permittees of nitrate electing an individual permit - Path A shall conduct an initial assessment of their discharge as it relates to nitrate upon receipt of a Notice to Comply. The initial assessment shall be submitted as part of a Notice of Intent and must contain the required elements prescribed in the Nitrate Control Program.

Path A is the default-permitting pathway. A permittee must affirmatively elect and notify the Central Valley Water Board to be permitted under Path B.

2. *Path B –Management Zone Approach*

Path B is utilized when multiple dischargers/permittees elect to participate in a management zone as the preferred method for complying with the Nitrate Control Program *(*Figure N-2 of the Basin Plan Amendment Language*)*.

Discharges of nitrate within a Management Zone are not categorized like discharges in Path A, and impacts to groundwater are assessed collectively in the upper zone that is the portion of groundwater basin, subbasin or management zone from which most domestic wells draw water (Figures 2-4 and 2-5). Availability and allocation of assimilative capacity are determined by the Central Valley Water Board based on a volume-weighted average of nitrate concentrations in the Upper Zone.

The Central Valley Water Board finds Path B - Management Zones to be a regulatory option that is both appropriate and preferable for many areas of the Central Valley as it maximizes resources to address the nitrate contamination, and provides a more integrated approach to developing local solutions.

Existing permittees electing the Management Zone permitting approach - Path B must work cooperatively with other permittees and local stakeholders and prepare and submit all the required documents to participate in a Management Zone (Table N-5B of the Basin Plan Amendment Language). Upon receipt of a Notice to Comply, the permittees in the Management Zone must prepare and submit a single Preliminary Management Zone Proposal for a geographic area they are proposing to establish as a Management Zone. A Preliminary Management Zone Proposal must include all the information within the time schedule prescribed in the Nitrate Control Program. Permittees that are identified as an Initial Participant in a Management Zone shall be presumed to be electing Path B for complying with the Nitrate Control Program, unless they otherwise notify the Central Valley Water Board of their intent to withdraw from Path B.

After Executive Officer approval of the Preliminary Management Zone proposal, participants must prepare and submit a Final Management Zone Proposal. The Final Management Zone

proposal must include all information from the Preliminary Management Zone Proposal, updated as necessary, and contain all the minimum prescribed information in the Nitrate Control Program and posted for public review and comment for at least 30 days. The Executive Officer determines if the Final Management Zone Proposal meets requirements of the Nitrate Control Program. A complete Final Management Zone Proposal functions as an equivalent to a Report of Waste Discharge for all existing permittees that are participating in the Management Zone.

A detailed Management Zone Implementation Plan must be submitted six months after approval of the Final Management Zone Proposal. The implementation plan indicates the method of compliance; i.e. through the allocation of assimilative capacity or through an exception to meeting the water quality objective (as defined in the Definitions and Terminology Section of the Basin Plan Amendment Language). The Management Zone Implementation Plan is the equivalent to an Alternative Compliance Project (as defined in the Definitions and Terminology Section of the Basin Plan Amendment Language). The Management Zone Implementation Plan is subject to public review and comment and must be approved by the Central Valley Water Board.

A Management Zone Implementation Plan must be reviewed periodically, and modified as appropriate. Any modifications that impact or change timelines, milestones or deliverables in the Plan must be approved by the Central Valley Water Board. Failure to implement or revise the Management Zone Implementation Plan in accordance with the Nitrate Control Plan will result in dischargers within that Management Zone being directed by the Executive Officer to comply with the Nitrate Control Program via Path A.

New dischargers that propose to discharge new or additional levels of nitrate[13], or existing permittees seeking a permit modification due to a material change to a facility that will increase nitrate discharges (either in volume or concentration), shall submit initial assessment information at the time of submittal of the Report of Waste Discharge. The discharger shall indicate how they intend to comply with the Nitrate Control Program, i.e., Path A or Path B, if a management zone exists.

Key Components of Nitrate Permitting Strategy

Early Action Plan

Regardless of whether a permittee chooses Path A or B, all permittees must assess nitrate levels in groundwater that may be impacted by nitrate in their discharge(s) over a 20-year planning horizon. If drinking water is impacted or threatened to be impacted a permittee shall submit an Early Action Plan (EAP). An EAP includes specific actions and a schedule of implementation to address the immediate needs of those drinking groundwater that exceeds the drinking water standard for nitrate. The timing of the submittal of the EAP depends on whether a permittee chooses permitting Path A or B. To be deemed complete, an EAP must at a minimum include the prescribed elements contained in the Nitrate Control Program. An Early Action Plan may be part of an Alternative Compliance Project.

Allocation of Assimilative Capacity

The allocation of assimilative capacity by the Central Valley Water Board shall be determined based on the nitrate permitting strategy pathway. For Path A assimilative capacity will be based

[13]In cases where there is an ownership transfer of a facility and where the level of nitrate being discharged does not change, an initial assessment may not be necessary.

on the quality of the groundwater in the shallow zone. For Path B assimilative capacity will be based on a volume-weighted average of groundwater quality in the upper zone and a condition that the quality will not exceed a trigger level of 75% of the nitrate water quality objective over a 20-year timeframe. For Path B, the Board will typically require an Alternative Compliance Project as a condition to granting any assimilative capacity. For Path A, the Board will determine the need for an ACP on a case-by-case basis.

Exceptions to Meeting the Water Quality Objective for Nitrate

The Nitrate Control Program establishes a new Exceptions Policy for nitrate. Using the authority provided under the Exceptions Policy, the Central Valley Water Board may authorize a discharge that may violate applicable water quality standards in the receiving groundwater basin[5] provided safe drinking water is provided to users of the nitrate contaminated water. Exceptions are used when there is no feasible, practicable or reasonable means for a discharge to meet water quality objectives within a time schedule typically allowed by the Board (i.e. 10 years or less) and it is not feasible, practicable or reasonable to prohibit the discharge. An Exception is available to permittees under Path A or Path B where assimilative capacity in the groundwater basin is not available. Exceptions are not intended to be a permanent waiver from compliance obligations. They are time bound, subject to conditions and reviewed periodically.

Alternative Compliance Projects

An Alternative Compliance Project (ACP) is a project proposed by a permittee or permittees and must assure short and long-term safe drinking water supplies while moving toward long-term managed restoration. An ACP is used to support a request for allocation of available assimilative capacity above certain triggers or to request use of an Exception. Under Path A, the ACP is submitted with the Notice of Intent, while under Path B the Management Zone Implementation Plan will serve as the ACP. An ACP must assure a significantly better outcome for the people of California than would occur under strict compliance with waste discharge requirements. As part of an ACP for nitrate, permittee(s) will need to show that groundwater users down-gradient of the discharge(s) have drinking water that meets applicable state and federal standards. ACPs may include both emergency actions (e.g., bottled water) in the short-term, permanent solutions (such as well-head treatment or alternative drinking water supplies) in the intermediate term, and efforts to re-attain the water quality objective (where feasible and practicable) over the long-term. Any short and/or long-term drinking water solutions must be developed with participation and concurrence of those benefiting from the project(s). Criteria for development of an ACP are included in the Nitrate Control Program.

ADDITIONAL POLICIES TO SUPPORT IMPLEMENTATION OF THE SALT AND NITRATE CONTROL PROGRAMS

Conditional Prohibition of Discharge for Surface and Groundwater discharges

The Salt and Nitrate Control Program requires actions by both dischargers and Central Valley Water Board staff. To fully implement the Salt and Nitrate Control program staff will amend, revise, renew or develop new waste discharge requirements or other orders to impose the requirements of the Salt and Nitrate Control Program. Staff resources may constrain staff's ability to do this in a timely manner. As a bridge to ensure compliance and timely

[5] Exceptions from compliance with water quality standards in a groundwater basin is similar to the concept of a "variance" for surface waters. The key distinction is that exceptions are governed exclusively by state law and variances are subject to both state and federal authority. See, for example, Resolution. No. R5-2014-0074.

implementation of the Salt and Nitrate Control Program, these proposed amendments establish Conditional Discharge Prohibitions of salt discharges to surface and groundwater and nitrate dischargers to groundwater. The conditional prohibition applies to all permitted dischargers of salt and nitrate upon receipt of a Notice to Comply with the provisions of the Salt and Nitrate Control Program. Once applicable, the prohibition will remain in effect until such time the permittees' existing waste discharge requirements are updated or amended to reflect Control Program Requirements. The Conditional Prohibition will not apply to permittees regulated by an Irrigated Lands General Order, instead they will be required to comply with the Salt and Nitrate Control Program through an amendment to the Irrigated Lands General Orders.

Variance Program for Salinity Water Quality Standards for Surface Water Discharges Subject to NPDES Permits Only

Variances are most commonly employed when there is no feasible, practicable or reasonable means for a point source discharge to surface water governed under the federal Clean Water Act, to meet water quality standards, when evaluating if a beneficial use or water quality standard represents the highest attainable condition consistent with federal regulations, or when a use or standard is unattainable today (or for a limited period of time) but feasible progress could be made toward attaining the designated use and criterion in the future. The current Variance Policy contains provisions for a streamlined salinity variance for a group of permittees with similar discharge characteristics that meet the above criteria. The salinity variance was to sunset with submittal of the CV-SALTS SNMP unless recommended for extension. The Salt and Nitrate Control Program recommends extension of the sunset date to coincide with completion of the P&O Study and that only permittees participating in the P&O Study be eligible for the salinity variance.

Exceptions from Basin Plan Provisions and Water Quality Objectives Other Than Nitrates for Groundwater and for Non-NPDES Dischargers to Surface Water

In addition to the discussion provided above for exceptions to the nitrate water quality objective for MUN, further amendments will be made to the current Exceptions policy provided in the Basin Plans.

The current Exceptions Policy only provides guidance for a limited number of salinity constituents (EC, TDS, chloride, sulfate and sodium) (Central Valley Water Board, 2014). This proposed amendment policy recommends revisions to the existing policy to provide guidance on obtaining exceptions for nitrates and boron in WDRs. In addition, the current Salinity Exceptions Policy is scheduled to sunset on 30 June 2019. This amendment proposes to remove the sunset date and limit terms for exceptions for salinity, nitrate or boron. Terms will generally not exceed 10-years; however, the Central Valley Water Board shall have the discretion to adopt an exception for longer than 10 years if the applicant(s) can demonstrate that it is necessary to further the management goals of the Salt or Nitrate Control Programs. The Central Valley Water Board has the authority to reauthorize (renew) an exception for one or more additional terms, the length of which shall be determined by the Board but may only exceed 50 years if the management practices under the exception are resulting in significant, measurable and continuing improvements in water quality. The authorization of an exception, or any reauthorization, shall require approval of the Board, after public notice and hearing. Status reports are required every five years with review conducted in a public hearing.

Under Phase I of the Salt Control Program, permittees that are in compliance with the conditions established by the Alternative Permitting Approach are in compliance with their

salinity limits. Additional conditions for exceptions to water quality objectives for salinity under Phase II and Phase III of the Salt Control Program may be incorporated in the future.

Drought and Conservation Policy for Surface and Groundwater

The proposed Basin Plan Amendments include incorporation of interim salinity permit limits that are in effect during droughts or through conservation and recycling. The policy establishes interim limits that are available for permittees who have documented that conservation or recycling is causing increased salinity in their discharge. The interim limits will not exceed an EC concentration of 2,200 uS/cm as a 30-day running average, or an equivalent measure in terms of concentration or TDS load. Concentration and loading limits shall not apply at the same time.

Further, the policy allows that permittees discharging to groundwater who document long-term commitment (20+ years) to water conservation and/or water recycling efforts may be eligible to use a long-term (10+ year) flow-weighted average to calculate compliance with effluent and or groundwater limitations.

The Drought and Conservation Policy is proposed to guide interim effluent limits as needed under the Variance Policy during Phase 1 of the Salt Control Program and may become generally applicable during future phases based upon review of the overall program.

Offsets for Groundwater Only

The proposed Basin Plan Amendment recommends an Offsets Policy for discharge of salt and nitrate to groundwater. An offset is an alternative means of achieving compliance with Waste Discharge Requirements (WDRs) either alone or in combination with other actions, for a given pollutant or pollutants authorized by the Central Valley Water Board. The decision to pursue an offset is voluntary. Offsets must be:

(1) Proposed by the permittee[6] as an Alternative Compliance Project (ACP)

(2) Approved by the Central Valley Water Board; and

(3) Enforced through a WDR or other order issued by the Board.

Requirements that apply to offsets are documented in the amendment language contained in the Offsets Policy.

Application of Secondary Maximum Contaminant Levels to Protect MUN for Surface and Groundwater

Current Basin Plan language simply incorporates the Secondary Maximum Contaminant Level (SMCLs) tables from Title 22 California Code of Regulation and not the contextual language. Lack of contextual language has led to inconsistent application of the SMCLs as permit limits, and conservative application of SMCLs can limit a permittee's ability to discharge water which is otherwise available for reuse. The proposed Basin Plan Amendments recommend revisions to the Water Quality Objectives Chapter 3 (Chemical Constituents) and to the Implementation Chapter 4 to clarify the intent and use of applying the SMCLs in permitting actions by staff.

[6] Throughout this document the term "permittee" can connote either an individual permittee or a coalition of dischargers regulated under a common set of categorical WDRs or watershed/groundwater basin/subbasin permit or order, or permittees working collaboratively within a management zone.

SURVEILLANCE AND MONITORING PROGRAM FOR SURFACE AND GROUND WATER

The overarching goals of the Salt and Nitrate Surveillance and Monitoring Program are to:

- Periodically assess the effectiveness of the Salt and Nitrate Control Programs and, if appropriate, support efforts to re-evaluate the requirements of the control program.
- Develop representative ambient water quality and trend information for Total Dissolved Salts (TDS)/Electrical Conductivity (EC) and Nitrate as Nitrogen.
- Maximize the use of existing monitoring programs to provide needed data and avoid duplication of efforts.

The Central Valley Water Board will require permittees discharging salt and nitrate to provide information to the Board to satisfy the monitoring goals. This information may come from, but not be limited to, permittees' monitoring efforts; consolidated or regional monitoring programs conducted by state or federal agencies or collaborative watershed efforts; or special studies evaluating effectiveness of management practices. Information gathered will be consolidated and evaluated by the entity leading the Monitoring Study and a summary report will be submitted to the Board every five years.

Recommendations to Other Agencies

The need to control and abate the impacts from increasing salinity through implementation of the Salt Control Program in the Central Valley is an important priority for the State of California, is critically important to the long-term sustainability of the Central Valley and its water supply, and is consistent with the goals and objectives of the California Strategic Growth Plan (California Bond Accountability, 2008). Failure to control salts will result in a decline of Central Valley surface and groundwater quality at an enormous cost to all water users of Central Valley waters. Due to the complexity and far-reaching impacts of salt management in the valley, the Central Valley Water Board has determined that all users of Central Valley waters, within and outside of the Board's jurisdictional area, are considered stakeholders responsible for the successful implementation of the Salt Control Plan. This will require significant participation and actions by federal, state, local agencies, districts, associations and other entities that use, transport or otherwise impact Central Valley's waters. These amendments propose recommended actions that should be taken by other governmental and public agencies and organizations to implement the Salt Control Program. A key recommendation applicable to all parties identified is for these entities participate in the P&O Study to be done under Phase I, and in the other two phases of the Salt Control Program as appropriate. Participation in the Phase I P&O Study may be done by providing financial, technical and policy support to the P&O Study. This participation is essential as findings from the P&O Study will direct the implementation of physical and non-physical projects in the phased Salt Control Program and coordination. An ongoing effort will be required to identify all stakeholders and to determine their financial responsibility and needed level of participation

AMENDMENT LANGUAGE FOR THE SACRAMENTO RIVER AND SAN JOAQUIN RIVER BASIN PLAN AND TULARE LAKE BASIN PLAN

The following sections identify proposed amendments to the Water Quality Control Plans for both the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin (Basin Plans). Where the proposed changes to the Basin Plan revise existing language, text additions to the existing Basin Plan language are underlined and *italicized*. Text deletions to the existing Basin Plan are in ~~strikethrough~~.

For proposed amendments that add new sections to the Basin Plans, the new section is noted but not presented in underlined italics to facilitate clarity.

The following summarizes components of the proposed amendments:

Chapter 3 Water Quality Objectives

- Application Water Quality Objectives—Fourth Point (revision)
- Secondary Maximum Contaminant Levels (revision)

Chapter 4 Implementation

- Salt and Nitrate Control Program (new)
    - Program to Control and Permit Salt Discharges to Surface and Groundwater
        - Conservative Permitting Approach
        - Alternative Permitting Approach
        - Schedule of Implementation
        - Required Deliverables
        - Edits specific to the Tulare Lake Basin Plan Salinity Limits (revision)
    - Program to Control and Permit Nitrate Discharges to Groundwater (new)
        - Priority Basins and Subbasins
        - Permitting Approaches
            - Pathway A: Individual
            - Pathway B: Management Zone Approach
        - Schedule of Implementation
        - Required Deliverables by Pathway
            - Early Action Plans
            - Implementation Plans for Long-term Sustainability
    - Conditional Prohibition of Salt and Nitrate Discharges
    - Surveillance and Monitoring Program
    - Recommendations to Other Agencies
    - Definitions and Terminology Specific to the Salt and Nitrate Control Program
- Supporting Policies
    - Variance Policy (revised)
    - Exceptions Policy (revised)
    - Drought and Conservation Policy (new)
    - Offsets Policy (new)
- Application of Secondary Maximum Contaminant Levels to Protect Municipal and Domestic Supply (new)
- Estimated Costs to Agriculture

Appendix XX

- Nitrate Control Program Non-Prioritized Groundwater Basins (new)

CHAPTER 3 WATER QUALITY OBJECTIVES

The following edits are proposed for the Sacramento River and San Joaquin River Basin Plan's *Chapter 3 Water Quality Objectives* in the sections indicated below.

Points That Apply to Water Quality Objectives

Modify the Basin Plan in Chapter 3 Water Quality Objectives under the heading, “Water Quality Objectives” as follows:

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

CHAPTER 3 WATER QUALITY OBJECTIVES

The following edits are proposed for the Sacramento River and San Joaquin River Basin Plan's *Chapter 3 Water Quality Objectives* in the sections indicated below. Note that these changes are also proposed for the Tulare Lake Basin Plan.

Secondary Maximum Contaminant Level Policy

Modify the Basin Plan in Chapter 3 Water Quality Objectives under the heading, "Water Quality Objectives for Inland Surface Waters, Chemical Constituents" as follows:

Water Quality Objectives For Surface Waters

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

At a minimum*, unless there is an approved site specific objective*, *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 (*Title 22*), which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of *s*~~S~~ection 64431, *and* Table 64444-A (Organic Chemicals) of *s*~~S~~ection 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. At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain lead in excess of 0.015 mg/l. The *Central Valley Water Board* ~~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. *Some MCLs may not be appropriate as an untreated surface water objective without filtration or consideration of site-specific factors*. To protect all beneficial uses the *Central Valley Water Board*~~Regional Water Board~~ may apply limits more stringent than MCLs.

The annual average of sample results will be used to evaluate compliance with the Secondary Maximum Contaminant Levels identified in Tables 64449-A or 64449-B.

In addition, for surface waters designated MUN the concentration of chemical constituents shall not exceed the "secondary maximum contaminant level" specified in Title 22, Table 64449-A or the "Upper" level specified in Table 64449-B, unless otherwise authorized by the Central Valley Water Board in accordance with the provisions of Title 22, section 64449 et seq. Constituent concentrations ranging to the "Upper" level in Table 64449-B are acceptable if it is demonstrated that it is not reasonable or feasible to achieve lower levels; 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 section 64449(d)(3), pending construction of treatment facilities or development of new water sources, and/or consistent with the Drought and Conservation Policy (Section XX). In cases where the surface water natural background concentration of a particular chemical constituent exceeds the maximum contaminant level specified in 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 Central Valley Water Board authorizes it consistent with State Antidegradation Policy.

Modify the Basin Plan in Chapter 3 Water Quality Objectives under the heading, "Water Quality Objectives for Ground Waters, Chemical Constituents" as follows:

Water Quality Objectives For Groundwaters

Chemical Constituents

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

At a minimum, unless there is an approved site specific objective, 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 *(Title 22)*, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of *s*~~S~~ection 64431, *and* Table 64444-A (Organic Chemicals) of *s*~~S~~ection 64444, and Tables 64449-A (Secondary Maximum Contaminant levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain lead in excess of 0.015 mg/l. To protect all beneficial uses the *Central Valley Water Board* ~~Regional Water Board~~ may apply limits more stringent than MCLs.

For Secondary MCLs identified in Tables 64449-A and 64449-B, appropriate long-term averaging periods shall be used to evaluate ambient groundwater quality and annual averages of sample results will be used to determine compliance with Secondary Maximum Contaminant Levels for discharge limitations prescribed in Waste Discharge Requirements.

In addition, for ground waters designated MUN, concentration of chemical constituents shall not exceed the "secondary maximum contaminant level" specified in Title 22, Table 64449-A or the "Upper" level specified in Table 64449-B unless otherwise authorized by the Central Valley Water Board in accordance with the provisions of Title 22, section 64449 et seq. Constituent concentrations ranging to the "Upper" level in Table 64449-B are acceptable if it is demonstrated that it is not reasonable or feasible to achieve lower levels; 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 section 64449(d)(3) and/or consistent with the Drought and Conservation Policy (Section XX). In cases where the natural background concentration of a particular chemical constituent exceeds the maximum contaminant level specified in 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 Board authorizes it consistent with State Antidegradation Policy.

CHAPTER 4 IMPLEMENTATION

Following is a summary of a proposed addition for the Sacramento River and San Joaquin River Basin Plan and the Tulare Lake Basin Plan. The text noted below will comprise a new section under *Chapter IV—Implementation* within each Basin Plan.

Salt and Nitrate Control Program

The Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative developed a comprehensive salt and nitrate management plan (SNMP) for the Central Valley Region, which was submitted to the Central Valley Water Board in January of 2017.[7] The SNMP is the basis for many components of this Salt and Nitrate Control Program and serves as one of the reference documents for the control efforts. The SNMP documented elevated salt and nitrate concentrations in portions of the Central Valley that impair or threaten to impair the region's water and soil quality which, in turn, adversely affects agricultural productivity and/or drinking water supplies. Excessive nitrates are significant issues for public health and safety in some areas. Based on the findings, the Central Valley Salt and Nitrate Control Program is designed to address both legacy and ongoing salt and nitrate accumulation issues in surface and groundwater; however, the primary focus of early actions (first ten years) is on groundwater quality and in particular nitrate impacts to drinking water supplies. The over-arching management goals and priorities are:

1. Ensure Safe Drinking Water Supply (short and long term)
2. Achieve Balanced Salt and Nitrate Loading
3. Implement Long-Term, Managed Restoration of Impaired Water Bodies

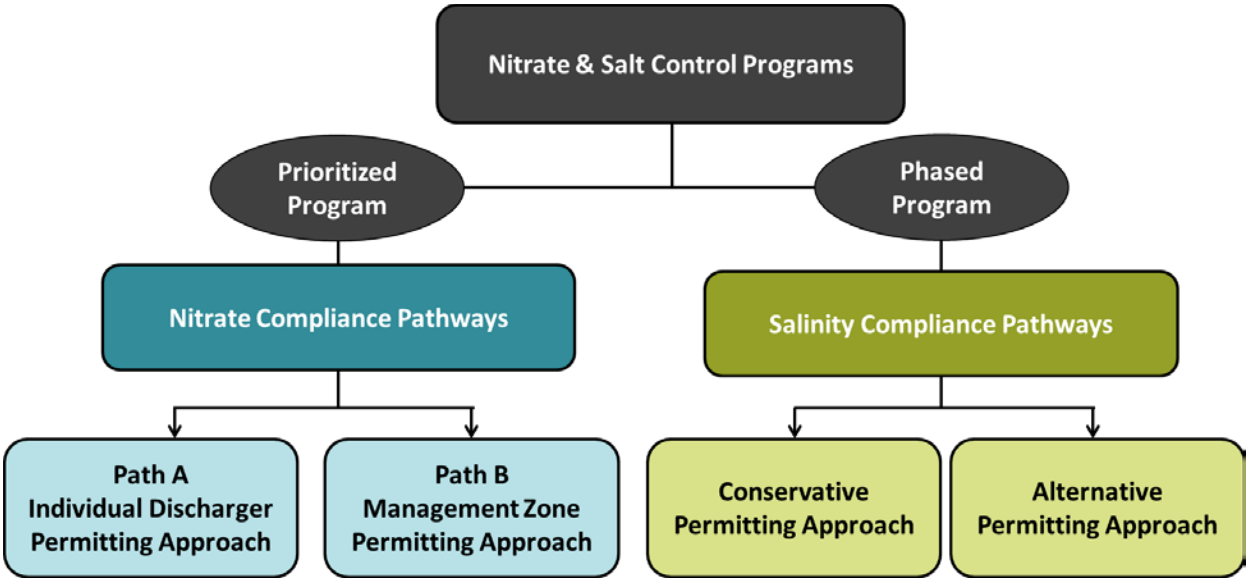
To meet these prioritized goals, the Salt and Nitrate Control Program has been phased with specific implementation activities required for salt and another set of implementation activities required for nitrate. Both implementation approaches provide permittees the option to select their means of compliance: either through a conservative permitting approach focused on individual source control or through an alternative coordinated, multi-discharger management approach (Figure I-1). For goals 2 and 3, the Salt and Nitrate Control Program recognizes that in some circumstances meeting these goals may not be reasonable, feasible or practicable.

The Salt and Nitrate Control Program is implemented through a combination of Central Valley Water Board authorities. First, to ensure timely implementation, a Conditional Discharge Prohibition has been established in the Basin Plans that will require that certain permittees begin to implement provisions of the Control Program upon receiving a Notice to Comply issued by the Board's Executive Officer. The Conditional Discharge Prohibition will assist in establishing enforceable conditions until the Board revises permits to incorporate applicable requirements from the Control Program or determines that existing permit requirements are adequate. Second, for certain other permittees subject to General Orders, the Board will hold a hearing to consider amending such Orders within 18 months of the effective date of the Salt and Nitrate Control Program to incorporate timelines and milestones for complying with the Control Program. Long-term implementation of the Salt and Nitrate Control Program is achieved primarily through Board permitting actions (i.e., waste discharge requirements or conditional waivers); however, to be successful, coordination, funding and support will be required from multiple state, federal and local agencies as well as from local stakeholders and those benefitting from Central Valley waters. Additional implementation authorities, affected entities,

[7] CV-SALTS SNMP (2016)

and required actions related to salt and nitrate control will be determined during the first phase of the effort.

FIGURE I-1. SALT AND NITRATE MANAGEMENT STRATEGY



The following identifies the major components of the Salt and Nitrate Control Program and policies that support its implementation:

- Salt Control Program (Discharges to Surface and Groundwater)
- Nitrate Control Program (Discharges to Groundwater)
    - Prioritized Groundwater Basins
    - Management Zones
- Conditional Prohibition
- Surveillance and Monitoring
- Policies to Support Implementation
    - Variance Policy
    - Exception Policy
    - Drought and Conservation Policy
    - Offsets Policy
    - Application of Secondary Maximum Contaminant Levels to Protect MUN

This amendment was adopted by the Central Valley Water Board on 31 May 2018, and approved by the State Water Resources Control Board on ___(date)___. The Effective Date of the Salt and Nitrate Control Program shall be ___(date)___, the date of Office of Administrative Law approval. For those components subject to USEPA approval, the effective date shall be ____(date)___, the date of USEPA approval. The Salt and Nitrate Control Program will be reviewed in its entirety prior to initiation of Phase II of the Salt Control Program, but no later than 15 years after Office of Administrative Law approval.

Program to Control and Permit Salt Discharges to Surface and Groundwater

The Salt Control Program is a program for the control and permitting of salt discharges in the Sacramento-San Joaquin River Basins and in the Tulare Lake Basin and applies to all surface and ground waters. The Salt Control Program will be implemented in conjunction with and not replace the requirements of the *Control Program for Salt and Boron Discharges into the Lower San Joaquin River (LSJR)* adopted by Central Valley Water Board Resolution R5-2017-0062[8], site specific salinity objectives in the Bay-Delta Plan, or other site-specific salinity objectives adopted by the Central Valley Water Board or State Water Board.

Program Overview

Based on the CV-SALTS SNMP and its supporting studies, salt concentrations in surface and ground waters generally continue to increase over time under existing water quality management programs and strategies to control salt. Given these findings, the SNMP identified the need for the implementation of a salt management strategy with the following goals:

- Control the rate of degradation through a "managed degradation" program;
- Protect beneficial uses by applying appropriate antidegradation requirements for high quality waters.
    - Implement salinity management activities to achieve long-term sustainability and prevent continued impacts to salt sensitive areas; and
    - Protect beneficial uses by maintaining water quality that meets applicable water quality objectives and pursuing long-term managed restoration where reasonable, feasible and practicable.

The supporting studies evaluated local salt management options in areas with significant salt concerns. These evaluations demonstrated that the volume and mass of unmanaged salt would remain high even under scenarios where existing salt management tools are widely adopted. A comprehensive solution to the salinity issues in the Central Valley will therefore need to rely on both local and sub-regional solutions as well as broad region-wide projects that will export salt out of the Central Valley. Additional studies are still needed to further define the range of solutions for surface and ground waters that may be deployed within each Central Valley hydrologic region to prevent continued impacts to salt sensitive areas in the Central Valley Region.

Given the need for these studies, the Central Valley Water Board will implement a phased Salt Control Program consistent with the goals of the salt management strategy. All permitted salt discharges shall comply with the provisions of this program. Two pathways to compliance are available for Phase I. Compliance pathways for subsequent phases will be identified prior to that phase. The Phase I Compliance pathways are:

1. ***Conservative Salinity Permitting Approach***, utilizes the existing regulatory structure and focuses on source control, use of conservative salinity limits and limited use of assimilative capacity and/or compliance time schedules.

[8] In the LSJR Basin, management activities are addressing salinity impact to surface water but are not sufficient to address the long-term accumulation in the basin as a whole.

2. ***Alternative Salinity Permitting Approach***, is an alternative approach to compliance through implementation of specific requirements, rather than application of conservative limits. Under Phase I, permittees must support facilitation and completion of the Salinity Prioritization and Optimization Study. Discharges of salt to waste management units subject to the containment requirements of Division 2 of Title 27 of the California Code of Regulations are not eligible to be permitted under the Alternative Salinity Permitting Approach.

Phased Control Program

The Salt Control Program will be implemented in three phases, with each of the three phases having a duration of ten to fifteen years (Figure S-1). Some portions of a subsequent phase may occur or be initiated prior to the end of an existing phase. At the discretion of the Central Valley Water Board's Executive Officer, the completion date and interim milestones for any phase may be modified or extended. The findings from each phase will inform the next phase, allowing for implementation of an adaptive management approach to salt management in the Central Valley Region.

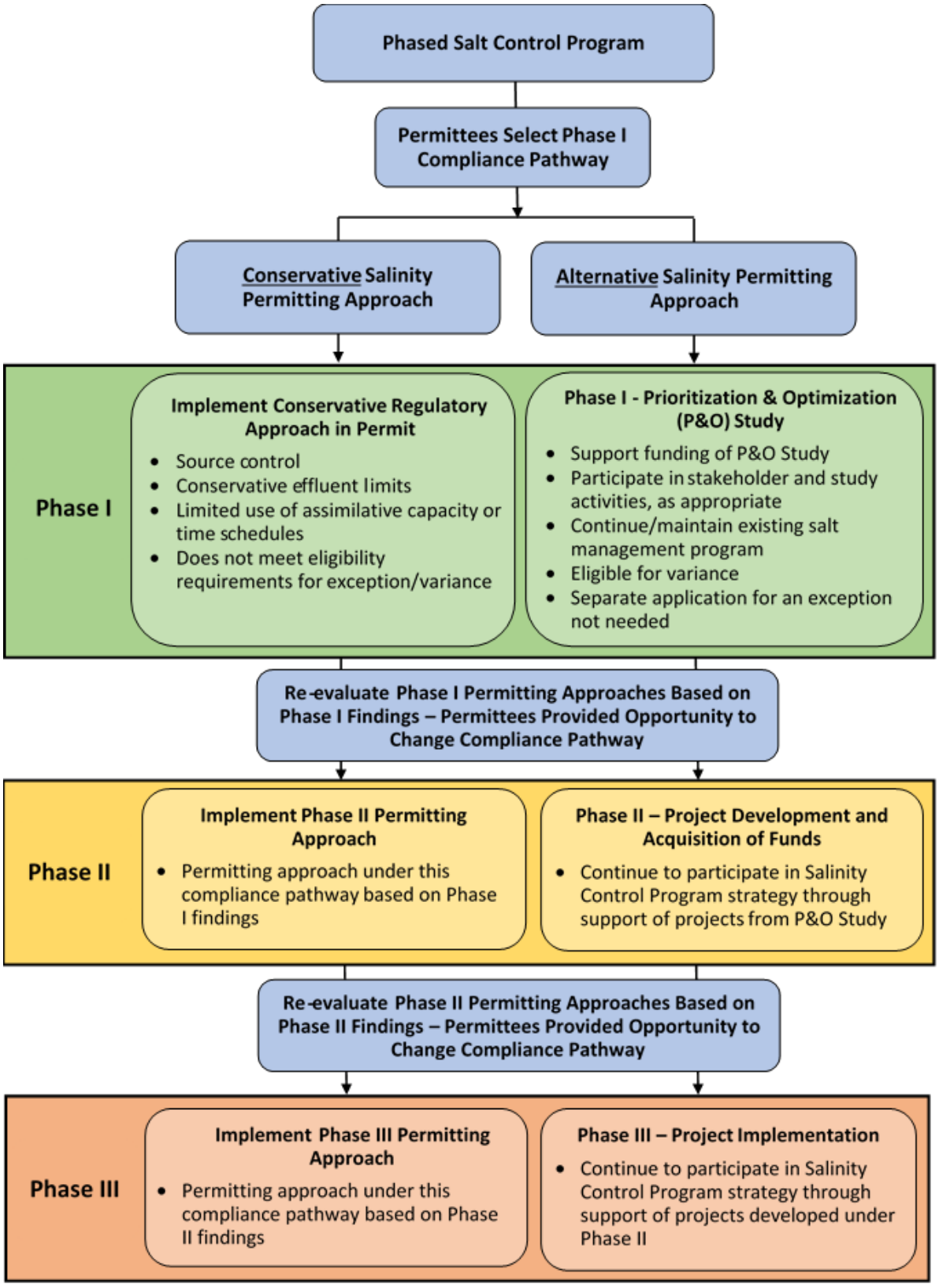
The phases of the Salt Control Program are linked to activities occurring under each the Alternative Salinity Permitting Approach, as follows:

Phase I – Prioritization and Optimization Study (P&O Study) - The P&O Study will facilitate the development of a long-term Salt Control Program to achieve the goals of the salinity management strategy by coordinating and completing tasks and securing funding. The P&O Study will:

- Develop groundwater and surface water-related salinity data and information for sensitive and non-sensitive areas for hydrologic regions within the entire Central Valley Region, including guidelines to protect salt-sensitive crops;
- Identify sources of salinity and actions that impact salinity in surface and ground waters;
- Evaluate impacts of state and federal policies and programs;
- Identify and prioritize preferred physical projects for long-term salt management (e.g. regulated brine line(s), salt sinks, regional/sub-regional de-salters, recharge areas, deep well injection, etc.);
- Develop the conceptual design of preferred physical projects and assess the environmental permitting requirements and costs associated with each of these projects;
- Identify non-physical projects and plan for implementation;
- Develop a governance structure and funding plan;
- Identify funding programs, including federal and state funds, and opportunities for future phase implementation; and
- Identify recommendations for Phase II of the Salt Control Program.

The P&O Study will inform Phases II and III of this Salt Control Program. Based on the findings of the P&O Study, the Central Valley Water Board must review the Basin Plan and consider whether modifications to the Basin Plan are required to facilitate implementation of Phases II or III.

FIGURE S-1: SALT CONTROL PROGRAM PATHWAYS TO COMPLIANCE



Phase II – Project Development and Acquisition of Funds - Phase II of this Salt Control Program will begin no later than at the end of Phase I, but some activities may be initiated during Phase I. Phase II includes the following key elements:

- Using available funding sources, complete the engineering design and environmental permitting of preferred physical projects identified in Phase I;
- Initiating or continuing implementation of preferred non-physical projects identified during Phase I and, if appropriate, identifying new preferred non-physical projects and the process or milestones for implementation; and
- Identifying sources and securing the funding to implement the preferred physical projects.

Phase III – Project Implementation - During Phase III, construction of preferred physical projects will be completed, unless already completed during Phase II. For large-scale capital projects, such as construction of a regulated brine line, construction may occur over multiple phases and additional time may be required to complete full build-out of the project.

Salt Control Program Implementation

Permittees will be subject to Phase I of the Salt Control Program from the issuance of the Notice to Comply until **date*** (ten years from the effective date of the Basin Plan Amendments). Phase I may be extended up to five years at the discretion of the Central Valley Water Board's Executive Officer based on the need to develop Basin Plan Amendments to support implementation of Phase II, reduction in anticipated staff resources, or other factors. Table S-1 depicts the key components of the two pathways to regulatory compliance under the Phase I Salt Control Program. The Board retains its discretion to adjust the established requirements on a case-by-case basis. However, because the Board finds that implementation of the Salt Control Program is best achieved through implementation of the Alternative Salinity Permitting Approach, application of such discretion will be limited under the Conservative Salinity Permitting Approach.

Under Phase I of the Salt Control Program, permitted dischargers of salinity (permittees) will be subject to the Conservative Salinity Permitting Approach unless the permittee elects to be permitted under the Alternative Salinity Permitting Approach.

Permittees may switch from one approach to another by submitting a written request to the Executive Officer of the Central Valley Water Board to change its selected compliance pathway. This request must include documentation regarding how the permittee will comply with the requirements applicable to the compliance pathway it is now requesting to be permitted under and the basis for the change. If the permittee requests to change from the Alternative to the Conservative Permitting Approach, the permittee must demonstrate to the Board that it has complied with all provisions associated with the Alternative Compliance Permitting Approach, including financial support to the P&O study, up through the time of permit revision to incorporate requirements for the Conservative Permitting Approach. If the permittee requests to change from the Conservative Permitting Approach to the Alternative Approach, the permittee shall meet the financial commitment requirements of the Alternative Approach as required by the entity conducting the P&O Study.

Prior to implementation of Phase II, the Central Valley Water Board must review the Salt Control Program and adopt compliance pathways for Phase II. The compliance pathways for Phase II may be similar or different from those in Phase I. Permittees will have an opportunity to review and select Phase II compliance pathways upon implementation of Phase II. The process shall repeat itself prior to implementation of Phase III.

TABLE S-1: COMPARISON BETWEEN THE CONSERVATIVE AND ALTERNATIVE SALINITY PERMITTING APPROACHES DURING PHASE I

Conservative Salinity Permitting Approach	Alternative Salinity Permitting Approach
<u>All Permittees</u> • Apply conservative assumptions for interpretation of the narrative objectives and application of numeric water quality objectives to protect AGR and MUN beneficial uses • Limited availability of a compliance or time schedule to meet a salinity-related effluent limit or waste discharge requirement (subject to the discretion of the Central Valley Water Board) <u>Groundwater Discharge and Non-NPDES Discharge Permittees</u> • Limited new or expanded allocation of assimilative capacity subject to the discretion of the Central Valley Water Board • Does not meet eligibility requirements for an exception <u>NPDES Surface Water Discharge Permittees</u> • A new or expanded allocation of assimilative capacity may be authorized only where a permittee can demonstrate that the impact of the new discharge or the increased discharge will be spatially localized or temporally limited, a determination subject to the discretion of the Central Valley Water Board Does not meet eligibility requirements for a variance	<u>All Permittees</u> • Participate in the Phase I Prioritization and Optimization Study throughout its duration • Continue implementing reasonable, feasible and practicable efforts to control salinity through performance-based measures as determined by the Central Valley Water Board, including: - Salinity management practices - Pollution prevention, watershed, and/or salt reduction plans - Monitoring - Maintenance of existing discharge concentration or loading levels of salinity <u>Groundwater and Non-NPDES Discharges</u> • Salinity limits not used as a compliance metric except to ensure implementation of performance-based measures; • Permittees that meet requirements of the alternative salinity permitting approach are considered in compliance with their salinity limits <u>NPDES Surface Water Discharges</u> • Eligible for a salinity variance

Phase I Conservative Salinity Permitting Approach

The Conservative Salinity Permitting Approach applies to all permitted dischargers, unless the permittee elects to participate in the Phase I Alternative Salinity Permitting Approach. Under the Conservative Salinity Permitting Approach, the Central Valley Water Board shall develop permit conditions based on the requirements established below.

Groundwater and Non-NPDES Surface Water Discharges

The Central Valley Water Board shall apply the following principles to permits being issued to regulate discharges of salt to groundwater or discharges of salt to surface waters that are not subject to NPDES permits (Chapter 5.5 of the Porter-Cologne Water Quality Control Act which contains state statutory requirements for issuing NPDES permits consistent with the federal Clean Water Act).

1. *Permit Provisions* – Permit limitations shall be set as follows:

    (a) Surface Water – Limitations shall be set based on the applicable water quality objective that protects the most sensitive beneficial use and based on the application of the Antidegradation Policy. The Central Valley Water Board may use its discretion to continue to authorize a previously approved mixing zone for salinity subject to the provisions in paragraph (4).

(b) Groundwater – Limitations will be set based on the applicable water quality objective that protects the most sensitive beneficial use and based on the application of the Antidegradation Policy. The Central Valley Water Board may use its discretion to continue to authorize previously allocated use of assimilative capacity in groundwater subject to the provisions in paragraph (4).

2. *Application of Applicable Water Quality Objectives* – When the most salinity sensitive beneficial use is AGR or MUN, the Central Valley Water Board will apply the associated narrative and range in numeric objectives as indicated below. When the applicable water quality objective for setting Permit Limitations is a site-specific numeric water quality objective, the Board shall apply that numeric objective. The values recommended below apply only for the conservative approach and are limited to use under Phase 1.

   (a) AGR Beneficial Use Protection – When it applies the narrative water quality objective, the Central Valley Water Board shall use a conservative, numeric value for electrical conductivity (EC) to protect the AGR beneficial use. During Phase I of the Salt Control Program, the numeric value of 700 µS/cm EC (as a monthly average) shall be considered to be a conservative value that is protective of the AGR beneficial use. This value is for use only as indicated here for the Conservative Permitting Approach and shall not be considered a water quality objective. For discharges where a site-specific numeric value has been developed and/or previously applied to the discharge for the protection of the AGR beneficial use, the Board shall continue to apply that value, as appropriate.

   (b) MUN Beneficial Use – When it applies a Secondary Maximum Contaminant Level (SMCL) for protection of a MUN beneficial use, the Central Valley Water Board shall use the recommended SMCL of 900 µS/cm EC (as an annual average).

3. *Consideration of Degradation to High Quality Waters* – Before authorizing degradation to high quality waters, and consistent with the state and federal antidegradation policies as applicable, the Central Valley Water Board must consider, among other things, if allowing the degradation is to the maximum benefit to the people of the state. Under the Phase I Conservative Permitting Approach, the Board must specifically find that allowing this permittee to degrade a high quality water better serves the people of the state rather than their participation in the P&O study for Phase I of the Salt Control Program.

4. *Allocation of Assimilative Capacity* – For both surface and groundwater discharges, the Central Valley Water Board will limit new or expanded allocations of salinity related assimilative capacity. If a permittee has previously received an allocation of assimilative capacity, and the allocation was granted with the support of an antidegradation study or analysis, then the Board may consider continuing the previously approved allocation of assimilative capacity.

5. *Salinity Exception* - Permittees operating under the Phase I Conservative Salinity Permitting Approach do not meet eligibility requirements for a salinity exception.

6. *Issuance of Time Schedules* – The Central Valley Water Board will limit use of time schedules for achieving compliance with salinity permit limitations and will use its discretion to limit the time allowed in the event that a time schedule is deemed necessary under the particular circumstances associated with that discharge.

NPDES Surface Water Discharges

The Central Valley Water Board shall apply the following principles to permits being issued to regulate discharges of salinity to surface waters that are subject to NPDES permit provisions as required by the federal Clean Water Act.

1. *Permit Provisions* – Permit limitations, if required, shall be set as follows:

   Limitations shall be set based on the applicable water quality objective that protects the most sensitive beneficial use and based on the application of the Antidegradation Policy. The Central Valley Water Board may use its discretion to continue to authorize a previously-approved mixing zone for salinity subject to the provisions in paragraph (4).

2. *Application of Applicable Water Quality Objectives* – When the most salinity sensitive beneficial use is AGR or MUN, the Central Valley Water Board will apply the associated narrative and range in numeric objectives as indicated below. When the applicable water quality objective for setting Permit Limitations is a site-specific numeric water quality objective, the Board shall apply that numeric objective. The values recommended below apply only for the conservative approach and are limited to use under Phase 1.

   (a) AGR Beneficial Use Protection – When it applies the narrative water quality objective, the Central Valley Water Board shall use a conservative, numeric value for electrical conductivity (EC) to protect the AGR beneficial use. During Phase I of the Salt Control Program, the numeric value of 700 µS/cm EC (as a monthly average) shall be considered to be a conservative value that is protective of the AGR beneficial use. This value is for use only as indicated here for the Conservative Permitting Approach and shall not be considered a water quality objective. For discharges where a site-specific numeric value has been developed and/or previously applied to the discharge for the protection of the AGR beneficial use, the Board shall continue to apply that value, as appropriate.

   (b) MUN Beneficial Use – When it applies a Secondary Maximum Contaminant Level (SMCL) for protection of a MUN beneficial use, the Central Valley Water Board shall use the recommended SMCL of 900 µS/cm EC (as an annual average).

3. *Consideration of Degradation to High Quality Waters* – Before authorizing degradation to high quality waters, and consistent with the state and federal antidegradation policies as applicable, the Central Valley Water Board must consider, among other things, if allowing the degradation is to the maximum benefit to the people of the state. Under the Phase I Conservative Permitting Approach, the Board must specifically find that allowing this permittee to degrade a high quality water better serves the people of the state rather than their participation in the P&O study for Phase I of the Salt Control Program.

4. *Allocation of Assimilative Capacity (i.e., mixing zone/dilution credit)* – The Central Valley Water Board will limit new or expanded allocations of assimilative capacity in surface water (i.e., mixing zone/dilution credit) and will consider whether a permittee can demonstrate that the reduction of water quality will be spatially localized or temporally limited with respect to the waterbody. The Board may consider maintaining any previously approved allocations of assimilative capacity, if the previously approved allocation was granted with the support of an antidegradation study or analysis.

5. *Salinity Variance* – Permittees operating under the Phase I Conservative Salinity Permitting Approach do not meet eligibility requirements for a salinity variance.

6. *Compliance Schedule* – Where a reasonable potential finding has been made and the permittee is unable to comply with the applicable salinity effluent limit, the Central Valley Water Board will use its discretion to limit the use of compliance schedules authorized by the State Water Board Compliance Schedule Policy for achieving compliance with salinity-based effluent limits, and will use its discretion to limit the time allowed in the event that a compliance schedule is deemed necessary under the particular circumstances associated with the discharge.

Phase I Alternative Salinity Permitting Approach

In lieu of being subject to the Conservative Permitting Approach, permittees may elect to be permitted for discharges of salinity by participating in the Phase I Alternative Salinity Permitting Approach. Permittees electing to participate in the Phase I Alternative Salinity Permitting Approach are given the opportunity to participate collectively in the P&O Study with other permittees, the Central Valley Water Board, and other stakeholders, including those importing and benefitting from water supplies from the Central Valley, to work toward full implementation of the Salt Control Program. Key milestones for the P&O Study are identified in Table S-2 and outlined in Figure S-2.

If the P&O Study does not meet the milestones established in Table S-2 or where the Central Valley Water Board finds reasonable progress is not being made towards achieving the milestones, the Board will notify the permittees that selected the Alternative Salinity Permitting Approach of its findings through public notice that includes a required schedule for completion of the P&O Study milestones. Failure to comply with the requirements in the notice will result in all permittees that elected to be permitted under the Phase I Alternative Salinity Permitting Approach to become subject to the requirements of the Conservative Salinity Permitting Approach.

The Central Valley Water Board shall develop salinity-related permit conditions based on the requirements established below. Permitted salinity discharges shall be implemented in a manner consistent with state and federal antidegradation policies (State Water Board Resolution No. 68-16 and 40 CFR §131.12), as applicable. Discharges of salt to waste management units subject to the containment requirements of Division 2 of Title 27 of the California Code of Regulations are not eligible to be permitted under the Alternative Salinity Permitting Approach.

TABLE S-2: KEY PHASE I PRIORITIZATION AND OPTIMIZATION STUDY MILESTONES

Implementation Schedule	Milestone/ Deliverable	Minimum Requirements
6 months from Notice to Comply	Phase I Workplan	*Workplan to include*: • Detailed P&O Study task descriptions • Cost estimate for each task • Task completion schedule • Stakeholder participation elements
Within 12 months from Notice to Comply	Phase I Funding & Governance Plan	*Complete Phase I implementation planning:* • Establish the entity and procedures for governance of the P&O Study • Develop funding plan to complete the P&O Study
Per Workplan	Special Studies	*Special Studies to include*: • Groundwater Quality Trace Constituent Study • Recycled Water Imports Study • Stormwater Recharge Master Plan Study • Emerging Technical Updates (every 5 years)
12 months from Workplan approval and annually there after	Annual Progress Report	*Annual Report to summarize*: • Progress on Workplan execution • Status of Phase I funding and expenditures • Stakeholder participation
5 years from Notice to Comply	Interim Project Report	*By Central Valley Hydrologic Region, identify*: • Recommended preferred physical projects with recommended next steps for development • Recommended non-physical projects and a schedule for implementation
9 years from Notice to Comply	Long-term Governance Plan for Phases II and III	*Governance Plan that establishes*: • Describes planned implementation approach for Phases II & III • Governance structure including: - Stakeholder roles and responsibilities - Committees responsible for development of policies, technical documents, BMPs and funding
	Long-term Funding Plan for Phases II and III	*Funding Plan that establishes*: • Financial approach for long-term funding including sources and funding types (grants, bonds, loans, etc.) • Approach for the equitable management and funding of long-term, large-scale salinity management projects
	Basin Plan Amendment Recommendations	*As needed, recommended amendments to Basin Plans to:* • Facilitate implementation of Phase II of the Salt Control Program • Consider extension of salinity variance and revision of salinity exception policies • As appropriate, modify the Salinity Permitting Approaches;
10 years from Notice to Comply	Final Phase I Project Report	• *For preferred physical projects*: - Conceptual designs - Assessment of environmental permitting requirements • Status of implementation of non-physical projects per Interim Project Report with recommendations for modifications, as needed

Groundwater and Non-NPDES Surface Water Discharges

The Central Valley Water Board shall apply the following principles to permits being issued for regulating discharges of salt to groundwater or discharges of salt to surface waters that are not subject to NPDES permits (Chapter 5.5 of the Porter-Cologne Water Quality Control Act which contains state statutory requirements for issuing NPDES permits consistent with the federal Clean Water Act).

1. *Participation in P&O Study* - Permittees electing the Alternative Salinity Permitting Approach shall be required to participate in efforts related to conducting the P&O Study, including providing the minimum required level of financial support. The level of participation may vary based on salinity in the discharge, local conditions or other factors. The needed level of participation would be established by the lead entity (i.e., Central Valley Salinity Coalition [CVSC]) that is overseeing the P&O Study. The lead entity shall document and confirm full participation by the permittee(s) until the P&O Study is completed or until such time that the Central Valley Water Board otherwise revises the applicable waste discharge requirements and/or conditional waiver or determines permittee is in compliance with the requirements of the Phase 1 Conservative Salinity Permitting Approach. The timeframe for completion of the P&O Study is expected to be ten years from the effective date of this Salt Control Program but may be extended by the Central Valley Water Board's Executive Officer for a period of up to five years.

2. *Implementation of Reasonable, Feasible and Practicable Efforts to Control Salt* - The Central Valley Water Board will require dischargers to continue to implement reasonable, feasible and practicable efforts to control levels of salt in discharges. Such efforts may include, but are not limited to, implementation of management practices that are designed to reduce salt in discharges; implementation of pollution prevention plans, watershed plans, and/or salt reduction plans that help to reduce salt loads in discharges to groundwater or surface water; and, monitoring for salt in surface water or groundwater as part of existing local, watershed-based or regional monitoring programs, in coordination with monitoring under the SNMP.

3. *Maintain Current Discharge Concentrations for Salt or Mass Loading Levels* - To the extent reasonable, feasible and practicable (and while accounting for conservation and drought, salinity levels in the water supply source, and some appropriate increment of growth), the Central Valley Water Board may use its discretion to adopt performance-based limits or action levels to the extent the Board finds it appropriate and necessary for salinity for permittees electing the Alternative Salinity Permitting Approach.

4. *Setting Permit Requirements* - In regulating discharges of salt in waste discharge requirements and conditional waivers, the Board shall require dischargers to fully participate in the P&O study (as documented by the lead entity overseeing the study), implement reasonable, feasible and practicable efforts to control salt, and meet any performance-based limits or action levels deemed appropriate and necessary by the Central Valley Water Board. Compliance with these requirements shall constitute compliance with the water quality control plan and shall be deemed adequately protective of beneficial uses and the water quality objectives reasonably required for that purpose consistent with this salt control program.

NPDES Surface Water Discharges

The Central Valley Water Board shall apply the following principles to permits being issued for authorizing discharges of salt to surface waters subject to NPDES permits under the federal Clean Water Act.

1. *Participation in P&O Study* - Permittees electing the Alternative Salinity Permitting Approach shall be required to fully participate in efforts related to conducting the P&O Study including providing at least the minimum required level of financial support determined by the lead entity. The level of participation may vary based on salinity in the discharge, local conditions or other factors. The needed level of participation would be established by the lead entity (i.e., CVSC) that is overseeing the P&O Study. The lead entity shall document and confirm adequate participation by the permittee(s) until the P&O Study is completed or until such time that the Central Valley Water Board otherwise revises the applicable NPDES permit consistent with this Control Program. The timeframe for completion of the P&O Study is expected to be ten years from the effective date of this Salt Control Program but may be extended by the Board's Executive Officer for a period of up to five years.
2. *Requirements for Ensuring Reasonable Protection of Beneficial Uses* - Full participation in the P&O study as documented and confirmed by the lead entity overseeing the P&O Study shall be found by the Central Valley Water Board to provide for in lieu or alternative compliance to receiving water limits or effluent limits based on salinity. To determine reasonable potential, the Board maintains its discretion to conduct such analysis by using the approach set forth in U.S. EPA's Technical Support Document, by using the approach set forth in the SIP, or by using another approach that is consistent with applicable federal regulations. To the extent that the discharge in question is found to have reasonable potential for causing or contributing to a violation of an applicable salinity water quality objective pursuant to applicable federal regulations, the Board may consider granting use of assimilative capacity by allowing for a mixing zone and dilution credits. The permittee is also eligible for consideration of receiving a salinity variance pursuant to the Salinity Variance Policy.
3. *Implementation of Reasonable, Feasible, and Practicable Efforts to Control Salt* - The Central Valley Water Board will continue to require implementation of reasonable, feasible and practicable efforts to control levels of salt in discharges. Such efforts may include, but are not limited to, implementation of management practices that are designed to reduce salt in discharges; implementation of pollution prevention plans, watershed plans, and/or salt reduction plans that help to reduce salt loads in discharges to surface waters; and, continued monitoring for salt in surface water as part of existing local, watershed-based or regional monitoring programs, in coordination with monitoring under the Salt and Nitrate Control Program.
4. *Maintain Current Discharge Concentrations for Salt or Mass Loading Levels* - To the extent reasonable, feasible and practicable (and while accounting for conservation and drought, salt levels in the water supply source, and some appropriate increment of growth), the Central Valley Water Board may use its discretion to prescribe performance-based limits or triggers to the extent the Board finds such additional actions appropriate and necessary for salinity for permittees electing the Alternative Salinity Permitting Approach.

Permitted Discharge to a Water Body Subject to De-designation of a Beneficial Use

The P&O Study will establish a program for the long-term management of salts in the Central Valley, including identifying locations that may serve as salt management area. For example, a

groundwater basin that has had one or more beneficial uses de-designated due to salinity may be a considered a potential location for establishment of a salt management area. Accordingly, under the Phase I Salt Control Program:

- Permittee(s) that selects either the Conservative or Alternative Permitting Approach and then requests the de-designation of one or more beneficial uses from a surface water body or all or part of a groundwater basin based on salinity shall participate in the P&O Study even after the beneficial use de-designation is approved by providing at least the minimum level of required financial support throughout the Phase I program. The P&O Study shall evaluate all areas de-designated based on salinity for suitability as salt management areas.
- Permittee(s) that discharges to a surface water body or a groundwater basin where one or more beneficial uses were de-designated due to salinity prior to the beginning of Phase I of the Salt Control Program shall participate in the P&O Study by providing at least the minimum level of required financial support.

Process to Initiate Phase I of the Salt Control Program

This section establishes the process and schedule for initiation of Phase I of the Salt Control Program and for selection of a compliance pathway during Phase I. For permittees that select the Alternative Salinity Permitting Approach, nothing here prevents, or should be interpreted to prevent, permittees from implementing elements of the Phase I P&O Study prior to receiving a Notice to Comply.

Existing Discharges of Salt

The Central Valley Water Board shall issue a Notice to Comply with the Salt Control Program to existing permittees that discharge salt in the Central Valley Region within one year of the effective date of the Basin Plan Amendments. Upon receipt of the Notice to Comply, permittees receiving the notice will be subject to the Conditional Prohibition of Salinity Discharges (Section ##), which establishes enforceable requirements for implementation of Phase I of the Salt Control Program.

No later than six months after receiving the Notice to Comply, existing permittees shall notify the Central Valley Water Board of its decision of whether to be permitted under the Conservative Salinity Permitting Approach or the Alternative Salinity Permitting Approach. Based on the selection of the permitting approach, the permittee shall comply with the following requirements:

- *Conservative Salinity Permitting Approach* – A permittee that selects this approach must submit an assessment of how the discharge will comply with the conservative permitting requirements set forth in the Conservative Salinity Permitting Approach. The permittee shall submit this assessment to the Central Valley Water Board with the notification to the Board of its permit compliance pathway decision. If the Board does not concur with the findings of the assessment, the Board may request additional technical and/or monitoring information with a deadline for submittal. When conducting the assessment, the permittee may use historical water quality information if the information adequately represents the character of the current discharger and/or receiving water and is approved by the Board's Executive Officer.
- *Alternative Salinity Permitting Approach* – A permittee that selects this approach shall participate in the Phase I P&O Study by providing at least the minimum required level of financial support throughout Phase I as determined by the lead entity overseeing the P&O

Study. The permittee shall provide documentation of its compliance with the required level of support with the notification to the Central Valley Water Board of its permitting decision. If the permittee has an approved salinity-related Time Schedule Order, Compliance Schedule or variance that expires prior to the completion of the Phase I P&O Study, the Board, at its discretion, may extend the Time Schedule Order or Compliance Schedule or renew or grant a variance, as appropriate and allowed by other applicable policies.

New or Substantively Modified Discharges

A new permittee, or existing permittee seeking a permit modification due to a substantial and/or material change which increases salt concentration or load from a facility, shall indicate how the permittee intends to comply with the Salt Control Program at the time of application and provide the required information to support the decision, as described above.

Failure to Comply

Any permittee that does not submit a response to the Notice to Comply within the required six-month period may be subject to an enforcement action. Permittees who do not respond in the required six-month period are subject to enforcement for failure to respond to the Notice to Comply but may still select the Alternative Salinity Permitting Approach. Permittees selecting the Alternative Salinity Permitting Approach after the originally allocated six-month period will need to obtain approval from the lead entity conducting the P&O Study to join late and will be subject to the lead entity's requirements in addition to providing the minimum required level of financial support.

A permittee that elects to participate in the Alternative Salinity Permitting Approach must continue to provide at least the minimum required level of financial support to the lead entity for the P&O Study throughout the duration of Phase I of the Salt Control Program, unless the Central Valley Water Board has revised the permittee's permit in a manner that authorizes them to be subject to the Conservative Permitting Approach. In such cases, the permittee must remain in compliance with the Alternative Salinity Permitting Approach until such time that their permit is amended to allow compliance under the Conservative Permitting Approach. Where a permittee fails to provide the minimum required level of financial support to the P&O Study, the Board may require the permittee to comply with the requirements of the Conservative Salinity Permitting Approach.

Salt Control Program - Phase I to Phase II Re-Evaluation

Upon completion of Phase I and prior to initiation of Phase II of the Salt Control Program, the Central Valley Water Board will re-evaluate the Conservative and Alternative Salinity Permitting Approaches applicable under Phase I of the Salt Control Program. The Regional Water Board shall consider convening a stakeholder group to assist in the re-evaluation. In this re-evaluation, the Regional Water Board shall consider the findings of the P&O Study, results from surveillance and monitoring programs, proposals for use of other permitting options or approaches, and progress made towards meeting the overarching goals of the Salt Control Program. Based on the findings of this re-evaluation, the Regional Water Board may modify or re-adopt the Phase I permitting approaches and policies (e.g., variance and exceptions), thereby making them applicable to Phase II. Such amendments must be completed prior to the initiation of Phase II of the Salt Control Program.

Prior to the initiation of Phase II of the Salt Control Program, the Central Valley Water Board will notify all existing permittees in the Central Valley Region of the salinity-related permitting

approaches applicable to Phase II. This notification must occur even if the Phase I permitting approaches are re-adopted. The purpose of the notification is to provide the opportunity for permittees to change the compliance pathway selected for Phase I. A permittee that elects to change its compliance pathway shall submit documentation to support the change within 180 days of the Board's notification.

A similar notification process will be utilized prior to the initiation of Phase III of the Salt Control Program.

Figure S-2: General Schedule of Key Phase I Prioritization and Optimization Study Activities and Milestones

Category	Year of Implementation (From Notice to Comply)									
	1	2	3	4	5	6	7	8	9	10
Stakeholder Coordination	Stakeholder Coordination Meetings (as needed frequency)									
	SGMA GSA Coordination Meetings (as needed frequency)									
Phase I Workplan	Phase I Work-plan									
Governance	Phase I Governance Plan	Long-term Governance Plan for Phases II & III								
Funding	Phase I Funding Plan	Long-term Funding Plan for Phases II & III								
Preferred Physical/Non-Physical Salt Management Projects		Development of Recommended Preferred Physical and Non-Physical Projects			Interim Project Report					
						Conceptual Design and Assessment of Environmental Permitting Requirements for Preferred Physical Projects				Final Project Report
Special Studies				Groundwater Quality Trace Constituent Study						
						Recycled Water Imports Study				
								Stormwater Recharge Master Plan Study		
					Emerging Tech Update No. 1				Emerging Tech Update No. 2	
Basin Planning									Phase II Recommendations	
Reports		Progress Reports at Key Milestones (Years 1; 5; and 10 with documentation (electronic or otherwise) of participation)								

Edits Specific to the Tulare Lake Basin Plan Salinity Limits (Revision)

The following paragraphs include proposed modifications to the Tulare Lake Basin Plan in the sections indicated below.

CHAPTER 3 WATER QUALITY OBJECTIVES

Modify the Basin Plan in Chapter 3 Water Quality Objectives under the heading “Salinity” (page III-8 and III-9), as follows:

No proven means exist at present that will allow ongoing human activity in the Basin and maintain ground water salinity at current levels throughout the Basin. ~~Accordingly, the water quality objectives for ground water salinity control the rate of increase.~~

~~The maximum average annual increase in salinity measured as electrical conductivity shall not exceed the values specified in Table III-4 for each hydrographic unit shown on Figure III-1. The average annual increase in electrical conductivity will be determined from monitoring data by calculation of a cumulative average annual increase over a 5- year period.~~

~~TABLE III-4~~

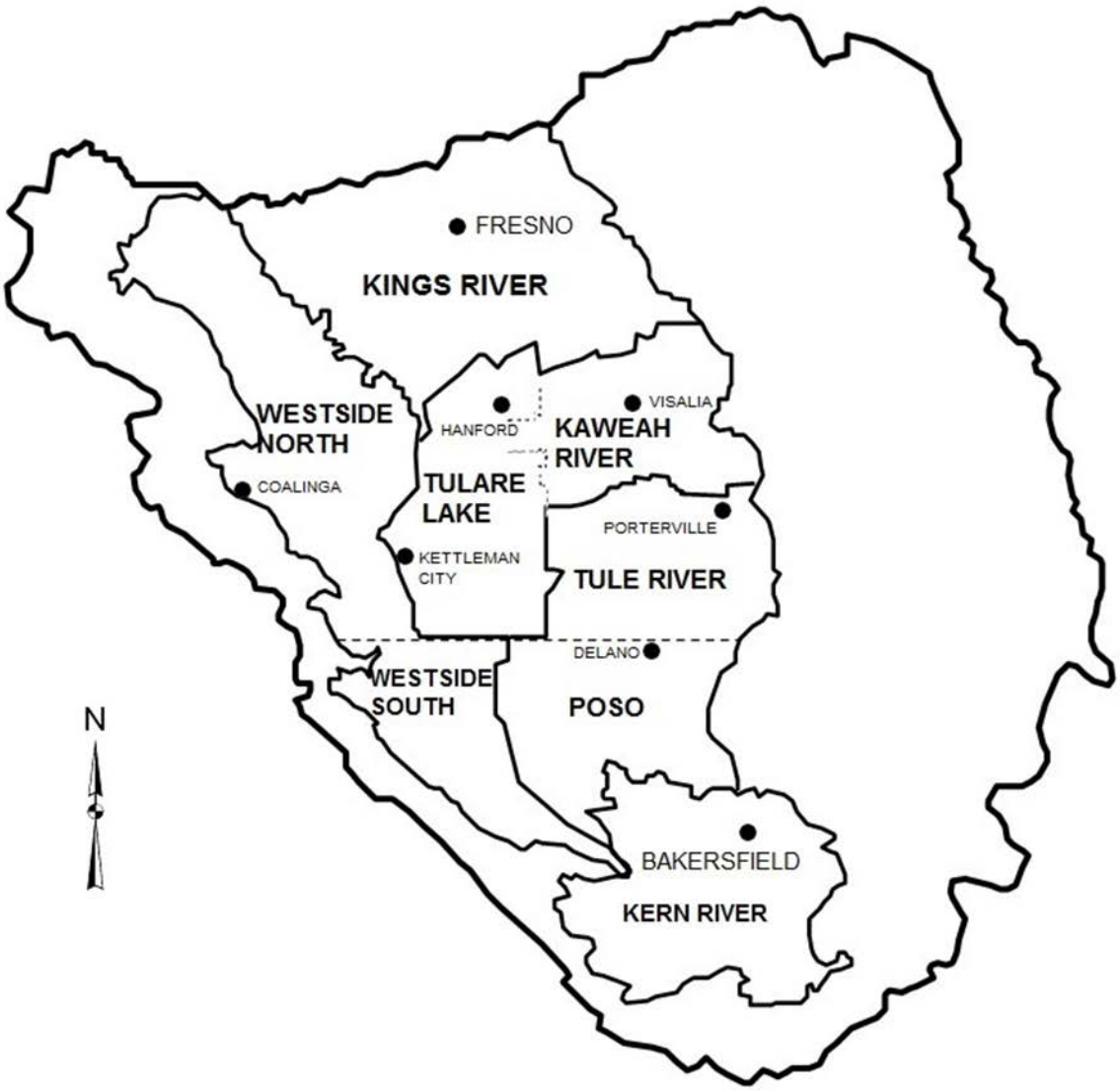
~~TULARE LAKE BASIN~~

~~GROUND WATER QUALITY OBJECTIVES FOR SALINITY~~

~~Hydrographic Unit~~	~~Maximum Average Annual Increase in Electrical Conductivity (µmhos/cm)~~
~~Westside (North and South)~~	~~1~~
~~Kings River~~	~~4~~
~~Tulare Lake and Kaweah River~~	~~3~~
~~Tule River and Poso~~	~~6~~
~~Kern River~~	~~5~~

~~FIGURE III-1~~

~~TULARE LAKE BASIN~~
~~GROUND WATER HYDROGRAPHIC UNITS~~



CHAPTER 4 IMPLEMENTATION

Modify the Basin Plan in Chapter 4 Implementation under the heading "Irrigated Agriculture" (page IV-3), as follows:

Agricultural drainage may be discharged to surface waters provided it does not exceed ~~1,000 µmhos/cm EC, 175 mg/l chloride, nor 1 mg/l~~ *an applicable water quality objective for* boron. Other requirements also apply. An exception from ~~the EC and/or the chloride~~*boron* limit*s* for agricultural drainage discharged to surface waters may be permitted consistent with the Program for Exception from Implementation of Water Quality Objectives for ~~Salinity~~*boron*.

Modify the Basin Plan in Chapter 4 Implementation under the heading "Discharges to Navigable Waters" (page IV-10), as follows:

- ~~The maximum electrical conductivity (EC) of a discharge shall not exceed the quality of the source water plus 500 micromhos per centimeter (µmhos/cm) or 1,000 µmhos/cm, whichever is more stringent. When the water is from more than one source, the EC shall be a weighted average of all sources.~~

- Discharges shall not exceed ~~an EC of 1,000 µmhos/cm, a chloride content of 175 mg/l, or~~ *an applicable water quality objective for* boron ~~content of 1.0 mg/l~~.

- A~~n exception~~*variance* from ~~the EC and/or the chloride~~*boron* limitations ~~identified here~~ may be granted for municipal and domestic wastewater discharges to navigable waters if a variance is granted pursuant to the Variance Policy for Surface Water.

Modify the Basin Plan in Chapter 4 Implementation under the heading "Discharges to Land" (page IV-11), as follows:

Additional effluent limits follow…

- The incremental increase in salts from use and treatment must be controlled to the extent ~~possible~~*that it is reasonable, feasible and practicable*. ~~In most circumstances, the maximum EC shall not exceed the EC of the source water plus 500 µmhos/cm. When the source water is from more than one source, the EC shall be a weighted average of all sources. However, under certain circumstances, the Regional Board, upon request of the discharger, may adopt an effluent limit for EC that allows EC in the effluent to exceed the source water by more than 500 µmhos/cm. This request will be granted consistent with the Policy for Exception from Implementation of Water Quality Objectives for Salinity.~~

- Discharges to areas that may recharge to good quality ground waters shall not exceed ~~an EC of 1,000 µmhos/cm, a chloride content of 175 mg/l, or~~ *an applicable boron ~~content of 1.0 mg/l~~water quality objective*.

- An exception from ~~the EC and/or the chloride~~*boron* limit*s* for discharges to land may be permitted consistent with the Program for Exception from Implementation of Water Quality Objectives ~~for Salinity~~.

Modify the Basin Plan in Chapter 4 Implementation under the heading “Industrial Wastewater” (page IV-13 and IV-14), as follows:

Generally, the effluent limits established for municipal waste discharges will apply to industrial wastes. Industrial dischargers shall be required to…

(1) Comply with water quality objectives established in Chapter 3.

(2) Comply with Chapter 15 for discharges of designated or hazardous waste unless the discharger demonstrates that site conditions and/or treatment and disposal methods enable the discharge to comply with this Basin Plan and otherwise qualify for exemption from Chapter 15.

(3) Comply with effluent limitations set forth in 40 CFR 400 when discharge is to surface water.

(4) Comply with, or justify a departure from, effluent limitations set forth in 40 CFR 400 if discharge is to land.

~~(5) Limit the increase in EC of a point source discharge to surface water or land to a maximum of 500 µmhos/cm. A lower limit may be required to assure compliance with water quality objectives.~~

~~An exception from the EC limit may also be permitted consistent with the Program for Exception from Implementation of Water Quality Objectives for Salinity.~~

Modify the Basin Plan in Chapter 4 Implementation under the heading “Oil Field Wastewater” (page IV-15), as follows:
Policies regarding the disposal of oil field wastewater are…

- *Discharges of oil field wastewater to unlined sumps, stream channels, or surface waters shall be regulated consistent with applicable laws, regulations and policies requiring the protection of beneficial uses in surface water and groundwater and the need to prevent nuisance conditions. Limits for the White Wolf subarea are discussed in the “Discharges to Land” subsection of the “Municipal and Domestic Wastewater” section.*

- ~~Maximum salinity limits for wastewaters in unlined sumps overlying ground water with existing and future probable beneficial uses are 1,000 µmhos/cm EC, 200 mg/l chlorides, and 1 mg/l boron, except in the White Wolf subarea where more or less restrictive limits apply. The limits for the White Wolf subarea are discussed in the “Discharges to Land” subsection of the “Municipal and Domestic Wastewater” section.~~

- ~~Discharges of oil field wastewater that exceed the above maximum salinity limits may be permitted to unlined sumps, stream channels, or surface waters if the discharger successfully demonstrates to the Regional Water Board in a public hearing that the proposed discharge will not substantially affect water quality nor cause a violation of water quality objectives~~

- ~~Maximum salinity limits~~*~~boron~~* ~~*limit*~~ ~~for wastewaters in unlined sumps overlying ground water with existing and future probable beneficial uses are 1,000 umhos/cm EC, 200 mg/l chlorides, and~~ *~~is~~* ~~1 mg/l boron, except in the White Wolf subarea where more or less restrictive limits apply. The limits for the White Wolf subarea are discussed in the "Discharges to Land" subsection of the "Municipal and Domestic Wastewater" section.~~
- ~~Discharges of oil field wastewater that exceed the above maximum salinity limits may be permitted to unlined sumps, stream channels, or surface waters if the discharger successfully demonstrates to the Regional Water Board in a public hearing that the proposed discharge will not substantially affect water quality nor cause a violation of water quality objectives.~~An exception from ~~the EC and/or the chloride~~*boron* limit*s* may be permitted consistent with the Program for Exception from Implementation of Water Quality Objectives for ~~*Salinityb*~~*Boron*.

Program to Control and Permit Nitrate Discharges to Groundwater

The Nitrate Control Program is a program for the control and permitting of nitrate discharges to groundwater in the Sacramento-San Joaquin River Basins and in the Tulare Lake Basin and applies to all groundwater basins that are designated with the municipal and domestic supply (MUN) beneficial use.[9]

This amendment was adopted by the Central Valley Water Board on 31 May 2018, and approved by the State Water Resources Control Board on X _____ 2018. The Effective Date of the Nitrate Control Program shall be X _____ 2018, the date of Office of Administrative Law approval.

Program Overview

Based on the CV-SALTS SNMP and its supporting studies, several groundwater basins and sub-basins in the Central Valley currently exceed the water quality objective for nitrate, which is set at the primary maximum contaminant level of 10 mg/L-N for drinking water. In addition, the SNMP and supporting studies identified that the cost for treating groundwater that exceeds 10 mg/L-N to be in the range of $36 to $81 billion, and in some scenarios would take more than 70 years for groundwater to meet the standard. Based on this and other information, the SNMP identified the need for a Nitrate Control Program that includes the following management goals:

Goal 1 – Ensure a Safe Drinking Water Supply;
Goal 2 – Achieve Balanced Salt and Nitrate Loadings; and,
Goal 3 – Implement Managed Aquifer Restoration where reasonable, feasible and practicable.

The timeframe for meeting these three goals is largely unknown and will vary from basin to basin. Further, the SNMP recognized that it may not be reasonable, feasible or practicable to achieve balanced loadings or fully restore groundwater in some basins/sub-basins. For other basins, it may take multiple decades to achieve the goals of the Nitrate Control Program. In some limited cases, where restoration of the groundwater basin for MUN uses may not be reasonable, feasible or practicable it may be necessary for the Central Valley Water Board to consider de-designating the MUN beneficial use designations from that groundwater basin.

The Nitrate Control Program is prioritized to first address health risks associated with drinking water that exceeds the nitrate primary maximum contaminant level (i.e., nitrate drinking water standard). Priority Groundwater Basins/Sub-basins[10] have been identified based on ambient nitrate conditions, and timelines have been established for implementation of the Nitrate Control Program in these prioritized basins and sub-basins. Implementation of the Nitrate Control Program in non-prioritized basins and sub-basins will occur as directed by the Central Valley Water Board's Executive Officer. In areas of the Central Valley where there are no identified groundwater basins or sub-basins, the Nitrate Control Program will apply when the Central

[9] The implementation provisions in this Nitrate Control Program apply to discharges of nitrate to groundwater. To extent that the Central Valley Water Board uses other forms of nitrogen speciation (e.g., total Nitrogen and nitrite+nitrate) to address nitrate discharges, this Control Program would also apply in those circumstances.

[10] The prioritized Groundwater Basins/Sub-basins identified in the public draft, including identification per DWR's Bulletin 118, are from Luhdorff and Scalmanini Consulting Engineers and Larry Walker Associates (2016a), and the Central Valley Water Board may adjust these priorities during the public review process.

Valley Water Board's Executive Officer determines it is necessary and appropriate to address nitrate discharges to localized groundwater.

Permittees within the prioritized basins and sub-basins that have received notice must generally assess nitrate levels in groundwater used for MUN that may be impacted by nitrate discharge(s). The assessment, using readily available data and information, must determine if the groundwater in question is a safe, reliable source of drinking water with respect to nitrates. If the groundwater is impacted, and if the permittee is causing an exceedance of nitrate in the groundwater in public water supply or domestic wells beyond the primary maximum contaminant level, then the permittee shall submit an Early Action Plan (EAP) that includes specific actions and a schedule of implementation to address the immediate needs of those drinking groundwater from public water supply or domestic wells that exceed the primary maximum contaminant level for nitrate.

For longer-term implementation of the Nitrate Control Program, the Central Valley Water Board's permitting actions specific to nitrate discharges to groundwater will fall within one of the two following approaches:

- Individual Approach (Path A) is the approach utilized when an individual permittee (or third party group subject to a General Order wishing to proceed under Path A) decides to comply with the nitrate requirements as an individual/third party, or in circumstances when a management zone is not an available option.

- Management Zone Approach (Path B) is the approach utilized when multiple permittees elect to participate in a management zone as the preferred method for complying with the Nitrate Control Program.

Path A is considered the default permitting approach while Path B is an optional approach. Where appropriate, the Central Valley Water Board will encourage permittees to work cooperatively with each other and other stakeholders to implement the Nitrate Control Program through a Management Zone

The Nitrate Control Program provides the Central Valley Water Board with flexibility and authority to permit discharges of nitrate to groundwater using Alternative Compliance mechanisms rather than traditional permitting determinations. The Board's options for Alternative Compliance include: (1) determining availability of assimilative capacity on a volume-weighted average basis for a management zone; (2) granting a conditional exception for meeting nitrate water quality objectives in discharges and/or in groundwater; and, (3) offsets. To authorize Alternative Compliance through one of these options, the Board must approve an Alternative Compliance Project as part of the authorization. A fundamental element of any Alternative Compliance Project is that it must ensure that groundwater users impacted by discharges of nitrates have access to drinking water that meets state and federal drinking water standards, and must provide specific milestones and timelines for meeting all three management goals of the program. In circumstances where it is not reasonable, feasible or practicable to meet management goal 2 and/or goal 3, permittees must still indicate how discharges of nitrate will be controlled to the extent that is reasonable, practicable and feasible.

The Nitrate Control Program protects high quality groundwater by establishing nitrate triggers. Nitrate triggers are not water quality objectives themselves. The Central Valley Water Board may authorize a discharge, or collective discharges in a Management Zone, to exceed a nitrate

trigger level, but to do so the Board must approve an Alternative Compliance Project, except in limited and unique circumstances.

Geographic Areas of Application

Considering the extent and size of the Central Valley Water Board's jurisdictional boundaries, it is necessary to categorize and prioritize the region's groundwater basins/sub-basins based on currently known ambient water quality conditions (where information is available), location (e.g., valley floor versus foothill and mountainous areas), and areas that are not part of an identified basin/sub-basin.

Priority Basins and Sub-basins

Basins/sub-basins have been prioritized and within Priority 1 and 2 have been identified as having the most serious ambient water quality concerns for nitrate. Priority 1 and 2 Groundwater Basins/Sub-basins are identified in Table N-1 and are depicted in Figure N-1.

Non-Prioritized Basins/Sub-basins

Groundwater Basins/Sub-basins that are not currently prioritized are identified in Appendix X. These basins/sub-basins or areas with the basins/sub-basins may be designated by the Central Valley Water Board as a high priority on a case-by-case basis when determined necessary by the Board.

Areas Within Central Valley Water Board's *Jurisdictional Boundary That Are Not Part of a Basin/Sub-basin*

Due to geologic conditions, some areas within the Central Valley Water Board's jurisdictional area are not part of an identified groundwater basin/sub-basin. These areas tend to be outside of the valley floor, and nitrate concerns in drinking water are generally not an issue of concern.

Figure N-1: PRIORITIZED DWR BULLETIN 118 GROUNDWATER BASINS/SUB-BASINS

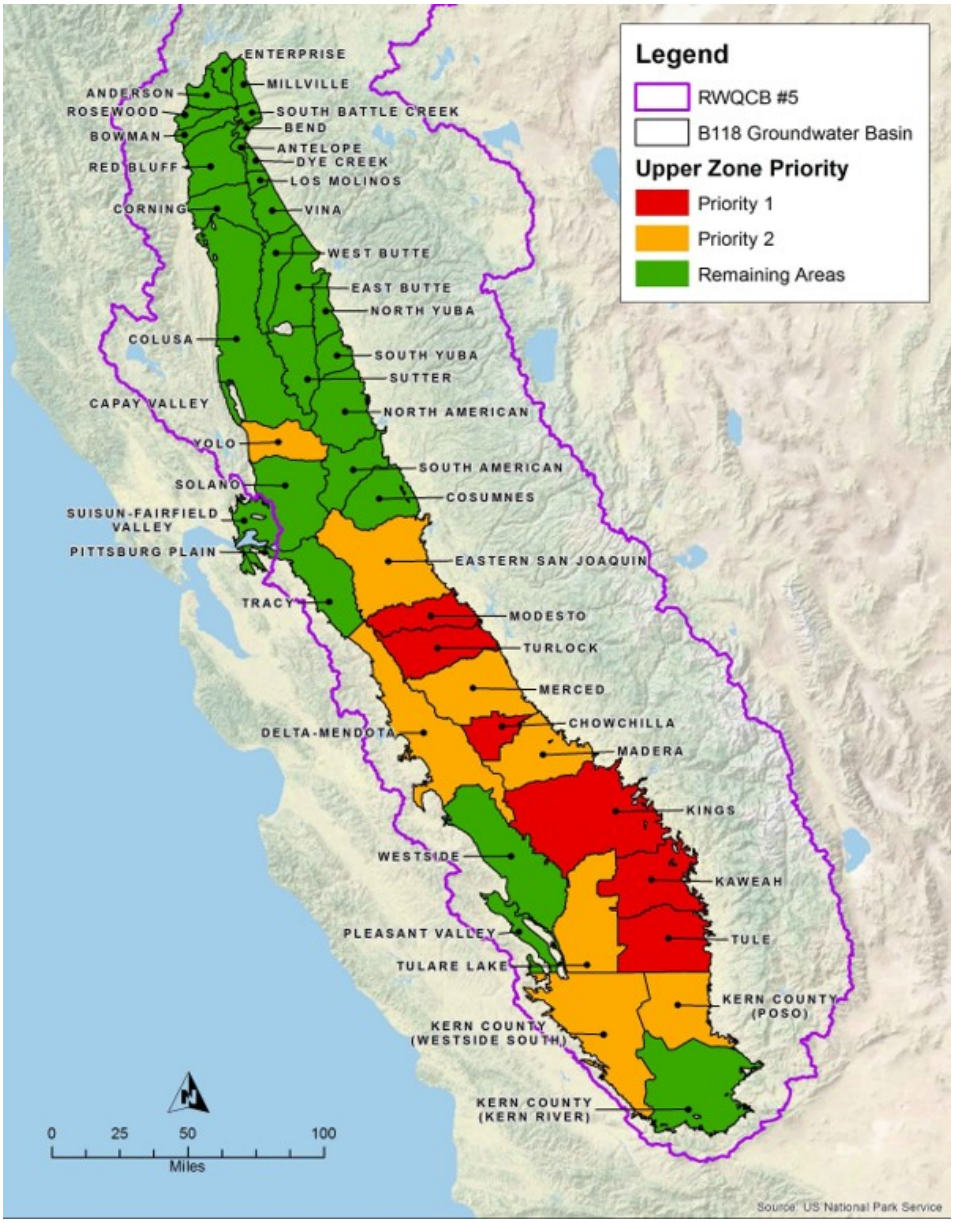


TABLE N-1: PRIORITIZED DWR BULLETIN 118 GROUNDWATER BASINS/SUB-BASINS

PRIORITY 1		PRIORITY 2	
5-22.11	Kaweah	5-21.67	Yolo
5-22.03	Turlock	5-22.04	Merced
5-22.05	Chowchilla	5-22.14	Kern County (Westside South)
5-22.13	Tule	5-22.12	Tulare Lake
5-22.02	Modesto	5-22.14	Kern County (Poso)
5-22.08	Kings	5.22-07	Delta Mendota
		5-22.01	Eastern San Joaquin
		5-22.06	Madera

Central Valley Water Board Review of Priorities

No later than January 1, 2024, the Central Valley Water Board shall review the priorities listed in Table N-1, and may adjust these priorities after considering water quality-based factors, and other relevant information. Factors the Board may consider in its review include, but are not limited to, the following:

(1) Degree to which areas (or subareas) with known nitrate drinking water supply contamination will be addressed under the current prioritization;
(2) Additional data/information provided by permittee(s) and/or other stakeholders within a basin/sub-basin (or subarea) that demonstrates that the nitrate concerns have or have not been addressed or will be addressed via another program or activity;
(3) Degree to which the area identified by water quality factors actually has impacted drinking water users (i.e., drinking water is predominately a surface water supply or drinking water supplies are primarily groundwater);
(4) Changes in groundwater basin/sub-basin boundaries by the Department of Water Resources, which may affect the spatial order as presented in Table N-1; and
(5) Maximization of efficient use of resources, which may affect the number of basins/sub-basins (or subareas) that may be included on the prioritized schedule of implementation.

Issuance of Notices to Comply

Existing Permitted Dischargers[11]

The Nitrate Control Program establishes timelines for implementation based on the priority designation of the groundwater basin/sub-basin, or lack of location within a groundwater basin/sub-basin. Implementation of the Nitrate Control Program for existing permitted dischargers occurs when notification is received from the Central Valley Water Board through the issuance of Notices to Comply. The Board will issue Notices to Comply according to the schedule in Table N-2. The Executive Officer of the Central Valley Water Board retains discretion to adjust the timelines in Table N-2 based on available resources.

New or Expanding Dischargers

After the effective date of the Nitrate Control Program, new dischargers located in groundwater basin/sub-basin (regardless of priority) or those with a material change to their operation that increases the level of nitrate discharged to groundwater must comply with the Nitrate Control Program and provide data and information as applicable. This provision does not apply to dischargers located in areas that are not part of a designated basin/sub-basin unless the Executive Officer of the Central Valley Water Board determines, based on the specific facts of the discharge, that it should be subject to the Nitrate Control Program and the Board's Executive Officer notifies the discharger accordingly.

[11] For the purposes of the Nitrate Control Program, the term "existing permitted dischargers" means dischargers subject to individual Waste Discharge Requirements, dischargers regulated as individual facilities under General Waste Discharge Requirements (e.g., facilities regulated under the Waste Discharge Requirements General Order for Existing Milk Cow Dairies), facilities or discharges subject to Conditional Waivers, or dischargers subject to General Waste Discharge Requirements that are regulated through a Third Party (e.g., dischargers regulated under Irrigated Lands Regulatory Program's Third-Party General Orders). For those dischargers that are part of a third party group, notifications required by the Nitrate Control Program may be issued to and received from the Third Party group on behalf of their members, who in turn will be responsible for notifying its members.

Table N-2. Timeline for Issuance of Notice to Comply with Nitrate Control Program

Basin Priority	Time for Issuance of Notice to Comply
Priority 1 Basins	As soon as is reasonably feasible after the effective date of the Nitrate Control Program, but no later than 1 year from xxxx (effective date).
Priority 2 Basins	Within 2 to 4 years after effective date of the Nitrate Control Program.
Basins/sub-basins not Prioritized	Based on available resources, and as determined necessary by the Executive Officer of the Central Valley Water Board.
Areas that are Not Part of a Basin	As determined necessary by the Executive Officer of the Central Valley Water Board.

Community Request

Nothing in the Nitrate Control Program is intended to prevent or prohibit a community from specifically requesting that the Central Valley Water Board subject a basin, sub-basin, or portion thereof to the Nitrate Control Program in advance of the timelines identified here. Upon such a request, the Central Valley Water Board will consider the same factors evaluated during initial prioritization utilizing any additional information provided and will consider whether the request appropriately enhances ongoing efforts to address nitrate contamination on a region-wide scale.

Permittees Requesting Deferral for a Sub-basin or Portion of a Sub-basin

Permittees may request that, for a sub-basin or a portion of a sub-basin, the Central Valley Water Board defer the issuance of Notices to Comply so that the notices for that sub-basin or portion of a sub-basin are issued along with the notices issued for a lower priority basin. Such a request must be accompanied by documentation related to the factors considered during the original prioritization. The request may be provided at any time up to six months prior to the scheduled issuance of a Notice to Comply as outlined in the section titled *Implementation of Permitting Approache*s.

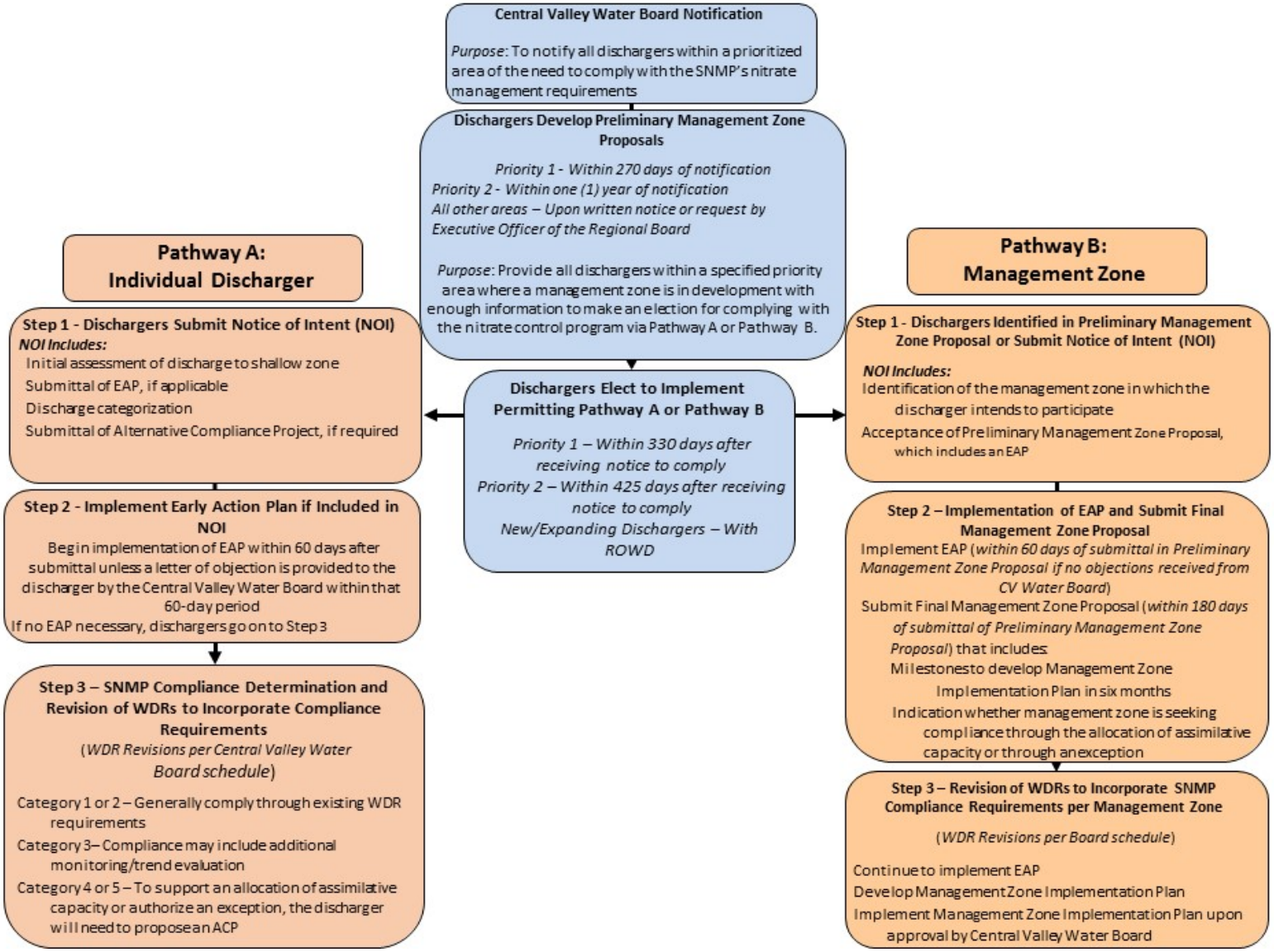
Permitting Approaches

Long-term implementation of the Nitrate Control Program will occur through updates of existing waste discharge requirements or conditional waivers, or through the issuance of new waste discharge requirements or conditional waivers for new sources of nitrate. Permit actions must fall under one of the two following approaches (Figure N-2):

(1) Individual Permitting Approach (Path A): Individual requirements (or per a General Order); or,

(2) Management Zone Approach (Path B): Participation in a Management Zone.

FIGURE N-2. NITRATE PERMITTING STRATEGY



Path A –Individual Permitting Approach

Path A applies to all permitted dischargers unless the discharger affirmatively elects to participate in the Management Zone Approach under Path B. For Path A, nitrate discharge impacts to groundwater are assessed in shallow groundwater underlying the area of discharge, otherwise referred to as the "Shallow Zone." What constitutes the Shallow Zone in any given area may vary but the purpose is to represent the area of the aquifer available for use by the shallowest domestic wells. To determine ambient nitrate concentrations in the Shallow Zone for purposes of the Nitrate Control Program only, several options are available:

(1) Use readily available data and information to calculate ambient nitrate concentrations for the shallowest ten percent (10%) of the domestic water supply wells in the Upper Zone[12] of a groundwater basin/sub-basin as defined and established in *Region 5: Updated Groundwater Quality Analysis and High Resolution Mapping for Central Valley Salt and Nitrate Management Plan* (June 2016);

(2) Conduct a site (or area) specific evaluation based on various types of available data and information, including but not limited to, depth and age of domestic wells in the area of contribution, groundwater table, well completion report data, and other available and relevant information; or,

(3) An equivalent alternative approved by the Central Valley Water Board's Executive Officer.

Based on the impact of the discharge to the Shallow Zone and the quality of the discharge, nitrate discharges will be characterized and placed into one of five categories (see Table N-3). Central Valley Water Board determinations regarding availability and allocation of assimilative capacity will be based on ambient water conditions in the Shallow Zone.

To protect high quality groundwater throughout the Central Valley, a nitrate trigger level of 75% of the water quality objective for nitrate is established. The trigger level is not a water quality objective. Permitted discharges that cause or may cause nitrate in the Shallow Zone to exceed a nitrate trigger may be subject to development and implementation of an Alternative Compliance Project.

[12] Upper Zone is defined to mean, "the portion of groundwater basin, sub-basin or management zone from which most domestic wells draw water. The Upper Zone generally extends from the top of the saturated zone to the depth to which domestic wells are generally constructed (screened). The lower boundary of the upper zone varies based on well construction information for a given basin or sub-basin. The Corcoran Clay layer may define the lower boundary of the upper zone or the lower zone, pending the available well construction and groundwater use information."

TABLE N-3: NITRATE DISCHARGE CATEGORIES

Category	Discharge Quality and Impact to Groundwater
Category 1 No Degradation	Discharge quality, as it reaches the Shallow Zone[13], is better than the applicable water quality objective and is better than the average nitrate concentration in the Shallow Zone.
Category 2 *De Minimis* Impacts	The average nitrate concentration in the Shallow Zone is better than the applicable water quality objective, and, over a 20-year planning horizon: • The effect of the discharge on the average nitrate concentration in the Shallow Zone is expected to use less than 10% of the available assimilative capacity in the Shallow Zone; and • The discharge, in combination with other nitrate inputs to the Shallow Zone, is not expected to cause average nitrate concentrations in the Shallow Zone to exceed a nitrate trigger of 75% of the applicable water quality objective.
Category 3 Degradation Below Trigger	The average nitrate concentration in the Shallow Zone is better than the applicable water quality objective. Estimated that discharge is more than *de minimis*, but will not cause the average nitrate concentration in the Shallow Zone to exceed a trigger of 75% of the applicable water quality objective over a 20-year planning horizon.
Category 4 Degradation Above Trigger	The average nitrate concentration in the Shallow Zone is better than the water quality objective. Though the discharge is reasonably expected to cause the average nitrate concentration in the Shallow Zone to exceed a trigger of 75% of the applicable water quality objective over a 20-year planning horizon, the average nitrate concentration in the Shallow Zone is expected to remain at or below the applicable water quality objective over the same 20-year planning horizon.
Category 5 Discharge Above Objective	Either: • The average nitrate concentration in the Shallow Zone is better than the applicable water quality objective, but the discharge may cause the average nitrate concentration in the Shallow Zone to exceed the water quality objective over a 20-year planning horizon; or, • The average nitrate concentration in the Shallow Zone exceeds the applicable water quality objective and the discharge quality, as it reaches the Shallow Zone, also exceeds the applicable water quality objective.

[13] For the purposes of this Table, the "Shallow Zone" is the portion of the aquifer whose areal extent is defined by the boundaries of the discharge area and whose vertical extent is defined by the depth of the shallowest 10% of the domestic water supply wells near the discharge or an equivalent alternative.

Path B –Management Zone Approach

Permittees with nitrate discharges may elect to comply with the Nitrate Control Program by participating in a Management Zone. The Central Valley Water Board finds Management Zones to be a regulatory option that is both appropriate and preferable for many areas of the Central Valley, because the use of Management Zones can maximize resources to address the varying degrees of nitrate concentrations found in groundwater basins/sub-basins, and can provide a more integrated approach to developing local solutions for localized areas of contaminated groundwater. Management Zones are a type of "Alternative Compliance Project" and are subject to Alternative Compliance Project requirements. Table N-4 summarizes the characteristics, intent and purposes of a Management Zone.

Individual nitrate discharges from permittees participating in a Management Zone are not categorized like discharges in Path A. Rather, impacts to groundwater are assessed collectively in the upper zone, which is defined to mean, "the portion of groundwater basin, sub-basin or management zone from which most domestic wells draw water. It generally extends from the top of the saturated zone to the depth to which domestic wells are generally constructed (screened). The lower boundary of the upper zone varies based on well construction information for a given basin or sub-basin. The Corcoran Clay layer may define the lower boundary of the upper zone or the lower zone, pending the available well construction and groundwater use information."

For a Management Zone, Central Valley Water Board determinations of availability and allocation of assimilative capacity are based on a volume-weighted average of nitrate concentrations in the Upper Zone.

Implementation of Permitting Approaches

Due Dates for Deliverables

To implement the Permitting Approaches set forth in this control program, permittees need to provide the Central Valley Water Board with information regarding their discharge of nitrate. Deadlines for submitting this information varies based on the priority of the basin/sub-basin, and the permitting approach selected. Table N-5.A and Table N-5.B identify the various deliverables based on which permitting approach a discharger seeks to follow, and associated due dates for these deliverables.

TABLE N-4: CHARACTERISTICS, INTENT AND PURPOSE OF A MANAGEMENT ZONE

Characteristics

- A defined area which incorporates a portion of a large groundwater basin(s)/sub-basin(s)
- Encompasses all groundwater for those permittees that discharge nitrate to said groundwater that have selected to comply with the Nitrate Control Program through participation in the defined Management Zone.
- Voluntarily proposed by those regulated permittees located within the proposed Management Zone boundary that have decided to work collectively and collaboratively to comply with the Nitrate Control Program.

Intent and Purposes

- Defined area that serves as a discrete regulatory compliance unit for complying with the Nitrate Control Program for multiple permittees.
- Basis for the establishment of local management plans to manage nitrate within the Management Zone's boundary.
- Participants work collectively to implement SNMP management goals: (1) safe drinking water, (2) achieving balance, and (3) restoring groundwater basins/sub-basins (where reasonable, feasible and practicable) across the Management Zone.
- Where groundwater within the Management Zone boundary, and groundwater impacted by those permittees within the Management Zone boundary, is being used as a drinking water supply, and where those drinking water supplies are impacted by nitrates and exceed or are likely to exceed nitrate drinking water standards in the foreseeable future, Management Zone participants will ensure the provision of safe drinking water to all residents in the area adversely affected by those dischargers of nitrates from those that are participating in the Management Zone.
- Ensure the provision of safe drinking water for the Management Zone through stakeholder coordination and cooperation.
- Work towards better resource management through appropriate allocation of resources.
- Central Valley Water Board imposes reasonable provisions collectively for the Management Zone, and its permittee participants, that recognize the need to prioritize nitrate management activities over time for compliance with the Nitrate Control Program and the SNMP's Management Goals.

TABLE N-5.A: PATHWAY A, SUMMARY SCHEDULE FOR IMPLEMENTATION

Deliverable	Application	Due Dates[A]	
Initial Assessment/Notice of Intent	All existing and new permittees electing Pathway A.	Existing Permittees - Priority 1 Basins/Sub-basins	330 days after receiving Notice to Comply
		Existing Permittees - Priority 2 Basins/Sub-basins & Non-Prioritized Basins	425 days after receiving Notice to Comply
		New or Expanding Permittees	With Report of Waste Discharge
Early Action Plan	Required if permittee is causing any public water supply or domestic well to exceed nitrate water quality objective.	To be submitted with Notice of Intent and initiated within 60-days if no objection received by the Central Valley Water Board	
Alternative Compliance Project if needed	Required for Category 4 and Category 5 Permittees	To be submitted with Notice of Intent	

A. The Executive Officer of the Central Valley Water Board retains the discretion to extend the due dates identified here for submittal of identified deliverables if proper justification is provided to the Executive Officer at least 30 days prior to required date for submittal.

TABLE N-5.B: PATHWAY B, SUMMARY SCHEDULE FOR IMPLEMENTATION

Deliverable	Application	Due Dates[A]	
Notice of Intent	All existing and new Permittees electing Pathway B.	Existing Permittees - Priority 1 Basins/Sub-basins	330 days after receiving Notice to Comply
		Existing Permittees - Priority 2 Basins/Sub-basins & Non-Prioritized Basins	425 days after receiving Notice to Comply
		New or Expanding Permittees	With Report of Waste Discharge
Preliminary Management Zone Proposal	Permittees electing Path B that are actively participating in development of Preliminary Management Zone Proposal.	Existing Permittees - Priority 1 Basins/Sub-basins	270 days after receiving Notice to Comply
		Existing Permittees - Priority 2 Basins/Sub-basins & Non-Prioritized Basins	1 year after receiving Notice to Comply
		New or Expanding Permittees	With Report of Waste Discharge
Early Action Plan	Required element of Preliminary Management Zone Proposal for public water supply and domestic wells within the Management Zone area that exceed nitrate water quality objective.	To be submitted with Preliminary Management Zone Proposal and initiated within 60-days if no objection received by the Central Valley Water Board	
Alternative Compliance Project if needed	Equivalent to Management Zone Implementation Plan noted below		
Final Management Zone Proposal		180 days after receiving comments from Central Valley Water Board on Preliminary Management Zone Proposal	
Management Zone Implementation Plan		Six (6) months after the Final Management Zone Proposal is accepted by the Executive Officer of the Central Valley Water Board.	

A. The Executive Officer of the Central Valley Water Board retains the discretion to extend the due dates identified here for submittal of identified deliverables if proper justification is provided to the Executive Officer at least 30 days prior to required date for submittal.

Deliverables

Initial Assessment/Notice of Intent (Path A)

Permittees, or those seeking a permit to discharge that includes the discharge of nitrate, must prepare an Initial Assessment and Notice of Intent, unless the permittee is actively engaged in developing a Management Zone proposal and is identified as an initial participant in a Preliminary Management Zone Proposal submitted pursuant to Path B.

Existing Permittees

Upon receipt of a Notice to Comply, existing permittees shall conduct an initial assessment of their discharge as it relates to nitrate. The initial assessment shall be submitted as part of a Notice of Intent and must include the following unless as otherwise approved by the Central Valley Water Board's Executive Officer:

(i.) Estimated impact of discharge of nitrate on the Shallow Zone over a 20-year planning horizon;
- May be estimated based on a simple mass balance calculation assuming 20 years of loading as nitrate reaches the water table.

(ii.) Initial assessment of water quality conditions based on readily available existing data and information.
- May use default information in or referenced by, the Central Valley SNMP (2016) or provide supplemental information that includes water quality conditions in the shallow and upper zones;[14]

(iii.) Survey of the discharge, and determination if the discharge is causing any public water supply or domestic well to be contaminated by nitrate;

(iv.) If causing contamination of a public water supply or domestic well, an Early Action Plan; Identification/summary of current treatment and control efforts, or management practices;[15]

(v.) Identification of any overlying or adjacent Management Zone;

(vi.) Identification of Category of the Discharge, and information to support the categorization;[16]

(vii.) Information necessary to support request for allocation of assimilative capacity, if applicable;

(viii.) For category 4 dischargers, identification of an Alternative Compliance Project or justification as to why the Central Valley Water Board should not require implementation of an Alternative Compliance Project.

[14] Dischargers may rely on previous groundwater assessments conducted by the discharger, assessments conducted by others that are applicable and relevant, or previous antidegradation analysis that have been submitted to the Central Valley Water Board.

[15] If the discharger seeking compliance through this option is a third party submitting the NOI on behalf of the individual members of the third party, the third party will need to take reasonable efforts to summarize the management practices being used by its members with respect to protecting groundwater quality from the impacts of nitrates from member farming operations.

[16] If the discharger seeking compliance through this option is a third party submitting the NOI on behalf of the individual members of the third party, the third party will need to take reasonable efforts to categorize the various geographic areas as covered by the third party general order.

(ix.) For category 5 dischargers, information as required to support an Application for an Exception pursuant to the Exceptions Policy, which would include identification of an Alternative Compliance Project.

Previous groundwater assessments conducted by the discharger (or third party group on behalf of collective dischargers), and/or antidegradation analyses that have been submitted and approved by the Central Valley Water Board's Executive Officer may satisfy all or part of initial assessment requirement.

Recycled Water Permittees

Permittees for recycled water that meets the requirements of Title 22 of the California Code of Regulations may substitute the information requested above with the same information that is otherwise required for a Recycled Water Application under State Water Resources Control Board Order No. 2014-0090-DWQ, General Waste Discharge Requirements for Recycled Water Use.

New Dischargers, or Existing Permitted Dischargers Proposing Material Changes to their Regulated Discharge

New dischargers that propose to discharge new or additional levels of nitrate[13], or existing dischargers seeking a permit modification due to a material change to a facility that requires submittal of a Report of Waste Discharge and that includes an increase in nitrate discharges (either in volume or concentration), shall include the initial assessment information at the time of submittal of the Report of Waste Discharge. If a Management Zone exists for the area where the new or expanded discharge shall occur, the discharger shall indicate how the discharger intends to comply with the Nitrate Control Program, i.e., Path A or Path B. If a Management Zone does not exist at the time of application, the Central Valley Water Board may use its discretion to issue a time schedule to the discharger for complying with the Nitrate Control Program through a later formed Management Zone.

Option In lieu of Individual Initial Assessment/Notice of Intent

In lieu of conducting an initial assessment and submitting a Notice of Intent, existing permitted dischargers may work collaboratively and cooperatively to prepare a Preliminary Management Zone Proposal that meets the requirements specified under Path B.

Preliminary Management Zone Proposal (Path B)

Existing permitted dischargers may work cooperatively to prepare a single Preliminary Management Zone Proposal for an identified geographic area. A Preliminary Management Zone Proposal must include all of the following unless otherwise approved by the Central Valley Water Board's Executive Officer:

(i.) Proposed preliminary boundaries of the Management Zone area;
(ii.) Identification of Initial Participants/Dischargers;
(iii.) Identification of other dischargers and stakeholders in the management zone area that the initiating group is in contact with regarding participation in the management zone;

[13]In cases where there is an ownership transfer of a facility and where the level of nitrate being discharged does not change, an initial assessment may not be necessary.

(iv.) Initial assessment of groundwater conditions based on readily available existing data and information.
- May use default information in or referenced by, the Central Valley SNMP or provide supplemental information that includes water quality conditions in the upper zone;

(v.) Identification/summary of current treatment and control efforts, or management practices;[14]

(vi.) Initial identification of public water supplies or domestic wells within the Management Zone area with nitrate concentrations exceeding the water quality objective;

(vii.) An Early Action Plan to address drinking water needs for those that rely on public water supply or domestic wells with nitrate levels exceeding the water quality objective;

(viii.) Documentation of process utilized to identify affected residents and the outreach utilized to ensure that they are given the opportunity to participate in development of an Early Action Plan;

(ix.) Identification of areas within or adjacent to the management zone that overlap with other management areas/activities;

(x.) Any constituents of concern that the individual discharger/group of dischargers intend to address besides nitrate (not required but is an option available);

(xi.) Proposed timeline for:
- Identifying additional participants;
- Further defining boundary areas;
- Developing proposed governance and funding structure for administration of the Management Zone;
- Additional evaluation of groundwater conditions across the management zone boundary area, if necessary; and,
- Preparing and submitting a Final Management Zone Proposal and a Management Zone Implementation Plan.

Preliminary Management Zone Proposals must be submitted to the Central Valley Water Board according to the due dates identified in Table N-5.

Permittees that are identified as an Initial Participant in a Management Zone shall be presumed to be electing Path B for complying with the Nitrate Control Program, unless they otherwise notify the Central Valley Water Board of their intent to withdrawal from Path B. If a permittee withdraws from Path B, the permittee must submit an initial assessment and Notice of Intent within 30 days from withdrawing from Path B.

Early Action Plan (Path A and Path B as applicable)

Early Action Plans are required if public water supply or domestic wells in the area of contribution exceed the water quality objective for nitrate. Implementation of an Early Action Plan that is addressing elevated nitrate concentrations in public water supply and/or domestic wells by providing an alternative water supply does not create a presumption of liability for the cause of the elevated concentrations.

[14] If the discharger seeking compliance through this option is a third party submitting the NOI on behalf of the individual members of the third party, the third party will need to take reasonable efforts to summarize the management practices being used by its members with respect to protecting groundwater quality from the impacts of nitrates from member farming operations.

An Early Action Plan must include the following, unless otherwise approved by the Central Valley Water Board's Executive Officer:

(i.) A process to identify affected residents and the outreach utilized to ensure that impacted groundwater users are informed of and given the opportunity to participate in the development of proposed solutions;

(ii.) A process for coordinating with others that are not dischargers to address drinking water issues, which must include consideration of coordinating with affected communities, domestic well users and their representatives, the State Water Board's Division of Drinking Water, Local Planning Departments, Local County Health Officials, Sustainable Groundwater Management Agencies and others as appropriate;

(iii.) Specific actions and a schedule of implementation that is as short as practicable to address the immediate drinking water needs of those initially identified within the management zone, or area of contribution for a Path A discharger, that are drinking groundwater that exceeds nitrate standards and that do not otherwise have interim replacement water that meets drinking water standards; and

(iv.) A funding mechanism for implementing the Early Action Plan, which may include seeking funding from Management Zone participants, and/or local, state and federal funds that are available for such purposes;

An Early Action Plan may be part of an Alternative Compliance Project.

Final Management Zone Proposal (Path B)

Management Zone participants must prepare and submit a Final Management Zone Proposal. The Final Management Zone Proposal must include all information from the Preliminary Management Zone Proposal, updated as necessary, as well as the following:

(i.) Timeline for development of the Management Zone Implementation Plan;
(ii.) Updated list of participants;
(iii.) Governance structure that, at a minimum, establishes the following: (a) roles and responsibilities of all participants; (b) identification of funding or cost-share agreements to implement short term nitrate management projects/activities, which may include local, state and federal funds that are available for such purposes; and (c) a mechanism to resolve disputes among participating dischargers;
(iv.) Additional evaluation of groundwater conditions across management zone area, if necessary;
(v.) Identification of proposed approach for regulatory compliance (i.e., use of assimilative capacity and/or seeking approval of an exception for meeting nitrate water quality objectives);
(vi.) Explanation of how the management zone intends to interact and/or coordinate with other similar efforts such as those underway pursuant to the SGMA; and,
(vii.) Documentation of actions taken to implement the Early Action Plan.

Final Management Zone Proposals shall be submitted to the Central Valley Water Board for review and comment according to the due dates identified in Table N-5B.

Management Zone Implementation Plan (Path B)

A Management Zone Implementation Plan is the equivalent of an Alternative Compliance Project. Management Zone Implementation Plans shall:

(i.) Identify how emergency, interim and permanent drinking water needs for those affected by nitrates in the Management Zone area are being addressed, and how a drinking water supply that ultimately meets drinking water standards will be available to all drinking water users within the Management Zone boundary, and the timeline and milestones necessary for addressing such drinking water needs;

(ii.) Show how the Management Zone plans to achieve balanced nitrate loadings within the management zone (to the extent reasonable, feasible and practicable);

(iii.) Include a plan for establishing a managed aquifer restoration program to restore nitrate levels to concentrations at or below the water quality objectives to the extent it is reasonable, feasible and practicable to do so;

(iv.) Document collaboration with the community and/or users benefitting from any proposed short/long-term activities to provide safe drinking water;

(v.) Identify funding or cost-share agreements, or a process for developing such funding or cost-share agreements, to implement intermediate and long-term nitrate management projects/activities, which may include identification of local, state and federal funds that are available for such purposes;

(vi.) Identify nitrate management activities within a Management Zone which may be prioritized based on factors identified in the Central Valley SNMP (2016) and the results of the characterization of nitrate conditions. Prioritization provides the basis for allocating resources with resources directed to the highest water quality priorities first;

(vii.) Include a water quality characterization and identification of nitrate management measures that contains:

- Characterization of nitrate conditions within the proposed management zone, which will be used as the basis for demonstrating how nitrate will be managed within the Management Zone over short and long-term periods to meet the management goals established in the Central Valley Region SNMP.
- Short (≤ 20 years) and long-term (> 20 years) projects and/or planning activities that will be implemented within the Management Zone, and in particular within prioritized areas (if such areas are identified in the Implementation Plan) to make progress towards attaining each of the management goals identified by the Nitrate Control Program. Over time as water quality is managed in prioritized areas, updates to the plan may shift the priorities in the Management Zone.
- Milestones related to achieving balanced nitrate loadings and managed aquifer restoration.
- A short and long-term schedule for implementation of nitrate management activities with interim milestones.
- Identification of triggers for the implementation of alternative procedures or measures to be implemented if the interim milestones are not met.
- A water quality surveillance and monitoring program that is adequate to ensure that the plan when implemented is achieving the expected progress towards attainment of management goals. All or parts of the surveillance and monitoring program may be coordinated or be part of a valley-wide and/or regional groundwater monitoring, if appropriate.
- Consideration of areas outside of the Management Zone that may be impacted by discharges that occur within the Management Zone boundary areas.

(viii.) Identify the responsibilities of each regulated discharger, or groups of regulated dischargers participating in the Management Zone, to manage nitrate within the Zone.

(ix.) Include information necessary for obtaining an Exception as set forth in the Exceptions Policy, or information necessary for the Central Valley Water Board to grant use of assimilative capacity for Management Zones.

Management Zone Request for Allocation of Assimilative Capacity

A request for allocation of assimilative capacity for a Management Zone may not be for an area larger than an identified basin or sub-basin from Table N-2, and must include the following:

(i.) A comprehensive antidegradation analysis, consistent with the State Antidegradation Policy, which includes an evaluation of impacts to down-gradient areas.[17]

(ii.) Demonstration that there is sufficient assimilative capacity to ensure that discharges of nitrate from participants to the Management Zone, including discharges to recharge projects, will not cause the volume-weighted average water quality in the upper zone underlying the management zone to exceed the applicable Basin Plan objective(s);

(iii.) Demonstration that the proposed discharges covered by the management zone will not unreasonably affect present and anticipated beneficial uses in or down-gradient to the Management Zone;

(iv.) Demonstration that the allocation of assimilative capacity, and the resulting net effect on receiving water quality, is consistent with maximum benefit to the people of the State; and

(v.) Demonstration that Best Practicable Treatment or Control will be implemented to ensure that pollution or nuisance will not occur and that any degradation authorized by Central Valley Water Board will be consistent with the maximum benefit to the people of the state.

(vi.) Demonstration that allocation of assimilative capacity to dischargers participating in the Management Zone will not result in groundwater, as a volume-weighted average in the upper zone, to exceed a trigger level of 75% of the nitrate water quality objective over a 20-year timeframe. The Central Valley Water Board retains the discretion to allocate assimilative capacity above this trigger level as long as the Board can find that use of assimilative capacity above the trigger level will not result in pollution or nuisance over the longer term.

<u>Management Zone Request for Exception to Meeting a Nitrate Water Quality Objective</u>

A Management Zone may request an Exception to meeting a Nitrate Water Quality Objective. The request for application of the Exception may apply to all permitted dischargers participating in the Management Zone. The Central Valley Water Board must find that all required components of the Management Zone Implementation Plan, which is equivalent to an Alternate Compliance Project, is complete to consider an Exception. A complete Management Zone Implementation Plan is considered to meet the application requirements for an Exception for nitrate under the Exceptions Policy

<u>Modification to Management Zone Implementation Plan</u>

A Management Zone Implementation Plan shall be reviewed periodically, and may be modified periodically to incorporate changes based on new data or information. Any such modifications

should generally be changes that will benefit water quality or user protection in the management zone. Any modifications to the Management Zone Implementation Plan that impact or change timelines, milestones or deliverables identified in the Implementation Plan must be approved by the Central Valley Water Board.

Central Valley Water Board Actions

Individual Permitting Approach – Path A

The Central Valley Water Board will use the information contained in a submitted Initial Assessment/Notice of Intent or Report of Waste Discharge to determine if the discharge in question complies with the Nitrate Control Program. If the Board finds that the discharge as currently permitted is in compliance with the Nitrate Control Program, then revisions to existing waste discharge requirements or conditional waivers may not be necessary. In such cases, the Board will provide the permittee with a letter stating its finding with respect to the adequacy of existing waste discharge requirements and compliance with the Nitrate Control Program.

If the discharge as permitted, or proposed to be discharged, does not comply with the Nitrate Control Program, or if the Central Valley Water Board needs additional information to make such a determination, the Board may request additional information using its existing authorities.

Based on the categorization of the discharge, the Central Valley Water Board may require the permittee to conduct additional monitoring and/or implement an Alternative Compliance Project as part of permit conditions.

Upon receipt of a completed Initial Assessment/Notice of Intent or Report of Waste Discharge, the Central Valley Water Board shall take all reasonable efforts to revise applicable waste discharge requirements or conditional waivers within one year, as resources allow.

Implementation of an Early Action Plan shall begin as soon as is reasonably feasible, but no later than 60 days after submittal, unless the Central Valley Water Board deems the Early Action Plan to be incomplete. A revised Early Action Plan must be resubmitted and implemented within the time period directed by the Board's Executive Officer.

Management Zone Permitting Approach – Path B

Preliminary Management Zone Proposal

Upon receipt of a Preliminary Management Zone Proposal, the Central Valley Water Board shall prominently post the proposal on its website, circulate the Proposal publicly through its Lyris list-serve and provide individual post card notices (as resources allow) of the Proposal's availability to dischargers within the Management Zone boundary area that are not already identified as Initial Participants. The Board will work with the group of initiating dischargers to help communicate the availability of the Proposal to other dischargers and stakeholders within the Management Zone area. The Preliminary Management Zone Proposal shall be available for public comment for at least 30 days after being posted by the Board.
Early Action Plan

Implementation of the Early Action Plan shall begin as soon as is reasonably feasible, but no later than 60 days after submittal, unless the Central Valley Water Board deems the Early

Action Plan to be incomplete. A revised Early Action Plan must be resubmitted and implemented within the time period directed by the Board's Executive Officer.

Final Management Zone Proposal

Upon receipt of a Final Management Zone Proposal, the Central Valley Water Board shall prominently post the proposal on its website, circulate the Final Proposal publicly through its Lyris list-serve, and make the Final Proposal available for public review and comment for at least 30 days. The Executive Officer of the Board shall determine if the Final Management Zone Proposal meets the minimum requirements set forth under Path B and must determine if the Final Management Zone Proposal is deemed complete. A complete Final Management Zone Proposal functions as an equivalent to a Report of Waste Discharge for all existing permitted dischargers that are participating in the Management Zone.

Management Zone Implementation Plan

Within a reasonable time period, but not longer than six months after finding the proposed Management Zone Implementation Plan is complete or finding that requests for modifications to an approved Management Zone Implementation Plan that would alter timelines, milestones or deliverables are complete, the Central Valley Water Board shall provide public notice, request comment and schedule and hold a public hearing on the Management Zone Implementation Plan and the request for Alternative Compliance (i.e., volume weighted assimilative capacity or exception) embedded within the plan.

When the Central Valley Water Board finds it necessary to revise existing or issue new waste discharge requirements or conditional waivers to implement the Management Zone Implementation Plan, the notice, request for comment and public hearing requirement may be conducted in conjunction with the Board's process for revising or adopting waste discharge requirements or conditional waivers for those permittees participating in the Management Zone.

The Central Valley Water Board may approve all or part of a request for use of assimilative capacity to a Management Zone using a volume-weighted average in the upper zone, if the Board finds all of the following:

(i.) The request is consistent with the State Antidegradation Policy;
(ii.) The request is supported with a comprehensive antidegradation analysis;
(iii.) The request includes a Management Zone Implementation Plan that meets the requirements identified herein;
(iv.) Allocation of assimilative capacity to dischargers participating in the Management Zone will not adversely impact available assimilative capacity in areas outside of the Management Zone; and,
(v.) Allocation of assimilative capacity to dischargers participating in the Management Zone will not result in groundwater, as a volume-weighted average in the upper zone, to exceed a trigger level of 75% of the nitrate water quality objective for MUN over a 20-year timeframe. The Central Valley Water Board retains the discretion to allocate assimilative capacity above this trigger level as long as the Central Valley Water Board can find that use of assimilative capacity above the trigger level will not result in pollution or nuisance over the longer term.

The Central Valley Water Board may grant an exception to meeting nitrate water quality objectives to existing permitted dischargers participating in the Management Zone, if the Board finds all of the following:

(i) The request is consistent with the Exceptions Policy; and,
(ii) The request includes a Management Zone Implementation Plan that meets the requirements identified herein and serves as an Alternative Compliance Project for an exception to be granted.

If a Management Zone Implementation Plan is found to not be complete, and if the permittees of a Management Zone does not revise the Management Zone Implementation Plan in a timely manner that makes it complete for consideration by the Central Valley Water Board, then permittees within that Management Zone must comply with the Nitrate Control Program via Path A as directed by the Board's Executive Officer.

Requirements for Alternative Compliance Projects

The Central Valley Water Board will require a permittee(s) to develop and implement an Alternative Compliance Project to support an allocation of assimilative capacity on a volume-weighted basis, above a trigger level (except in unique or limited circumstances), or to authorize an exception.

- For permittees electing to comply under Path A, the Alternative Compliance Project must be submitted with the Initial Assessment/Notice of Intent.

- For permittees electing to comply under Path B, the Alternative Compliance Project is the Management Zone Implementation Plan.

At a minimum, an Alternative Compliance Project must include the following:

(1) Identification of public water supply and domestic wells that exceed nitrate water quality objectives and that are within the discharge areas zone of contribution;
(2) A schedule, with identified milestones, for addressing those nitrate-related drinking water issues; and,
(3) Identification of steps to be taken to meet the management goals of the Nitrate Control Program, which may be phased in over time[18]

The Central Valley Water Board has developed *Guidelines for Developing Alternative Compliance Projects*, which dischargers should consider in development of an Alternative Compliance Project. The guidelines may be found in the Staff Report to Incorporate a Salt and Nitrate Control Program for the Central Valley (Central Valley Water Board, 2018).

[18] The Central Valley Water Board recognizes that full compliance with management goals 2 and 3 (i.e., reaching balance and managed restoration) may not be reasonable, feasible or practicable in all circumstances. In such cases, the discharger is responsible for providing the Board with all necessary information to show why full compliance with management goals 2 and 3 are not reasonable, feasible or practicable. Dischargers shall still implement actions towards meeting the management goals that are reasonable, feasible and practicable.

Program Review

The Nitrate Control Program will be reviewed on the same schedule as the Salt Control Program with the first review occurring no later than ___(date)___ (15 years after Office of Administrative Law approval).

Conditional Prohibition for Salt and Nitrate Control Program

Salt Control Program

During Phase 1 of the Salt Control Program, a Conditional Prohibition shall apply to all permittees discharging salt pursuant to Board-issued waste discharge requirements and conditional waivers, except those dischargers regulated under the Board's Irrigated Lands Regulatory Program (ILRP). Dischargers regulated under the ILRP will instead be required to comply with the initial phase of the Salt Control Program through an amendment to the ILRP General Orders, which the Central Valley Water Board shall consider within 18 months of the effective date of the Basin Plan Amendment.

For permittees subject to the Conditional Prohibition, the prohibition shall apply from the time of receiving a Notice to Comply until such time that the permittees' existing waste discharge requirements or conditional waivers regulating the discharge of salts are updated or amended to reflect requirements of Phase I of the Salt Control Program, or until such time that the Central Valley Water Board affirmatively notifies the permittee that their permit complies with the Phase I of the Salt Control Program without the need for further update or amendments. Until the discharger receives a Notice to Comply, the relevant waste discharge requirements or conditional waiver provisions governing the discharge of salts, including any applicable compliance schedule, shall remain in force.

Conditional Prohibition on Salt Discharges

Upon receiving a Notice to Comply from the Central Valley Water Board, discharges of salts at concentrations that exceed salinity numeric values identified in the Phase 1 Conservative Permitting Approach of the Salt Control Program are prohibited unless the permittee is implementing the Phase I requirements of the Salt Control Program.

Permittees subject to the Conditional Prohibition must notify the Central Valley Water Board within six months of receiving a Notice to Comply whether they elect to be regulated under the Conservative or Alternative permitting approaches. Dischargers who do not reply to the Notice to Comply will be required to meet the requirements of the Salt Control Program's Conservative permitting approach. The following information must be submitted with the permittee's response to the Central Valley Water Board of its permit compliance pathway decision (i.e. within six months of receiving a Notice to Comply).

(a) Conservative Salinity Permitting Approach

Permittees not selecting the alternative approach must submit an assessment of how their discharge complies with the conservative permitting requirements set forth in the Salt Control Program. If the Central Valley Water Board's Executive Officer does not concur with the findings of the assessment, the Executive Officer may request additional information from the permittee to verify that the permittee will meet those conservative permitting requirements.

(b) Alternative Salinity Permitting Approach

Permittees selecting the alternative salinity permitting approach must submit written documentation from the lead entity for the Salinity Prioritization and Optimization Study (P&O Study) confirming the discharger's full participation in the P&O Study. Status of the P&O Study

must be documented and confirmed through reports to the Central Valley Water Board from the lead entity. Dischargers maintaining full participation in the P&O Study will be deemed in compliance with salinity discharge requirements in their waste discharge requirements or conditional waivers consistent with the Salt Control Program. During the P&O Study, the permittee must maintain current efforts to control levels of salinity in the discharge.

The Salinity Conditional Prohibition shall sunset at the end of Phase I of the Salt Control Program.

Nitrate Control Program

The Conditional Prohibition of Nitrate Discharges shall apply to all permittees discharging nitrate pursuant to Board-issued waste discharge requirements and conditional waivers, except those dischargers regulated under the Board's Irrigated Lands Regulatory Program (ILRP). Dischargers regulated under the ILRP will instead be required to comply with the initial phase of the Nitrate Control Program through an amendment to the ILRP General Orders, which the Central Valley Water Board shall consider within 18 months of the effective date of the Basin Plan Amendment.

For those permittees subject to the Conditional Prohibition, the prohibition shall apply from the time of receiving a Notice to Comply until such time that the permittees' existing waste discharge requirements or conditional waivers regulating the discharge of nitrate are updated or amended to reflect requirements of the Nitrate Control Program, or such time that the Central Valley Water Board affirmatively notifies the permittee that their permit complies with the Nitrate Control Program without the need for further update or amendments. Until such time as the discharger receives a Notice to Comply, the relevant waste discharge requirements or conditional waiver provisions governing the discharge of nitrate shall remain in force.

Conditional Prohibition of Nitrate Discharges to Groundwater

Upon receiving a Notice to Comply from the Central Valley Water Board, discharges of nitrate are prohibited unless a permittee is implementing the requirements of the Nitrate Control Program. These requirements include, but are not limited to, the development of an Early Action Plan (EAP), when so required, and the initiation of that EAP within 60 days of the submittal of the EAP to the Board, unless an extension has been granted by the Executive Officer. If a discharger has not elected to participate in the Management Zone Approach (Path B), the requirements of the Individual Permitting Approach (Path A) shall apply to the discharge. Compliance timelines are identified in the Nitrate Control Program.

After receiving a Notice to Comply with the Nitrate Control Program, all permittees subject to the Conditional Prohibition must provide either a Notice of Intent to comply with the Nitrate Control Program under Path A or be included as a participant in a previously-submitted Preliminary Management Zone Proposal (Path B). The Notice of Intent must be submitted within 330 days of receiving the Notice to Comply for Priority 1 Basins and within 425 days for remaining basins.

(a) Path A – Individual Permitting Approach

Permittees electing Path A must submit a Notice of Intent that includes an Initial Assessment to the Central Valley Water Board that complies with the applicable requirements of the Nitrate Control Program. Should the Initial Assessment identify the need for an Early Action Plan

(EAP), the proposed EAP must be submitted with the Notice of Intent. The discharger must initiate the activities proposed under the EAP within 60 days of the submittal of the EAP, unless the Board's Executive Officer deems the EAP to be incomplete. Revised EAPs must be submitted and implemented within timelines directed by the Board's Executive Officer. Should the Initial Assessment identify the need for an Alternative Compliance Project (ACP), the permittee must submit the proposed ACP with the Notice of Intent.

(b) Path B – Management Zone Approach

Permittees electing to comply under a Management Zone Approach must meet the timelines identified in the Nitrate Control Program, including, but not limited to, submitting a Preliminary Management Zone Proposal within 270 days (Priority 1 Basins) or within one year (remaining basins) of receiving a Notice to Comply with the Nitrate Control Program. The Preliminary Management Zone Proposal must document all permittees considering compliance under Path B for the Management Zone. When an EAP is required, the EAP must be submitted with the Preliminary Management Zone Proposal. Activities proposed under the EAP must be initiated within 60 days after submittal unless the Central Valley Water Board deems the EAP incomplete. Revised EAPs must be re-submitted and implemented within timelines directed by the Board's Executive Officer.

Surveillance and Monitoring Program Requirements for the Central Valley Salt and Nitrate Control Program

The overarching goals of the Salt and Nitrate Surveillance and Monitoring Program are to:

- Periodically assess the progress of the Salt and Nitrate Control Program and, if appropriate, support efforts to re-evaluate the requirements of the control program.
- Develop statistically-representative ambient water quality determinations and trend analyses for Total Dissolved Salts (TDS)/Electrical Conductivity (EC) and Nitrate as Nitrogen.
- Maximize the use of existing monitoring programs to provide needed data and avoid duplication of efforts.

The Central Valley Water Board will require permittees discharging salt and nitrate to provide information to the entity leading the surveillance and monitoring program to allow the Board to satisfy the monitoring goals. This information may come from the dischargers' monitoring efforts; monitoring programs conducted by state or federal agencies or collaborative watershed efforts; or from special studies evaluating effectiveness of management practices. Information gathered will be consolidated and evaluated by the entity leading this surveillance and monitoring effort and a Program Assessment Report will be submitted to the Board every five years that answers the following management questions.

- What are the ambient conditions and trends of salinity in surface waters throughout the Central Valley?
- What are the ambient conditions and trends of salinity and nitrate in the following groundwater zones for groundwater basins within the Central Valley Region: upper; lower; and production?

Within two years of the effective date of the Salt and Nitrate Control Program, or as extended with the approval of the Central Valley Water Board's Executive Officer, the entity leading the effort will submit to the Board a Work Plan that is compliant with all surface water and groundwater requirements set forth in this section. The Work Plan will include a Quality Assurance Project Plan (QAPP). Implementation of the Work Plan will be initiated within 30 days of the approval by the Central Valley Water Board's Executive Officer.

Permittees that discharge salt or nitrate in the Central Valley Region shall participate in the preparation of the Program Assessment Report by contributing funding for the preparation of the report and any additional activities necessary to ensure that all required information is available to the lead entity. Permittees that discharge salt or nitrate must either gather needed information required by the Work Plan for their area of contribution and provide the information to the lead entity in a format acceptable to the lead entity, or permittees must demonstrate their support for the lead entity to gather needed information by submitting documentation of such support from the lead entity. The requirements for participation shall be established by the lead entity and will consider factors such as participation in other existing groundwater quality monitoring programs that will contribute data to the Salt and Nitrate Monitoring Program, resources required to develop and implement the Monitoring Program, including preparation of the Program Assessment Reports, and other factors.

Surface Water Requirements

To assess ambient conditions and trends of salinity and other secondary MCLs in surface waters throughout the Central Valley, the monitoring program for surface waters will rely on data collected by existing Central Valley monitoring and assessment programs already established in the region as well as any additional information collected under the Salt and Nitrate Control Program.

The portion of the Work Plan that addresses the surface water component will include at a minimum:

- Description of how the entity leading the Salt and Nitrate Surveillance and Monitoring Program will utilize data collected by existing monitoring and assessment programs to evaluate ambient conditions and trends in major water bodies including but not limited to the Sacramento River, Feather River, San Joaquin River and Delta as well as their major tributaries;
- Identification of the monitoring programs and associated monitoring locations that will be utilized;
- Approach that will be used to compile data from existing surface water quality databases and other sources for use in the assessment;
- Approach to assess ambient water quality conditions and trends for selected secondary Maximum Contaminant Levels (SMCLs), including but not necessarily limited to salinity-related SMCLs. Identification of the specific SMCLs to be assessed by the SAMP and frequency of analysis will be included in the work plan.

Groundwater Requirements

The Salt and Nitrate Groundwater Monitoring Program (Groundwater Monitoring Program) shall be sufficiently robust to evaluate ambient water quality and trends in groundwater basins in the floor of the Central Valley Region, including all sub-basins within the following groundwater basins defined by Department of Water Resources Bulletin 118: Redding Area (#5-6); Sacramento Valley (#5-21); and San Joaquin Valley (#5-22). Remaining groundwater basins will be considered for incorporation after completion of the Phase I Prioritization and Optimization Study and before initiation of Phase II of the Salt Control Program.

The Groundwater Monitoring Program shall consider, as appropriate, Chapter 5 of the CV-SALTS SNMP (2016) as guidance during the development of the work plan and shall include, at a minimum, the following components:

- Groundwater Monitoring Program goals;
- Entities responsible for the collection and reporting of data from groundwater wells incorporated into the Groundwater Monitoring Program;
- Identification of the groundwater monitoring wells to be included in the program and how the selected wells will provide a representative assessment of ambient water quality and trends by basin/sub-basin;
- Governance and funding mechanisms and agreements necessary to ensure the Groundwater Monitoring Program obtains the required data;
- Procedures for review and revision of the Groundwater Monitoring Program;
- A QAPP that includes:
    - Characteristics of each well incorporated into the program, e.g., well types, logs and construction data, where available;

    - Sample collection requirements, e.g., water quality parameters, sampling frequency and collection methods;
    - Data reporting and management requirements
  - Approach to assess ambient water quality conditions and water quality trends for TDS/EC and Nitrate as Nitrogen in the Upper, Lower and Production Zones for each groundwater basin/sub-basin included in the Groundwater Monitoring Program; and
  - Approach to evaluate the progress of the Salt and Nitrate Control Program based on trends in water quality.

To the extent practicable, the Groundwater Monitoring Program will utilize data collected by existing Central Valley Water Board water quality monitoring programs to be cost-effective and establish consistency in how groundwater quality data are collected, managed, assessed and reported. In this regard, the Irrigated Lands Regulatory Program Groundwater Quality Trend Monitoring Program implemented by the Central Valley Groundwater Monitoring Collaborative is anticipated to provide the foundation for the development of the Groundwater Monitoring Program. Data developed under the Irrigated Lands Regulatory Program will be supplemented as needed, to ensure that the periodic Program Assessment Report is completed on schedule. Sources of supplemental data include but are not limited to Groundwater Ambient Monitoring and Assessment (GAMA) shallow domestic well monitoring program; USGS Oil and Gas Regional Groundwater Monitoring Program; routine Title 22 sampling program; monitoring programs associated with implementation of Groundwater Sustainability Plans; monitoring programs established to comply with WDRs/Conditional Waivers; monitoring programs established as part of the approval of a management zone under the nitrate control program, or through the direct collection of groundwater quality data.

Program Assessment Report Requirements

An assessment of ambient water quality conditions and trends shall be completed at least once every five years consistent with the requirements of the approved work plan. The first Program Assessment Report shall be submitted to the Central Valley Water Board no later than five years after the approval of the Work Plan and every five years thereafter, unless a revised reporting schedule is approved by the Board's Executive Officer.

Recommendations for Implementation to Other Agencies

Modify the Basin Plan in Chapter 4 Implementation as follows:

Recommendations to Other Agencies

General
The implementation of long-term salinity management in the Central Valley is critically important to the long-term sustainability of the Central Valley and its water supply. Failure to control salts will result in a decline of Central Valley surface and groundwater quality at an enormous cost to all water users of Central Valley waters, eventually creating greater hardship for the environment, agriculture, industry, municipal utilities, and the entire economy of the Central Valley and the State. The need to control and abate the impacts from increasing salinity through implementation of the Salt Control Program in the Central Valley is an important priority for the State of California and is consistent with the goals and objectives of the California Strategic Growth Plan (California Bond Accountability, 2008). Nearly two-thirds of the State's population and over 3 million acres of irrigated agricultural lands rely on waters from the Central Valley via the State's water project to meet their daily needs. A significant portion of the southern Central Valley's domestic, agricultural and industrial water supply is imported from the Sacramento/San Joaquin Delta via State and federal water projects. Delta water is of lower water quality than the Sierra Mountain waters that historically fed the valley and water projects import nearly 400 thousand tons of salt a year from the Delta into the valley.

Due to the complexity and far-reaching impacts of salt management in the valley, the Central Valley Water Board has determined that all users of Central Valley waters, within and outside of the Board's jurisdictional area, are considered stakeholders responsible for the successful implementation of the Salt Control Plan. Successful implementation will require significant participation and actions by federal, state, local agencies, districts, associations and other entities that use or transport Central Valley's waters. It is recommended that these entities participate in the P&O Study to be done under Phase I, and in the other two phases of the Salt Control Program as appropriate. Participation in the Phase I P&O Study may be done by providing financial, technical and policy support to the P&O Study. This participation is essential as findings from the P&O Study will direct the implementation of physical and non-physical projects in the phased Salt Control Program and coordination.

Recommendations to Federal Officials
The U.S. Federal Legislature should establish the Central Valley Salinity Act[19] to develop a Central Valley Salt Control Program and authorize the construction, operation, and maintenance of certain works in the San Joaquin and Tulare Lake Hydrologic Regions in the Central Valley to control the salinity of water delivered to users in the Central Valley and the State.

Recommendations to Federal Agencies and Departments
The U.S. Natural Resource Conservation Service, U.S. Department of Agriculture, U.S. Fish and Wildlife Service, U.S. Geological Service, U.S. Army Corps of Engineers and U.S. Bureau of Reclamation should participate in the P&O Study to understand how the Salt Control Program supports their agency's mission and provide funding for the P&O Study and subsequent phases of the Salt Control Program as appropriate.

[19] Similar to the Colorado River Basin Salinity Control Act (SCA), Public Law 93-320, enacted 24 June 1974.

The U.S. Environmental Protection Agency should participate in the P&O Study to understand how to integrate the agency's goals into the study. The Agency should provide funding to the P&O Study and future salt control implementation programs for studies on the impacts of salt discharges on the environment and determining appropriate mitigating measures to address the impacts.

Recommendations to the State Legislature
The State of California Legislature should include in future budgets or funding mechanisms a means to fund a portion of the P&O Study, fund implementation of the salt management solutions identified through P&O solutions, and fund other elements of the Salt and Nitrate Control Program for the Central Valley.

Recommendations to the State Water Board
The State Water Board should use its water rights permitting and enforcement authorities, as appropriate, to require participation in the P&O Study to those holders of water right permits for waters in the Central Valley. This is especially important when granting water rights separates water from its watershed resulting in the accumulation of salt in inland areas or the reduction in assimilative capacity of surface and groundwater, such as exporting of surface waters to areas outside of the Central Valley.
The State Water Board should seek and prioritize funding opportunities to fund a portion of the P&O Study and future implementation of the salt management solutions identified through P&O Solutions.
The State Water Board should support water resource programs that are related to salt management and should prioritize grant and other funding sources to support implementation of the Salt and Nitrate Control Program.

The State Water Board should develop or revise drought and conservation regulations, policies and plans to be consistent with maintaining a salt balance in the Central Valley. Such policies should balance the need for conservation where adequate recharge is needed to protect and maintain high quality groundwaters.

Recommendations to Other State Agencies and Departments
The California Department of Food and Agriculture, California Department of Fish and Wildlife, California Department of Conservation and the California Department of Water Resources should participate and provide funding to the P&O Study to ensure that the implementation of its programs and policies are consistent with the requirements of the Salt Control Program.

The California Environmental Protection Agency, the California Department of Fish and Wildlife and the Delta Stewardship Council should participate in the P&O Study to ensure that proposed solutions found through the study are sound and will not adversely impact our resources or the Delta.

Recommendations to Counties and Municipalities
Municipalities within the Central Valley, as well as those outside of the Central Valley that benefit from the export and import of Central Valley surface waters, should participate in and support the P&O Study to ensure that actions they plan, permit and implement minimize reductions in surface water and groundwater quality, while promoting water sustainability.

County and municipal planning departments within the Central Valley should ensure their land use and development policies, ordinances and actions are consistent with the goals and

objectives of the Salt and Nitrate Control Program and requirements of the Groundwater Sustainability Agencies.

Recommendations to Groundwater Sustainability Agencies (GSAs)
Groundwater Sustainability Agencies (GSAs) within the Central Valley should participate in and support the P&O Study under the Salt Control Program as well as any Management Zones developed under the Nitrate Control Program to ensure that actions they plan, permit and implement minimize reductions in groundwater quality, while promoting water sustainability.

Recommendations to Local Agencies, **Districts, Associations, Commissions, Coalitions, Industries and other Entities Within and Outside of the Central Valley**

Agencies, Districts, Associations, Commissions, Coalitions, Industry and other entities[20] include parties that may or may not have been participating in the CV-SALTS initiative to develop the Salt and Nitrate Management Plan and that benefit from the export and import of State Water Project and Central Valley Water Project surface waters. These entities should participate in and provide funding for the P&O Study, and subsequent phases of the Salt Control Program as appropriate, and participate in management zone implementation plans as appropriate to ensure that actions they plan, permit or implement minimize reductions in surface and groundwater quality within the Central Valley while promoting water sustainability.

Agencies, Districts, Associations, Commissions, Coalitions, Industry and other entities[21] responsible for existing and future water resource and/or salinity treatment and/or disposal facilities within the Central Valley should participate in and provide funding for the P&O Study, and subsequent phases of the Salt Control Program as appropriate, and participate in management zone implementation plans as appropriate to ensure that actions they plan, permit or implement minimize reductions in surface and groundwater quality within the Central Valley while promoting water sustainability.

[20] These parties include, but are not limited to, Resource Conservation Districts, California League of Food Processors, Dairy CARES, Wine Institute, California Urban Water Agencies, Association of California Water Agencies, California Association of Sanitation Districts, Contra Costa Water District, Metropolitan Water District, San Joaquin River Authority, Kern Water District, Westlands Water District, East San Joaquin Water Quality Coalition, South Delta Water Agency, Friant Water Users Authority, San Joaquin River Water Contractors, State Water Contractors, Santa Clara Water District, East Bay Municipal Utility District, and others.

[21] These parties include, but are not limited to, Resource Conservation Districts, California League of Food Processors, Dairy CARES, Wine Institute, California Urban Water Agencies, Association of California Water Agencies, California Association of Sanitation Districts, Contra Costa Water District, Metropolitan Water District, San Joaquin River Authority, Kern Water District, Westlands Water District, East San Joaquin Water Quality Coalition, South Delta Water Agency, Friant Water Users Authority, San Joaquin River Water Contractors, State Water Contractors, Santa Clara Water District, East Bay Municipal Utility District, and others.

Definitions and Terminology Specific to the Salt and Nitrate Control Program

ALTERNATIVE COMPLIANCE PROGRAM (ACP): project(s) designed to provide the same or higher level of intended protection to water users that may be adversely affected by the discharge. For example, where a discharge is unable to comply with water quality objectives for nitrate, the permittee may seek an exception and offer to provide a safe and reliable alternative water supply for nearby drinking water wells that exceed or threaten to exceed the primary MCL for nitrate. Alternative Compliance Programs may be used in conjunction with other non-traditional regulatory options (including variances, exceptions, offsets, management zones and assimilative capacity allocations) to mitigate the adverse effects from a discharge until a feasible, practicable and reasonable means for meeting water quality objectives becomes available.

AQUIFER: A body of rock or sediment that is sufficiently porous and permeable to store, transmit and yield significant or economic quantities of groundwater to wells or springs.

AREA OF CONTRIBUTION: The portion(s) of Basin or Sub-basin where a discharge or discharges will co-mingle with the receiving water and where the presence of such discharge(s) could be detected.

ASSIMILATIVE CAPACITY: The capacity of a high-quality receiving water to absorb discharges of chemical constituents and still meet applicable water quality objectives that are protective of beneficial uses. State Water Board Resolution 68-16, the Statement of Policy with Respect to Maintaining High Quality of Waters in California (*State Antidegradation Policy*) requires a consideration, to the extent feasible, of the degree to which a discharge will affect the available assimilative capacity of a high-quality water relative to baseline water quality when the Central Valley Water Board is authorizing degradation. For the purposes of the Nitrate Control Program, available assimilative capacity may be calculated based on the average groundwater concentration of nitrate in the receiving water.

AVERAGE GROUNDWATER CONCENTRATION: The mean, volume-weighted concentration of a chemical constituent computed using the reasonably available, representative and reliable well data collected in a given Basin or Sub-basin during the most recent 10-year sampling period. The Central Valley Water Board may authorize longer or shorter averaging periods where necessary and appropriate. Statistical tools and transformations or other QA/QC data may be used to identify and disqualify outliers, to normalize data, or to spatially and temporally de-cluster well data to reduce the potential for sampling bias when estimating a mean concentration.

GROUNDWATER BASIN: A groundwater basin is an alluvial aquifer comprised of soils and sediments that are sufficiently porous and permeable to store, transmit and yield significant or economic quantifies of water to wells or springs. Groundwater basins have a definable bottom and well-defined lateral boundaries that are usually characterized by impermeable formations of rock or clay or by subsurface gradients that physically constrain subsurface flows to a limited direction. The California DWR (2006) has identified 126 groundwater basins or sub-basins in the Central Valley Region.

BEST EFFORTS: The applicable standard that must be met by a permittee when the Central Valley Water Board is authorizing waste discharges that may impact waters that are not considered "high quality waters." The Best Efforts approach involves making a showing that the constituent is in need of control and establishing limitations which the permittee can be expected to achieve using reasonable control methods. Factors that should be considered include: the water supply available to the permittee; the past effluent quality of the permittee; the effluent quality achieved by other similarly situated permittees; the good-faith efforts of the permittee to limit the discharge of the constituent; and the measures necessary to achieve compliance

BEST MANAGEMENT PRACTICES (BMP): Structural or non-structural (operational) control techniques designed to reduce the discharge of pollutants into receiving waters, especially for non-point sources where conventional wastewater treatment technologies are not a feasible or practicable compliance option.

BEST PRACTICABLE TREATMENT OR CONTROL (BPTC): The applicable standard that must be met by a permittee when the Central Valley Water Board is authorizing the degradation of high-quality waters pursuant to the State Antidegradation Policy. BPTC is conceptually comparable (but not legally synonymous) with other similar phrases commonly used to proscribe the most effective, efficient and affordable means for minimizing pollution, such as: Best Available Technology Economically Achievable (BATEA), Best Practicable Control Technology (BPT), Best Conventional Pollution Control Technology (BCT), and Best Management Practices (BMP).

CONDITIONAL PROHIBITION: Conditional prohibitions of discharge can be established in the Basin Plan for any type of discharge. (Wat. Code § 13243.) A conditional prohibition may specify conditions or areas where the discharge of waste, or the discharge of certain types of waste, will not be permitted unless specific conditions are met. A conditional prohibition established in the Basin Plan is directly enforceable by the Central Valley Water Board even in the absence of WDRs or a waiver regulating the discharge or discharger.

CURRENT GROUNDWATER QUALITY: For the purposes of the Salt and Nitrate Control Program, "current groundwater quality" is defined as the volume-weighted Average Concentration of a chemical constituent in a given Basin or Sub-basin. Current water quality can be computed separately for the Production Zone, Upper Zone, Lower Zone, Shallow Zone and Management Zone.

DE MINIMIS DISCHARGE: *De minimis* discharges of nitrate are specifically defined in the Central Valley Water Board's Nitrate Control Program.

DOMESTIC WELL: A water well used to supply water for the domestic needs of an individual residence or systems of four or less service connections (DWR Bulletin 74).

EARLY ACTION PLAN (EAP): For the purposes of the Central Valley Water Board's Nitrate Control Program, an EAP is a plan that identifies specific activities, and a schedule for implementing those activities, that will be undertaken to ensure immediate access to safe drinking water for those who are dependent on groundwater from wells that exceed the Primary MCL for nitrate. (See also the SNMP Nitrate Permitting Strategy).

EXCEPTION TO A WATER QUALITY OBJECTIVE: A special authorization, adopted by the Central Valley Water Board through the normal public review and approval process, that allows a discharge or group of discharges to groundwater, subject to various conditions, without an obligation to comply with certain water quality objectives that would normally apply to the given discharge for the period of the exception. Exceptions are limited to a specific term that is determined by the Central Valley Water Board. (See also the SNMP Exceptions Policy).

LOWER GROUNDWATER ZONE (see Fig. 1): The remaining portion of a groundwater basin or sub-basin's Production Zone excluding the Upper Zone. Wells constructed in the Lower Zone are generally used for some municipal supply and/or agricultural purposes. The upper boundary of the Lower Zone varies based on well construction information for a given basin or sub-basin (see reference citation in the definition of Upper Zone). Where the Corcoran Clay layer exists, the Corcoran Clay layer may define the lower boundary of the Upper Zone or the Lower Zone, pending the available well construction and groundwater use information. The groundwater beneath the Corcoran Clay is referred to as the lower aquifer system.

MANAGEMENT ZONE: A discrete and generally hydrologically contiguous area for which permitted discharger(s) participating in the management zone collectively work to meet the goals of the SNMP and for which regulatory compliance is evaluated based on the permittees collective impact, including any alternative compliance programs, on a defined portion of the aquifer. Where Management Zones cross groundwater basin or sub-basin boundaries, regulatory compliance is assessed separately for each basin or sub-basin. Management Zones must be approved by the Central Valley Water Board. (See also SNMP Management Zone Policy).

NATURALLY-OCCURRING BACKGROUND CONCENTRATION: The concentration of a chemical constituent that is likely to be present a given groundwater Basin or Sub-basin without the influence of anthropogenic activities that may have occurred over time, accounting for temporal and spatial variability.

OFFSET PROJECT: Project(s) implemented in conjunction with, but separately from, a discharge where the net impact of both on receiving water quality is better than what would be expected to occur if the discharge was required to comply with waste discharge requirements prescribed in the absence of any offset. (See also the Offsets Policy).

PERCHED GROUNDWATER (see Fig. 1): Groundwater that is supported by a zone of material of low permeability located above an underlying main body of groundwater with little or no hydrologic connectivity to the underlying main aquifer. In most cases, Perched Groundwater is excluded when characterizing the Production Zone, Upper Zone or Shallow Zone of the main Aquifer which makes up a given DWR Basin or Sub-basin.

PRODUCTION ZONE FOR GROUNDWATER (see Fig. 1): The portion of a basin or sub- basin from which the majority of groundwater is being pumped and utilized. The Production Zone includes the Upper Zone and the Lower Zone.

RECEIVING WATER(S): A surface waterbody (lake or stream) or a groundwater Basin or Sub-basin into which pollutants are discharged.

SALINITY: For purposes of implementing the Salt and Nitrate Control Plan, the definition of "salinity" and "salt" includes only: electrical conductivity, total dissolved solids, fixed dissolved solids, chloride, sulfate, and sodium.

SALT MANAGEMENT AREA: A defined groundwater basin or sub-basin that can be used receive and contain water with elevated salinity concentrations in order to remove the salt from sensitive areas until such time that the collected salts can be removed from the area for disposal or use.

SATURATED GROUNDWATER ZONE (see Fig. 1): The area below the land surface in which all pore space between soil, sand and rock particles is filled with water. The Saturated Zone is below the Unsaturated Zone and excludes areas of soil moisture where water is held by capillary action in the upper unsaturated soil or rock.

SHALLOW GROUNDWATER ZONE (see Fig. 1): The shallowest portion within the upper zone where groundwater would be considered to constitute an aquifer (which is defined as a "body of rock or sediment that is sufficiently porous and permeable to store, transmit, and yield significant or economic quantities of groundwater to wells and springs" [DWR, 2003]). In all cases, relevant groundwater does not include perched water. For example, this may be the upper portion of the upper zone that generally encompasses the shallowest 10% of the domestic water supply wells in a given basin or sub-basin. When determining the upper portion of the upper zone based on the shallowest 10% of the domestic wells in a given area, variations in well depth across the basin or sub-basin due to hydrogeologic conditions or other factors should be considered.

SUB-BASIN: A sub-basin is a smaller, but contiguous, area of the aquifer within a larger groundwater basin. The sub-basin boundaries can be defined both vertically and horizontally by a number of factors including, but not limited to: mineral or chemical concentrations, pumping practices, porosity, ownership, overlying land uses, jurisdictional oversight, flow gradients, tributary relationships, or other variables that merit the sub-basin be managed differently from adjacent areas in the same larger groundwater basin. The California DWR (2006) has identified 126 groundwater basins or sub-basins in the Central Valley Region; 41 of these aquifers are located on the valley floor, and the remainder are located in the surrounding foothills and mountains.

TRIGGER(s): A concentration or level for a specific constituent (e.g. TDS) or parameter (e.g. Electrical Conductivity) which, when equaled or exceeded, may require some permittees to initiate certain actions or implement certain measures.

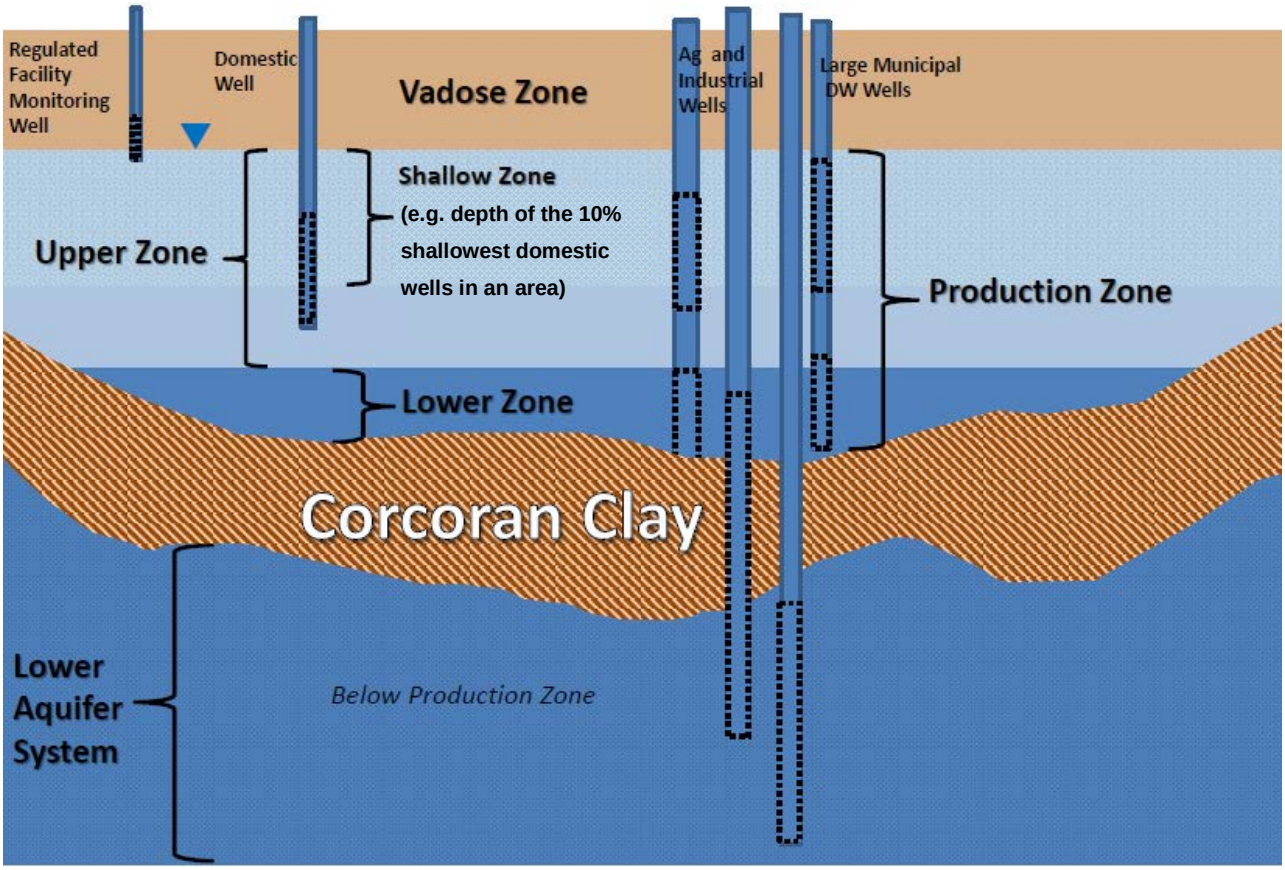
UNSATURATED ZONE (see Fig. 1): The area below the land surface in which the pore space between soil, sand and rock particles contains varying degrees of both air and water in ratios that inhibit extraction of significant or economic quantities of groundwater extraction. The term "Unsaturated Zone" is generally considered to be synonymous with the term "Vadose Zone."

UPPER GROUNDWATER ZONE (see Fig. 1): The portion of the groundwater basin, sub-basin or management zone from which most domestic wells draw water. It generally extends from the top of the saturated zone to the depth to which domestic wells are generally constructed (screened). The lower boundary of the Upper Zone varies based on well construction information for a given basin or sub-basin. The Corcoran Clay layer may define the lower boundary of the Upper Zone or the Lower Zone, pending the available

well construction and groundwater use information. (as described in Section 2 of LWA/LSCE; Region 5: Updated Groundwater Quality Analysis and High Resolution Mapping for Central Valley Salt and Nitrate Management Plan; June, 2016).

VARIANCE TO WATER QUALITY STANDARD: A special authorization, adopted by the Central Valley Water Board through the normal public review and approval process, that allows an NPDES-permitted discharge(s) to surface waters or a waterbody, subject to various conditions, without an obligation to comply with certain water quality standards that would normally apply to the given discharge(s) or waterbody. Variances are limited to specific terms governed by federal law and must also be approved by U.S. EPA. Variances apply solely to surface waterbodies or discharges to those surface waters.

Figure X-1: Schematic of Aquifer System Within Corcoran Clay Extent[1]



Legend

Unsaturated (Vadose) Zone

Groundwater Table - Top of saturated aquifer at the top of Upper Zone

Shallow Zone - Depth of the shallowest 10% of the domestic wells in an area (or alternative identified in the Nitrate Control Program).

Upper Zone The portion of the groundwater basin, sub-basin or management zone from which most domestic wells draw water (Defined by well depths and screening intervals).

Lower Zone The remaining portion of a groundwater basin or sub-basin's Production Zone excluding the Upper Zone. Wells constructed in the Lower Zone are generally used for some municipal supply and/or agricultural purposes.

Below Production Zone

Production Zone

The portion of basin or sub-basin from which the majority of groundwater is being pumped and utilized.

Well Depth

Screen Depth

[1] For the purposes of this program, calculations for Upper, Lower and Production Zones do not extend below the Corcoran Clay

Proposed Modifications to the Basin Plans' Variance Policy

Variance Policy

The following paragraphs include proposed modifications and additions to the Sacramento River and San Joaquin River Basin Plan's *Chapter 4 Implementation* in the sections indicated below. Note that these changes are also proposed for the Tulare Lake Basin Plan.

Control Action Considerations of the Central Valley ~~Regional~~ Water Board

Policies and Plans

Variance Policy for Surface Waters

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

I. Variances from Surface Water Quality Standards for Point Source Dischargers

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

B. The *Central Valley Water Board*~~Regional Water Board~~ may not grant a variance if:

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

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

C. The *Central Valley Water Board*~~Regional Water Board~~ may approve all or part of a requested variance, or modify and approve a requested variance, if the permit applicant demonstrates a variance is appropriate based on at least one of the six following factors:

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

D. In making a determination on a variance application that is based on factor (3) in paragraph C above, the *Central Valley Water Board*~~Regional Water Board~~ may consider the following:

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

E. In making a determination on a variance application that is based on factor (6) in paragraph C.~~,~~ above, the *Central Valley Water Board*~~Regional Water Board~~ may consider the following:

(1) The cost and cost-effectiveness of pollutant removal by implementing the methodology capable of attaining the adopted or proposed WQBEL for the specific constituent(s) for which a variance is being requested.
(2) The reduction in concentrations and loadings of the pollutant(s) in question that is attainable by source control and pollution prevention efforts as compared to the reduction attainable by use of the methodology capable of attaining the adopted or proposed WQBEL.
(3) The overall impact of attaining the adopted or proposed WQBEL and implementing the methodologies capable of attaining the adopted or proposed WQBEL.

(4) The technical feasibility of installing or operating any of the available methodologies capable of attaining the WQBEL for which a variance is sought.

(5) Other relevant information requested by the *Central Valley Water Board*~~Regional Water Board~~ or supplied by the applicant or the public.

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

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

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

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

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

II. Variance Application Requirements and Processes

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

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

C. A complete variance application must contain the following:

(1) Identification of the specific constituent(s) and water quality standard(s) for which a variance is sought;

(2) Identification of the receiving surface water, and any available information with respect to receiving water quality and downstream beneficial uses for the specific constituent;

(3) Identification of the WQBEL(s) that is being considered for adoption, or has been adopted in the NPDES permit;

(4) List of methods for removing or reducing the concentrations and loadings of the pollutants with an assessment of technical effectiveness and the costs and cost effectiveness of these methods. At a minimum, and to the extent feasible, the methods must include source control measures, pollution prevention measures, facility upgrades and end-of-pipe treatment technology. From this list, the applicant must identify the method(s) that will consistently attain the WQBELs and provide a detailed discussion of such methodologies;

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

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

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

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

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

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

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

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

(7) A detailed discussion of a proposed interim discharge limitation(s) that represents the highest level of ~~treatment~~ *constituent reduction* that the permittee can consistently achieve during the term of the variance. Such discussion shall

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

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

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

E. The *Central Valley Water Board*~~Regional Water Board~~ shall provide a copy of the variance application to USEPA Region 9 within 30 days of finding that the variance application is complete.

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

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

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

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

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

(4) A provision allowing the *Central Valley Water Board*~~Regional Water Board~~ to reopen and modify the permit based on any revision to the variance made by the *Central Valley Water Board*~~Regional Water Board~~ during the next revision of the water quality standards or by *U.S.* EPA upon review of the variance; and

(5) Other conditions that the *Central Valley Water Board*~~Regional Water Board~~ determines to be necessary to implement the terms of the variance.

H. The variance, as adopted by the *Central Valley Water Board*~~Regional Water Board~~ in section G, is not in effect until it is approved by U.S. EPA.

I. Permit limitations for a constituent(s) contained in the applicant's permit that are in effect at the time of the variance application shall remain in effect during the consideration of a variance application for that particular constituent(s), *unless a stay is granted by the State Water Resources Control Board under Water Code section 13321*.

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

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

(1) The variance application and any additional information submitted to the *Central Valley Water Board*~~Regional Water Board~~;
(2) Any public notices, public comments, and records of any public hearings held in conjunction with the request for the variance;
(3) The *Central Valley Water Board*~~Regional Water Board~~'s final decision; and
(4) Any changes to NPDES permits to include the variance.

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

III. Variance Program for Salinity Water Quality Standards

The State Water Board and the *Central Valley Water Board*~~Regional Water Board~~ recognize that salt is impacting beneficial uses in the Central Valley and management of salinity in surface and ground waters is a major challenge for dischargers. *No proven means exist at present that will allow ongoing human activity in the Basin and maintain salinity at current levels throughout the Basin.* ~~In response, the Water Boards initiated t~~*T*he Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) ~~in 2006. The State Water Board *Recycled Water Policy* requires the development of salt and nutrient management plans protective of ground water and submittal of these plans to the Regional Water Board by May 2016. These plans are to become the basis of basin plan amendments to be considered by the Regional Water Board by May 2017. CV-SALTS~~ is ~~the~~*a* stakeholder ~~effort working to~~*that* develop*ed a* comprehensive salt and nitrate management plan~~s~~ (SNMP~~s~~) that ~~will satisfy the Recycled Water Policy's salt and nutrient management plans. CV-SALTS is undertaking technical work to analyze~~*documents* salt and nitrate conditions in surface and ground water in the Central Valley, *and* ~~identify~~ *identifies* implementation measures~~,~~ and ~~develop~~monitoring strategies to ensure environmental and economic sustainability. ~~The technical work under development includes developing the models for loading and transport of salt, development and evaluation of effective management practices, and implementing activities to ensure beneficial uses are protected. Participation by all stakeholders is necessary to assure that the work is scientifically justified, supported by broad stakeholder representation, and completed in a timely fashion. The Regional Water Board has indicated its support for the comprehensive effort through CV-SALTS in Resolutions R5-2006-0024, R5-2010-0024, and R5-2013-0149 and the March 2010 Memorandum of Agreement between the Regional Water Board, the Central Valley Salinity Coalition and the State Water Board.~~ *The SNMP recommends a long-term salinity management strategy that is phased over time. The first phase (Phase I) consists of developing a Prioritization and Optimization Study for long-term salinity management which is intended to be a feasibility study that identifies appropriate regional and sub-regional projects, including location, routing and implementation and operations of salt management projects. Phase II will consist of environmental permitting, obtaining funding, and engineering and design. Phase III would then consist of construction of physical projects as identified in the previous phases. Because the salinity management strategy is phased over time, there is a need for an interim salinity permitting approach to be implemented during Phase 1 and while transitioning from Phase I to Phase II. The interim salinity permitting approach is anticipated to require 15 years and will be re-evaluated prior to implementation of Phase II. Only permittees that are participating in the Prioritization and Optimization Study may apply for a variance under this Salinity Variance Program.*

A. During the development ~~and initial implementation of the SNMPs by CV-SALTS~~*of the Prioritization and Optimization Study*, permittees who qualify may apply for a variance

from salinity water quality standards if they have or will have WQBELs for salinity that they are unable to meet by submitting a salinity variance application. The *Salinity Variance Program* as described specifically herein is for municipal and ~~domestic~~ industrial wastewater dischargers that have or will implement local pretreatment, source control, and pollution prevention efforts to reduce the effluent concentrations of salinity constituents and are now faced with replacing the municipal water supply with a better quality water or installing costly improvements, such as membrane filtration treatment technology, such that widespread social and economic impacts are expected consistent with the justification provided for the case study cities in the *Staff Report for the Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins and the Water Quality Control Plan for the Tulare Lake Basin to add Policies for Variances from Surface Water Quality Standards for Point Source Dischargers, Variance Program for Salinity, and Exception from Implementation of Water Quality Objectives for Salinity, June 2014*. Consistent with the planned development ~~and implementation of the SNMPs~~*of the Prioritization and Optimization Study*, no salinity variance under this section shall be approved after ~~30 June 2019~~*[15 years from effective date of these amendments]*. For the purposes of the Salinity Variance Program, salinity water quality standards are defined to only include water quality standards for the following constituents: electrical conductivity, total dissolved solids, chloride, sulfate and sodium.

B. An application for a variance for a specific salinity water quality standard may be submitted at any time after the permittee determines that it is unable to meet a WQBEL or proposed WQBEL based on a salinity water quality standard. Preferably, the salinity variance application should be submitted with the renewal application (i.e., report of waste discharge) for a NPDES permit. If the permittee is seeking to obtain a variance after a WQBEL has been adopted into a NPDES permit, the WQBEL shall remain in effect until such time that the *Central Valley Water Board*~~Regional Water Board~~ makes a determination on the variance application. *For dischargers that are participating in the same prioritization and optimization study, i.e. a study that covers their watershed or their groundwater basin, the dischargers may submit a joint application as long as the joint application contains all the information identified in paragraph C with individual discharger information provided for paragraphs C.7. through C.10.*

C. An application for variance from WQBELs based on a salinity water quality standard must contain the following:

(1) Identification of the salinity constituents for which the variance is sought;
(2) Identification of the receiving surface water, and any available information with respect to receiving water quality and downstream beneficial uses for the specific constituent;
(3) Identification of the WQBEL that is being considered for adoption, or has been adopted in the NPDES permit;
(4) A description of salinity reduction/elimination measures that have been undertaken as of the application date, if any;
(5) A Salinity Reduction Study Work Plan, which at a minimum must include the following:
    (i) Data on current influent and effluent salinity concentrations,
    (ii) Identification of known salinity sources,
    (iii) Description of current plans to reduce/eliminate known salinity sources,
    (iv) Preliminary identification of other potential sources,

(v) A proposed schedule for evaluating sources,
(vi) A proposed schedule for identifying and evaluating potential reduction, elimination, and prevention methods.

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

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

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

(9) Documentation of the applicant's active participation in ~~CV-SALTS as indicated by a letter of support from CV-SALTS.~~ *the development of the Prioritization and Optimization Study.*

(10) A detailed plan of how the applicant will continue to participate in ~~CV-SALTS and how the applicant will contribute to the development and implementation of the SNMPs~~*development of the Prioritization and Optimization Study.*

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

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

F. The *Central Valley Water Board*~~Regional Water Board~~ may approve a salinity variance, either as requested, or as modified by the *Central Valley Water Board*~~Regional Water Board~~, after finding that the permittee qualifies for the salinity variance, the attainment of the WQBEL is not feasible *consistent with the demonstrations based on the case studies identified in the Staff Report for the Amendments to the Water Quality Control*

Plan for the Sacramento River and San Joaquin River Basins and the Water Quality Control Plan for the Tulare Lake Basin to add Policies for Variances from Surface Water Quality Standards for Point Source Dischargers, Variance Program for Salinity, and Exception from Implementation of Water Quality Objectives for Salinity, June 2014, the permittee has implemented or will implement feasible salinity reduction/elimination measures and the permittee continues to participate in *the development of the prioritization and optimization studies for long-term salinity management*~~CV-SALTS consistent with the demonstrations based on the case studies identified in the *Staff Report for the Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins and the Water Quality Control Plan for the Tulare Lake Basin to add Policies for Variances from Surface Water Quality Standards for Point Source Dischargers, Variance Program for Salinity, and Exception from Implementation of Water Quality Objectives for Salinity, June 2014*~~. The *Central Valley Water Board*~~Regional Water Board~~ may take action to approve a variance and issue a new, or reissue or modify an existing NPDES permit as part of the same Board meeting. The permit shall contain all conditions needed to implement the variance, including, at a minimum, all of the following:

(a) The interim effluent limitation(s) that are determined to be attainable during the term of the variance. When the duration of the variance is shorter than the duration of the permit, compliance with effluent limitations sufficient to meet the water quality criterion upon the expiration of the variance shall be required;

(b) A requirement to implement the Salinity Reduction Study Work Plan submitted with the variance application as required by paragraph C.5, above;

(c) A requirement to participate in ~~CV-SALTS and contribute to~~ the development ~~and implementation~~ of the ~~SNMPs~~ *Prioritization and Optimization Study* in accordance with the plan required by paragraph C.10, above.

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

(e) A provision allowing the *Central Valley Water Board*~~Regional Water Board~~ to reopen and modify the permit based on any revision to the variance made by the *Central Valley Water Board*~~Regional Water Board~~ during the next revision of the water quality standards;

(f) Other conditions that the *Central Valley Water Board*~~Regional Water Board~~ determines to be necessary to implement the terms of the variance.

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

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

I. ~~A~~ll variances shall be reviewed during the *Central Valley Water Board*~~Regional Water Board~~'s triennial review process of this Basin Plan. For variances with terms that are greater than the term of the permit, the *Central Valley Water Board*~~Regional Water Board~~ may also review the variance upon consideration of the permit renewal.

Proposed Modifications to the Basin Plans' Exceptions Policy

Exceptions Policy For Salinity, Nitrate, and/or Boron

The following paragraphs include proposed modifications and additions to the Sacramento River and San Joaquin River Basin Plan's *Chapter 4 Implementation* in the sections indicated below. Note that these changes are also proposed for the Tulare Lake Basin Plan.

Control Action Considerations of the Central Valley ~~Regional~~ Water Board

Policies and Plans

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

Pursuant to Water Code sections 13050 and 13240 et seq., the *Central Valley Water Board*~~Regional Water Board~~ has adopted beneficial use designations and water quality objectives that apply to surface and ground waters in the basins covered by this Basin Plan as well as programs of implementation. The Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) is a stakeholder effort ~~to~~ *that* develop*ed a* comprehensive salt and nitrate management plan~~s~~ (SNMP~~s~~) ~~by May 2016 that is expected to result in basin plan amendments that will be considered by the Regional Water Board by May 2017. CV-SALTS is undertaking technical work to analyze~~*that documents* salt and nitrate conditions in surface and ground water in the Central Valley~~, identify~~ *and identifies* implementation measures~~,~~ and ~~develop~~ monitoring strategies to ensure environmental and economic sustainability. ~~The technical work under development includes developing the models for loading and transport of salt, development and evaluation of effective management practices, and implementing activities to ensure beneficial uses are protected. Participation by all stakeholders is necessary to ensure that the work is scientifically justified, supported by broad stakeholder representation, and completed in a timely fashion. The Regional Water Board has indicated its support for the comprehensive effort through CV-SALTS in Resolutions R5-2006-0024, R5-2010-0024, and R5-2013-0149 and the March 2010 Memorandum of Agreement between the Regional Water Board, the Central Valley Salinity Coalition and the State Water Board.~~*The SNMP identifies the need for a prioritized, long-term management strategy to address the need for providing safe drinking water while moving toward balanced salt and nitrate loading and managed restoration where reasonable, practicable and feasible.* The *Central Valley Water Board*~~Regional Water Board~~ finds that it is reasonable to grant exceptions to the discharge requirements related to the implementation of water quality objectives for salinity*, nitrate and boron* for non-NPDES discharge~~r~~s to surface water, and for discharges to groundwater ~~in order to allow for development and implementation of the SNMPs~~*if the permittee is actively participating in the implementation of the long-term Salt and Nitrate Control Program and it is infeasible, impracticable or unreasonable to prohibit the discharge or it is preferable to have a discharger and/or area specific and time-limited exception rather than a more lasting water quality standard revision or where a water quality standard should be revised*.

Exception Application Requirements Specific to Salinity

Under Phase I of the Salt Control Program, permittees that are in compliance with the conditions for the Alternative Permitting Approach are in compliance with their salinity limits. For the purposes of this Program, salinity and its constituents include, and are limited to, the following: electrical conductivity, total dissolved solids, chloride, sulfate and sodium. Additional conditions for exceptions to water quality objectives for salinity under Phase II and Phase III of the Salt Control Program may be incorporated in the future.

Exception to Discharge Requirements Related to the Implementation of Water Quality Objectives for ~~Salinity,~~ *Nitrate and/or Boron*

*(*1.*)* Any person[22] subject to waste discharge requirements and/or conditional waivers issued pursuant to Water Code 13269 that are not also NPDES permits may apply to the *Central Valley Water Board*~~Regional Water Board~~ for an exception to discharge requirements from the implementation of water quality objectives for ~~salinity,~~ *nitrate and/or boron. Recognized third party groups may apply on behalf of their members or for multiple permittees under a management zone.* The exception may apply to the issuance of effluent limitations and/or groundwater limitations that implement water quality objectives for ~~salinity,~~ *nitrate and/or boron* in groundwater, or to effluent limitations and/or surface water limitations that implement water quality objectives for ~~salinity,~~ *nitrate and/or boron* in surface water. For the purposes of this Program, ~~salinity and its constituents include, and are limited to, the following: electrical conductivity, total dissolved solids, chloride, sulfate and sodium.~~ *nitrate includes nitrate and other forms of nitrogen speciation (e.g. total inorganic nitrogen (TIN) and total Kjeldahl nitrogen (TKN)) used to address nitrate in groundwater.* The application for such an exception(s) shall be submitted in accordance with the requirements specified in *corresponding sections for nitrate and boron below (see sections ### and ###, respectively)*~~paragraph 8, below~~.

*(*2.*)* *When authorizing an* ~~An~~ exception to discharge requirements from the implementation of water quality objectives for ~~salinity,~~ *nitrate and/or boron* imposed as limitations in either waste discharge requirements and/or conditional waivers that are not also NPDES permits, ~~shall be set for a term not to exceed ten years~~ *the term for the exception shall generally not exceed 10-years, however the Central Valley Water Board shall have the discretion to adopt an exception for up to 50 years if the applicant(s) can demonstrate that it is necessary to further the management goals of the Salt and Nitrate Control Program. The Central Valley Water Board will have the authority to reauthorize (renew) an exception for one or more additional terms, the length of which shall be determined by the Central Valley Water Board but may only exceed 50 years if the management practices under the exception is resulting in significant, measurable and continuing improvements in water quality. The authorization of an exception, or any reauthorization, shall require approval of the Central Valley Water Board, after notice and hearing. The Central Valley Water Board shall also have the authority to rescind the authorization of an exception when the applicant(s) are not complying with the terms and conditions that are part of the exception. Any rescission of an exception may only occur after notice and hearing.*

~~For exception terms greater than five years, the Regional Water Board will review the exception five years after approval to confirm that the exception should proceed for the full term.~~

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

~~The Regional Water Board review will be conducted during a public hearing. An exception may be renewed beyond the initial term if the SNMPs are still under development, and if a renewal application is submitted in accordance with the requirements specified in paragraph (8), below. A renewal must be considered during a public hearing held in accordance with paragraph 10, below.~~

(~~3.~~*)* *The Central Valley Water Board will require those discharger(s) with authorized exceptions to prepare a status report every 5 years summarizing compliance with the terms and conditions of the exception. The status reports may be presented individually for individual exceptions or collectively for exceptions granted to multiple dischargers. The Central Valley Water Board will conduct its review of exceptions in a public hearing. The Central Valley Water Board may terminate an exception when the applicant(s) are not complying with the terms and conditions that are part of the exception. Any rescission of an exception may only occur after notice and hearing.* ~~The Regional Water Board will consider granting an exception to the implementation of water quality objectives for salinity under this Program if the applicant is actively participating in CV-SALTS as indicated by the letter required under paragraph 8.e., below.~~

(~~4.~~*)* *Exceptions are intended to facilitate long-term attainment of water quality objectives under the Salt and/or Nitrate Control Program or to provide the time needed to revise an inappropriate water quality objective or beneficial use designation. The Central Valley Water Board will consider granting an exception to the implementation of water quality objectives for salinity, nitrate, or boron under this Program if the applicant is fully participating in the Salt and/or Nitrate Control Programs as indicated by the letter required under #####., below and meets the specific requirements for boron indicated in #####.* ~~When granting an exception to the implementation of water quality objectives for salinity under this Program, the Regional Water Board shall consider including an interim performance-based effluent limitation and/or groundwater limitation that provides reasonable protection of the groundwater or the receiving water, where appropriate. When establishing such a limitation, the Regional Water Board shall take into consideration increases in salinity concentrations due to drought, water conservation, and/or water recycling efforts that may occur during the term of the exception granted.~~

(~~5.~~*)* *The Central Valley Water Board will set interim performance-based requirements when the exception is authorized.*

(6) *Requirements associated with seeking and approving an exception shall include, but are not limited to: eligibility criteria, mitigation responsibilities, monitoring/reporting obligations, and expectations relevant to implementing the SNMP Management Goals.*

(7) *As a condition for reauthorizing/renewing an exception, the Central Valley Water Board will require those discharger(s) with authorized exceptions terms greater than ten years to prepare and submit a report every ten years that reassesses Best Management Practices (BMPs) and surveys available treatment technologies to determine if feasible, practicable and reasonable compliance options have become available. The Central Valley Water Board will include review of BMPs and available treatment technologies when conducting the public hearing to review compliance as described in paragraph 3 above. Following review of the BMPs and available treatment technologies, the Central Valley Water Board may revise requirements under the authorized exception.*

(8) *Where exceptions are sought in order to provide time to develop and approve a more appropriate water quality standard (uses and/or objectives), there must be a well-defined work plan (including a schedule of milestones) and a commitment by dischargers to provide the resources needed to complete the proposed process.*

(9) *Where existing water quality standards are unlikely to change, dischargers must explain how the proposed exception facilitates the larger long-term salt and/or nitrate strategy designed to ultimately attain those standards while in the interim allocating available resources to address more urgent water quality priorities such as provision of safe drinking water, where applicable.*

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

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

Exception Application Requirements Specific to Nitrate

(1) *Exceptions for nitrate will not be considered unless an adequate supply of clean, safe, reliable and affordable drinking water is available for those who have been adversely affected by the non-compliant discharge(s).*

(2) *An applicant seeking an exception to the implementation of water quality objectives for nitrate under this Program must submit an application to the Central Valley Water Board. The applicant's request shall include the following (For a Management Zone that is seeking an Exception for all participating permittees, the Management Zone Implementation Plan may substitute for an Exception application as long as it includes all of the following information identified here):*

- *(a)* *An explanation/justification as to why the exception is necessary, and why the discharger is unable to ensure consistent compliance with existing effluent and/or groundwater/surface water limitations associated with nitrate at this time;*
- *(b)* *A description of the alternative compliance project(s), Early Action Plan (EAP) or other implementation measures that the applicant will implement or participate in, consistent with the Nitrate Permitting Strategy of this Basin Plan for individual or collective groups of dischargers.*
- *(c)* *Copies of any documents prepared and certified by another state or local agency pursuant to Public Resources Code section 21080 et seq.; or, such documents*

as are necessary for the Central Valley Water Board to make its decision in compliance with Public Resources Code section 21080 et seq.

(d) A work plan to provide an interim and permanent water supply for any person living in the area adversely affected by the discharge under the requested nitrate exception. The water supply work plan shall include a schedule of milestones and a description of financial commitments to assure completion of the interim and permanent water supply. Performance bonds may be required to assure timely implementation.

(e) A detailed plan of how the proposed implementation measures will further the long-term management goals of the Nitrate Control Program.

Exception Application Provisions Specific to Boron

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

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

A *boron*~~salinity~~-based watershed management plan shall at a minimum include the following:

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

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

(3~~7.~~*)* ~~The granting of an exception to the implementation of water quality objectives for *boron*salinity under this Program by the Regional Water Board is a discretionary action subject to the requirements of the California Environmental Quality Act. As such, the Regional Water Board may require the applicant for the exception to prepare such~~

~~documents as are necessary so that the Regional Water Board can ensure that its action complies with the requirements set forth in the California Environmental Quality Act or the Regional Water Board may use any such documents that have been prepared and certified by another state or local agency that address the potential environmental impacts associated with the project and the granting of an exception from implementation of water quality objectives for *boron*salinity in groundwater and/or surface water.~~

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

*(*a~~.~~*)* An explanation/justification as to why the exception is necessary, and why the discharger is unable to ensure consistent compliance with existing effluent and/or groundwater/surface water limitations associated with *boron*~~salinity~~ constituents at this time;

*(*b~~.~~*)* A description of *boron*~~salinity~~ reduction/elimination measures that the discharger has undertaken as of the date of application, or a description of a salinity-based watershed management plan and progress of its implementation;

*(*c~~.~~*)* A description of any drought impacts, irrigation, water conservation and/or water recycling efforts that may be causing or cause the concentration of *boron*~~salinity~~ to increase in the effluent, discharges to receiving waters, or in receiving waters;

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

*(*e~~.~~*)* Documentation of the applicant's active participation in *the long-term salinity management strategy*~~CV-SALTS~~ as indicated by a letter of support from CV-SALTS.

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

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

Proposed Modifications to the Basin Plans to Incorporate a Drought and Conservation Policy

Drought and Conservation Policy

The following paragraphs include proposed modifications and additions to the Sacramento River and San Joaquin River Basin Plan's *Chapter 4 Implementation* in the sections indicated below. Note that these changes are also proposed for the Tulare Lake Basin Plan.

During emergencies such as drought, high quality water supplies diminish. Climate change is also anticipated to diminish available water supplies. Water conservation and water recycling can stretch limited water supplies, providing benefits to the people of the state. Conservation and recycling has the unintended consequence of creating compliance issues due to increased concentrations of constituents, such as salinity in discharges. It is the intent of the *Central Valley Water Board* to encourage conservation and water resource management. The purpose of this policy is to provide for permitting procedures to be applied to account for conditions associated with the loss of higher quality water supplies such as drought and climate change, and/or constituent increases directly related to voluntary and/or mandatory conservation measures and increased recycling efforts.

Unless otherwise excluded based on requirements of the Salt Control Program, a permittee (or third party group on behalf of collective permittees) may qualify for interim permit limits for salinity under one or more of the following conditions:

a) A drought emergency is declared by an authorized federal or state authority, as defined by the California Emergency Services Act;
b) A local drought emergency or other emergency is declared, consistent with the California Emergency Services Act that impacts availability of water supplies; or
c) Water conservation and/or water recycling efforts may be causing or cause the concentration of salinity to increase in the effluent, discharges to receiving waters, or in receiving waters.

During Statewide or Local Drought or Other Emergencies that Limit Water Supplies

Permittees (or third party group on behalf of collective permittees) shall receive interim effluent and/or groundwater/surface water limitations based on their historical salinity load (with consideration given to reasonable increment of use or changes in source water salinity concentration) and shall not exceed an EC concentration of 2,200 µS/cm as a 30-day running average. The water quality-based effluent/groundwater/surface water limitations may be established in terms of EC concentration or total dissolved solids (TDS) loading, however, concentration and loading limits shall not be applied at the same time. An EC to TDS ratio of 0.64 shall be used to convert the EC concentrations to TDS concentrations, unless a discharge-specific ratio can be demonstrated. The Central Valley Water Board has the discretion to adjust these limitations based on local conditions including but not limited to local beneficial use protection and site-specific salinity objectives. The interim effluent and/or groundwater/surface water limitations will remain in effect during the time period when one or more of the conditions noted in a or b, above, are met.

Limitations to Account for Water Conservation and Recycling Efforts

A permittee (or third party group on behalf of collective permittees) may qualify for interim permit limits for salinity by submitting documentation that water conservation and/or water recycling efforts cause the concentration of salinity to increase in the effluent, discharges to receiving waters, or in receiving waters. Interim permit limits will be based on one of the following.

a) Permittees (or third party group on behalf of collective permittees) who demonstrate that their permitted discharges have a lower salinity concentration than the receiving water salinity concentration shall receive interim effluent and/or groundwater/surface water limitations that do not exceed the receiving water salinity concentration, provided there are no unreasonable impacts to downstream/downgradient water quality.

b) The remaining permittees (or third party group on behalf of collective permittees) shall receive interim effluent and/or groundwater/surface water limitations based on TDS loading consistent with their historical load (with consideration given to reasonable increment of use or changes in source water salinity concentration) and shall not exceed an EC concentration of 2,200 µS/cm as a 30-day running average. An EC to TDS ratio of 0.64 shall be used to convert the EC concentrations to TDS concentrations, unless a discharge-specific ratio can be demonstrated. The Central Valley Water Board has the discretion to adjust these limitations based on other considerations such as local beneficial uses and site-specific salinity objectives.

Long Term Waste Discharge Requirements and Limitations for Groundwater

Permittees to groundwater who submit documentation describing a long-term commitment (20 year planning horizon) to water conservation and/or water recycling efforts may be eligible to use a long-term (10+ year) flow-weighted average to calculate compliance with effluent and/or groundwater limitations when it can be demonstrated using recharge models and long-term precipitation estimates that applicable narrative or numeric salinity objectives can be met in the receiving water over the term of the compliance period. Periodic reassessments based on the best available data need to be conducted every five years unless otherwise directed in the waste discharge requirements to ensure that salinity objectives will be met and beneficial uses are protected.

Proposed Modifications to the Basin Plans to Incorporate an Offsets Policy

Offsets Policy

The following paragraphs are proposed for addition to *Chapter 4 Implementation* of the Sacramento River and San Joaquin River Basin Plan and the Tulare Lake Basin Plan within the proposed Salt and Nitrate Control Program at a location in the chapter to be determined.

Offsets Policy for Salt and/or Nitrate Discharges to Groundwater

An offset is an alternative means of achieving compliance with Waste Discharge Requirements (WDRs), either alone or in combination with other actions, for a given pollutant or pollutants that may be authorized by the Central Valley Water Board. An offset allows for the management of sources and loads of the constituent of concern (not directly associated with the regulated discharge) so that the combined net effect on receiving water quality from the discharge and the offset is functionally-equivalent to or better than that which would have occurred by requiring the discharger to comply with its WDR at the point-of-discharge. In most cases, an offset project proposed for nitrate or salt discharges should be located within the same groundwater basin/sub-basin or management zone as the regulated discharge and is applicable to groundwater only. Application for an offset may be submitted by individual permittees, or collective permittees within a management zone, by a third party group on behalf of its members, or other forms of collective groups of permittee recognized by the Central Valley Water Board. The decision to pursue an offset is voluntary. Offsets must be:

(4) Proposed by the permittee[23] as an Alternative Compliance Project (ACP)[24]

(5) Approved by the Central Valley Water Board; and

(6) Enforceable through a WDR or other orders issued by the Board.

The following requirements apply to all offsets:

(1) Where an offset project is being considered for implementation, it should be consistent with any local implementation plans established to manage salt or nitrate concentrations in the same area. And, in general, it is desirable to encourage offsets in the same groundwater basin/sub-basin where the discharge occurs. However, offsets may also be used to incentivize implementation of some large-scale projects such as a regional regulated brine line or establish a mitigation fund to provide safe drinking water, provided that the offsets still result in a positive net effect on receiving water quality.

(2) When there is no assimilative capacity available in the receiving water, the offset shall result in a net improvement in existing water quality (e.g., the offset ratio must be > 1:1) compared to baseline regulatory requirements. (Offset ratios < 1:1 may be authorized

[23] Throughout this document the term "discharger" can connote either an individual discharger or a coalition of dischargers regulated under a common set of categorical WDRs or watershed/groundwater basin/sub-basin permit or order, or dischargers working collaboratively within a management zone.
[24] See Appendix H guidance on development of an ACP project.

only in accordance with the state's antidegradation policy unless an exception is granted or Time Schedule Order or Compliance Schedule Order allows a less stringent interim ratio to apply.)

(3) Offsets shall be for the same class of constituents.

(4) The proposed package (discharge + offset project) cannot result in unmitigated localized impairments (e.g., “hotspots”) to sensitive areas (especially drinking water supply wells) or have a disproportionate impact on a disadvantaged community in the sub-basin. Downgradient well owners shall be notified and encouraged to participate in the offset approval process.

(5) Offsets shall be approved by the Central Valley Water Board. The Board may elect to approve a specific offset project (a 1-step process) through the issuance of a permit, or the Board may generally authorize the use of offsets in a permit and subsequently approve individual offset projects in subsequent Board actions (e.g., a 2-step procedure).

(6) Offsets shall apply to a specific discharge for a defined period. Offsets may be renewed but must be periodically reviewed and reauthorized by the Central Valley Water Board. The length of that period will be specified by the Central Valley Water Board when the offset is approved.

(7) The terms and conditions governing an approved offset shall specify the remedial actions that must be undertaken by the discharger, and the metric(s) used to trigger such obligations, in the event that the offset project fails.

(8) The offset project shall include a monitoring and reporting program sufficient to verify that the pollution reduction credits are actually being generated as projected and that these credits are adequate to offset the discharge loads in the ratio approved by the Central Valley Water Board. Pollutant removal, reduction, neutralization, transformation, dilution through recharge and support of a mitigation fund may all be acceptable means of generating offset credits (subject to appropriate verification).

When authorizing an offset, the Central Valley Water Board shall consider the following conditions:

(1) When it is not feasible, practicable or reasonable for the discharge to comply directly with applicable WDRs.

(2) When it is not feasible, practicable or reasonable to prohibit a discharge that is unable to comply with applicable WDRs.

(3) When there is no assimilative capacity available in the receiving water or as a condition for allocating any available assimilative capacity in order to authorize a discharge.

(4) When the net effect of authorizing the discharge, including the proposed offset project, would result in better water quality in the groundwater basin/sub-basin or better support beneficial use attainment than is likely to occur if the discharge was required to comply with the applicable WDRs at the point-of-discharge.

(5) When the proposed offset project will provide substantially greater and more immediate public health protection than is expected to result if the discharger was required to comply with the applicable WDRs at the point-of-discharge or the non-compliant discharge was prohibited completely.

(6) When the proposed offset project is an integral part of and facilitates a larger strategic plan or project designed to ultimately achieve attainment of water quality standards or restoration of a water body.

(7) Other factors such as the: relative location of the discharge and offset project and potential impacts on downgradient waters, reliability of the recharge, the extent that a groundwater recharge project improves water quality and/or water storage in the aquifer above that which would occur without the project, impacts on the vadose zone over time, mixing assumptions, brine disposal, and whether the offset is proposed as a temporary or permanent alternate compliance strategy.

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

Application of Secondary Maximum Contaminant Levels to Protect Municipal and Domestic Supply

The following paragraphs are proposed for addition to *Chapter 4 - Implementation* of the Sacramento River and San Joaquin River Basin Plan and the Tulare Lake Basin Plan under the heading, "*Actions and Schedule to Achieve Water Quality Objectives".*

Maximum Contaminant Levels (MCLs) are designed for water supplied to the public. State and federal drinking water regulations require that most surface waters or groundwater under the direct influence of surface waters, provide filtration and disinfection treatment to the source water prior to it being served to the public unless an exemption to that water system has been granted. In many cases, groundwater can be supplied to the public without the need of additional treatment due to removal of many constituents as water percolates into the groundwater.

Secondary MCLs were intended to protect public welfare for chemical constituents that may adversely affect the taste, odor, appearance or consumer acceptance of drinking water. Secondary MCLs related to salinity are identified in section 64449 (Table B) of Title 22 of the California Code of Regulations (Title 22) and were developed for consumer acceptance. Constituent concentrations ranging to the "Upper" level in Table 64449-B are acceptable if it is demonstrated that it is neither reasonable nor feasible to achieve lower levels. In addition, constituents ranging to the "Short Term" level may be authorized on a temporary basis consistent with the provisions of section 64449(d)(3), pending construction of treatment facilities or development of new water sources, or with the Drought and Conservation Policy (Section ##). 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 section 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 Central Valley Water Board and State Water Board to encourage meeting the best possible water quality while allowing greater water conservation, increased use of recycled water, more stormwater harvesting, additional groundwater recharge and storage, better drought protection, and allowing 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 Central Valley Water Board shall consider, as appropriate, a number of site-specific factors when developing WDRs, including, but not limited to those identified in the Staff Report to Incorporate a Salt and Nitrate Control Program into the Central Valley Basin Plans in Section 4.2.10 (Central Valley Water Board, 2018).

For receiving waters that have been deemed exempt from surface water filtration requirements, compliance with chemical constituents in Table 64449-A shall be determined using an unfiltered water sample.[25]

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

For receiving waters that are not exempt from surface water treatment requirements (i.e. 40 CFR Part 141, Subparts H, P, T & W), compliance with the Secondary Maximum Contaminant Levels for aluminum, copper, iron, manganese, silver, zinc, color and turbidity in Table 64449-A will be determined from samples that have been passed through a 1.5-micron filter to reduce filterable residue[26]; metal constituents will then be analyzed using the acid-soluble procedure described in EPA Approved Methods[27] as appropriate, or other methods approved by the Central Valley Water Board. Because this approach is intended to approximate the level of treatment normally applied to raw surface water sources before such water can be distributed to the public as drinking water, the Central Valley Water Board may adjust the filter size where necessary to more accurately represent site-specific conditions based on scientific evidence submitted for their consideration and after consultation with Division of Drinking Water and public comment. This provision applies solely to evaluating compliance with Secondary Maximum Contaminant Levels for certain metals and does not affect or alter the methods used to evaluate compliance with other water quality objectives that have been established for those same metals (e.g. as Primary MCLs, California Toxics Rule or National Toxic Rule constituents, or constituents with specific objectives listed in this Basin Plan).

For groundwaters, compliance with the Secondary Maximum Contaminant Levels for aluminum, copper, iron, manganese, silver, zinc, color and turbidity in Table 64449-A will be determined from samples that have been passed through a 1.5-micron filter to reduce filterable residue[31]; metal constituents will then be analyzed using the acid-soluble procedure described in EPA Approved Methods[32] as appropriate, or other methods approved by the Central Valley Water Board. Because this approach is intended to account for "removal of waste constituents as the water percolates through the ground to the aquifer," as described in WQ Order No. 73-04 and Water Quality Order No. 81-05, the Central Valley Water Board may adjust the filter size where necessary to more accurately represent site-specific conditions based on scientific evidence submitted for their consideration and after consultation with Division of Drinking Water and public comment. This provision applies solely to evaluating compliance with Secondary Maximum Contaminant Levels for certain metals and does not affect or alter the methods used to evaluate compliance with other water quality objectives that have been established for those same metals (e.g. Primary MCLs or constituents with specific objectives listed in this Basin Plan).

The Central Valley Water Board may require unfiltered samples be analyzed concurrently to assess general trends in receiving water quality, implement the state's Antidegradation Policy (Res. No. 68-16), and evaluate potential downstream impacts.

[26] Filter size recommended in EPA Approved Methods 30 CFR Part 136 for Total Dissolved Solids and Total Suspended Solids and is used for removing suspended solids from a solid prior to analysis. Filtering the sample will remove suspended solids that may contribute to turbidity and color in samples that may negatively impact analytical results for metal concentrations while better representing the dissolved solids that may pass through a water treatment plant's filtration system.

[27] Currently EPA Approved Methods are 200.7 and 200.8 for metals, Method 180.1 for turbidity and SM 2120 F-2011 for color. EPA methods are periodically updated and future approved methods may be applicable.

Estimated Costs To Agriculture

The following paragraphs are proposed for addition to the "ESTIMATED COSTS OF AGRICULTURAL WATER QUALITY CONTROL PROGRAMS AND POTENTIAL SOURCES OF FINANCING" section of the Sacramento River and San Joaquin River Basin Plan, Page IV-40 and the "Estimated Costs of Agricultural Water Quality Control Programs" section of the Tulare Lake Basin Plan, Page IV-30.

Central Valley-wide Salt and Nitrate Control Program

Cost Estimate for the Salt Control Program (Costs to Agriculture): Costs associated with the first phase of the Salt Control Program include costs associated with strategic planning, administration, and analyses and studies to support the Prioritization and Optimization Study (P&O Study). Costs are estimated to range from $357,000 to $696,000 per year for the first 10 years of the program. Cost identified after the first 10 years of the program are only speculative at this time and will be revised after the completion of the P&O Study. Costs are expressed as 2016 dollars.

Cost Estimate for the Nitrate Control Program (Costs to Agriculture): Costs associated with long-term restorations efforts are only speculative at this time. Costs associated with the Nitrate Control Program include costs associated with providing short-term safe drinking water supplies and development of Management Zones throughout the Priority 1 and Priority 2 basins/sub-basins. Costs are estimated to range from $24.1 million to $35.9 million per year. Costs are expressed as 2016 dollars.

Cost Estimate for the Surveillance and Monitoring Program (Costs to Agriculture): Costs associated with the Surveillance and Monitoring Program are costs designed to ensure the success of the Salt and Nitrate Control Program. Costs to agriculture are estimated to range from $70,000 to $130,000 per year. Costs are expressed as 2016 dollars.

Potential funding sources include:

1. *Private financing by individual and/or group sources.*
2. *Bonded indebtedness or loans from governmental institutions.*
3. *Federal grants or low-interest loan programs.*
4. *Single-purpose appropriations from federal or State legislative bodies.*
5. *Grant and loan programs administered by the State Water Resources Control Board and Department of Water Resources, which are targeted for agricultural water quality improvement. These programs include:*
   a) *Clean Water Act funds (State Water Resources Control Board)*
   b) *Agricultural Water Quality Grant Program (State Water Resources Control Board)*
   c) *Clean Water State Revolving Fund (State Water Resources Control Board) and*
   d) *Integrated Regional Water Management grants (State Water Resources Control Board, Department of Water Resources)*

APPENDIX

Modify the Sacramento River and San Joaquin River Basin Plan and the Tulare Lake Basin Plan by adding a new appendix, Nitrate Control Program Non-Prioritized Basins (page XX), as follows:

Appendix X-X Nitrate Control Program Non-Prioritized Basins

Non-Prioritized Basins		
Basin/Sub-basin Number (DWR Bulletin 118)	**Name**	**Notes**
2-4	Pittsburgh Plain	Listed as Non-Prioritized in Table D4-2 of SNMP
5.21.66	Solano	Listed as Non-Prioritized in Table D4-2 of SNMP
5.22.15	Tracy	Listed as Non-Prioritized in Table D4-2 of SNMP
2-3	Suisun-Fairfield Valley	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.52	Colusa	Listed as Non-Prioritized in Table D4-2 of SNMP
5-22.14	Kern County (Southeastern)	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.61	South Yuba	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.64	North American	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.57	Vina	Listed as Non-Prioritized in Table D4-2 of SNMP
5-22.16	Cosumnes	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.58	West Butte	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.68	Capay Valley	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.62	Sutter	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.56	Los Molinos	Listed as Non-Prioritized in Table D4-2 of SNMP
5-22.10	Pleasant Valley	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.60	North Yuba	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.65	South American	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.54	Antelope	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.59	East Butte	Listed as Non-Prioritized in Table D4-2 of SNMP

Non-Prioritized Basins		
Basin/Sub-basin Number (DWR Bulletin 118)	**Name**	**Notes**
5-21.51	Corning	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.50	Red Bluff	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.55	Dye Creek	Listed as Non-Prioritized in Table D4-2 of SNMP
5-22.09	Westside	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.53	Bend	Listed as Non-Prioritized in Table D4-2 of SNMP
5-6.04	Enterprise	Listed as Non-Prioritized in Table D4-2 of SNMP
5-6.03	Anderson	Listed as Non-Prioritized in Table D4-2 of SNMP
5-6.01	Bowman	Listed as Non-Prioritized in Table D4-2 of SNMP
5-6.06	South Battle Creek	Listed as Non-Prioritized in Table D4-2 of SNMP
5-6.05	Millville	Listed as Non-Prioritized in Table D4-2 of SNMP
5-6.02	Rosewood	Listed as Non-Prioritized in Table D4-2 of SNMP
5-1.01	Lower Goose Lake Valley	Outside of Valley Floor
5-1.02	Fandango Valley	Outside of Valley Floor
5-3	Jess Valley	Outside of Valley Floor
5-8	Mountain Meadows Valley	Outside of Valley Floor
5-20	Berryessa Valley	Outside of Valley Floor
5-23	Panoche Valley	Outside of Valley Floor
5-26	Walker Basin Creek Valley	Outside of Valley Floor
5-31	Long Valley	Outside of Valley Floor
5-35	McCloud Area	Outside of Valley Floor
5-36	Round Valley	Outside of Valley Floor
5-37	Toad Well Area	Outside of Valley Floor
5-38	Pondosa Town Area	Outside of Valley Floor
5-40	Hot Springs Valley	Outside of Valley Floor
5-41	Egg Lake Valley	Outside of Valley Floor
5-43	Rock Prairie Valley	Outside of Valley Floor
5-44	Long Valley	Outside of Valley Floor
5-45	Cayton Valley	Outside of Valley Floor
5-46	Lake Britton Area	Outside of Valley Floor
5-47	Goose Valley	Outside of Valley Floor
5-48	Burney Creek Valley	Outside of Valley Floor
5-49	Dry Burney Creek Valley	Outside of Valley Floor

Non-Prioritized Basins		
Basin/Sub-basin Number (DWR Bulletin 118)	**Name**	**Notes**
5-50	North Fork Battle Creek	Outside of Valley Floor
5-51	Butte Creek Valley	Outside of Valley Floor
5-52	Grays Valley	Outside of Valley Floor
5-53	Dixie Valley	Outside of Valley Floor
5-54	Ash Valley	Outside of Valley Floor
5-56	Yellow Creek Valley	Outside of Valley Floor
5-57	Last Chance Creek Valley	Outside of Valley Floor
5-58	Clover Valley	Outside of Valley Floor
5-59	Grizzly Valley	Outside of Valley Floor
5-60	Humbug Valley	Outside of Valley Floor
5-61	Chrome Town Area	Outside of Valley Floor
5-62	Elk Creek Area	Outside of Valley Floor
5-63	Stonyford Town Area	Outside of Valley Floor
5-64	Bear Valley	Outside of Valley Floor
5-65	Little Indian Valley	Outside of Valley Floor
5-66	Clear Lake Cache Formation	Outside of Valley Floor
5-68	Joseph Creek	Outside of Valley Floor
5-69	Squaw Flat	Outside of Valley Floor
5-70	Los Banos Creek Valley	Outside of Valley Floor
5-71	Vallecitos Creek Valley	Outside of Valley Floor
5-80	Brite Valley	Outside of Valley Floor
5-82	Cuddy Canyon Valley	Outside of Valley Floor
5-83	Cuddy Ranch Area	Outside of Valley Floor
5-84	Cuddy Valley	Outside of Valley Floor
5-85	Mil Potrero Area	Outside of Valley Floor
5-86	Joseph Creek	Outside of Valley Floor
5-87	Middle Fork Feather River	Outside of Valley Floor
5-88	Stony Gorge Reservoir	Outside of Valley Floor
5-89	Squaw Flat	Outside of Valley Floor
5-90	Funks Creek	Outside of Valley Floor
5-91	Antelope Creek	Outside of Valley Floor
5-92	Blanchard Valley	Outside of Valley Floor
5-93	North Fork Cache Creek	Outside of Valley Floor
5-94	Middle Creek	Outside of Valley Floor
5-95	Meadow Valley	Outside of Valley Floor
5-4	Big Valley	Outside of Valley Floor
5-5	Fall River Valley	Outside of Valley Floor
5-7	Lake Almanor Valley	Outside of Valley Floor
5-9	Indian Valley	Outside of Valley Floor
5-10	American Valley	Outside of Valley Floor

Non-Prioritized Basins		
Basin/Sub-basin Number (DWR Bulletin 118)	**Name**	**Notes**
5-11	Mohawk Valley	Outside of Valley Floor
5-13	Upper Lake Valley	Outside of Valley Floor
5-14	Scotts Valley	Outside of Valley Floor
5-15	Big Valley	Outside of Valley Floor
5-16	High Valley	Outside of Valley Floor
5-17	Burns Valley	Outside of Valley Floor
5-18	Coyote Valley	Outside of Valley Floor
5-19	Collayomi Valley	Outside of Valley Floor
5-25	Kern River Valley	Outside of Valley Floor
5-27	Cummings Valley	Outside of Valley Floor
5-28	Tehachapi Valley Area	Outside of Valley Floor
5-29	Castac Lake Valley	Outside of Valley Floor
5-30	Lower Lake Valley	Outside of Valley Floor
5-12.01	Sierra Valley	Outside of Valley Floor
5-12.02	Chilcoot	Outside of Valley Floor
5-2.01	South Fork Pitt River	Outside of Valley Floor
5-2.02	Warm Springs Valley	Outside of Valley Floor

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LIST OF ACRONYMS

Acronym/ Abbreviation	Definition
ACP	Alternative Compliance Project
AF	Acre-Feet
AFY	Acre-Feet/Year
AGR	Agricultural Supply
AID	Alta Irrigation District
APU	Administrative Procedures Update
AWQ	Ambient Water Quality
Basin Plans (BP)	Water Quality Control Plan for the Sacramento River and San Joaquin River Basins and the Water Quality Control Plan for the Tulare Lake Basin
BATEA	Best Available Technology Economically Achievable
BCT	Best Conventional Pollution Control Technology
BMP	Best Management Practice
Board	Central Valley Regional Water Quality Control Board
BOD	Biological Oxygen Demand
BPA	Basin Plan Amendment
BPT	Best Practicable Control Technology
BPTC	Best Practicable Treatment or Control
CAFO	Confined Animal Feeding Operation
CASGEM	California Statewide Groundwater Elevation Monitoring
CCR	California Code of Regulations
CDPH	California Department of Public Health
CEC	Constituents of Emerging Concern
CEDEN	California Environmental Data Exchange Network
Central Valley Water Board	Central Valley Regional Water Quality Control Board
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CVHM	Central Valley Hydrologic Model
CVP	Central Valley Project
CVRWQCB	Central Valley Regional Water Quality Control Board
CV-SALTS	Central Valley Salinity Alternatives for Long-Term Sustainability
CVSC	Central Valley Salinity Coalition

Acronym/ Abbreviation	Definition
CWA	Clean Water Act
DDW	Division of Drinking Water
Delta	Sacramento-San Joaquin Delta
DMC	Delta Mendota Canal
DWR	California Department of Water Resources
EAP	Early Action Plan
EBMUD	East Bay Municipal Utility District
EC	Electrical Conductivity
EIR	Environmental Impact Report
ELG	Effluent Limitation Guideline
ESA	Endangered Species Act
FDS	Fixed Dissolved Solids
GAMA	Groundwater Ambient Monitoring and Assessment
GAR	Groundwater Quality Assessment Reports
GMP	Groundwater Management Plan
gpm	Gallons per Minute
GQMP	Groundwater Quality Management Plan
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GW	Groundwater
HASP	Health and Safety Plan
IAZ	Initial Analysis Zone
ICM	Initial Conceptual Model
IGP	Industrial General Permit
ILRP	Irrigated Lands Regulatory Program
IRWMP	Integrated Regional Water Management Plan
IX	Ion Exchange
LAA	Land Application Area
LMUN	Limited Municipal and Domestic Water Supply
LSCE	Luhdorff & Scalmanini Consulting Engineers
LSJR	Lower San Joaquin River
LWA	Larry Walker Associates
MAF	Million acre feet
MCL	Maximum Contaminant Level
MEP	Maximum Extent Practicable

Acronym/ Abbreviation	Definition
MGD	Million Gallons/Day
mg/L	Milligrams/liter
mmhos/cm	Micromhos per centimeter
MS4	Municipal Separate Storm Sewer System
MUN	Municipal and Domestic Water Supply
MZ	Management Zone
N	Nitrogen
NIMS	Nitrate Implementation Measures Study
NOI	Notice of Intent
NO3-N	Nitrate as Nitrogen
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Unit
NUE	Nitrogen Use Efficiencies
NWIS	National Water Information System
O & M	Operations and Maintenance
OWTS	Onsite Wastewater Treatment System
P & O Study	Prioritization & Optimization Study
POTW	Publicly Owned Treatment Works
POU	Point of Use
PTS	Pump, Treat and Serve
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
Regional Water Boards	Regional Water Quality Control Boards
RMP	Representative Monitoring Program
RO	Reverse Osmosis
SAMP	Surveillance and Monitoring Program
SAP	Sample Analysis Plan
SC	Specific Conductance
SED	Substitute Environmental Document
SEMP	Salinity Evaluation and Minimization Plan
SGMA	Sustainable Groundwater Management Act
SIP	State Implementation Policy
SMCL	Secondary Maximum Contaminant Level
SNMP	Salt and Nitrate Management Plan

Acronym/ Abbreviation	Definition
Sq. mi.	Square Miles
SRSJR	Sacramento River/San Joaquin River
SSALTS	Strategic Salt Accumulation Land and Transportation Study
SSO	Site Specific Objective
SWP	State Water Project
SWQMP	Surface Water Quality Management Plan
State Water Board	State Water Resources Control Board
TAC	Technical Advisory Committee
TAF	Thousand acre feet
TBEL	Technology Based Effluent Limit
TDS	Total Dissolved Solids
TLB	Tulare Lake Basin
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
µmhos/cm	micromhos/centimeter
µS/cm	microsiemens/centimeter
USC	United States Code
US EPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UTS	Under the Sink
UWMP Act	Urban Water Management Planning Act
WARMF	Watershed Analysis Risk Management Framework
Wat. Code	California Water Code
WBD	Watershed Boundary Dataset
WBS	Water Balance Subregions
WDL	Water Data Library
WDR	Waste Discharge Requirement
WLA	Waste Load Allocation
WQ	Water Quality
WQBEL	Water Quality-based Effluent Limitations
WQO	Water Quality Objective
WQP	Water Quality Portal
WTP	Water Treatment Plant
WWTP	Waste Water Treatment Plant
WY	Water Year

1 INTRODUCTION

California's Central Valley is one of the most productive agricultural regions in the world and is home to almost 20% of California's population (estimated at over 38 million in 2015). By 2030, the state population is expected to increase by more than 13% to over 44 million people and by 2050, the population is expected to be close to 50 million people. This steady growth will put significant, increased demands on state and regional water resources (Central Valley Water Board, 2010). Communities in the Central Valley rely on surface and groundwater for many beneficial uses, including agriculture and drinking water supplies. However, elevated salt and nitrate concentrations in portions of the Central Valley impair or threaten to impair the region's water and soil quality which, in turn, adversely affects agricultural productivity and/or drinking water supplies. An economic study completed in 2009, projected that if salt management did not change, direct economic costs would exceed $1.5-billion/year within the Central Valley by 2030 (Howitt, et al., 2009).

In 2006, the State Water Resources Control Board and Central Valley Regional Water Quality Control Board (Central Valley Water Board) held a public forum to discuss the salinity conditions and concerns and initiated a stakeholder lead process to develop recommendations for a salinity management plan for the Central Valley. The stakeholder lead process transitioned over time into the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative and in addition to salt, developed recommendations for a Central Valley-wide nitrate management strategy to ensure safe drinking water supplies. Stakeholder membership included representatives from agriculture, municipalities, industry, water supply, environmental justice, state and federal regulatory agencies, and the public.

CV-SALTS was tasked with developing an environmentally and economically sustainable Salt and Nitrate Management Plan (SNMP) for the entirety of the Central Valley Regional Water Quality Control Board's (Central Valley Water Board or Board) jurisdictional area. In December 2016, CV-SALTS completed the SNMP (CV-SALTS, 2016). The CV-SALTS SNMP builds on a range of water quality management policies and mechanisms already in existence, proposes additional policies and tools needed to provide the Central Valley Water Board with flexibility in addressing legacy and ongoing loading of salt and nitrate in the diverse region, and presents a comprehensive regulatory and programmatic approach for the sustainable management of salts and nitrate in groundwater and surface water. The SNMP was developed to achieve the following management goals:

- Sustain the Valley's lifestyle
- Support regional economic growth
- Retain a world-class agricultural economy
- Maintain a reliable, high-quality water supply
- Protect and enhance the environment

Although broader in overall scope, the SNMP was also developed to meet requirements set forth in the State Water Resources Control Board (State Water Board) Recycled Water Policy. The Recycled Water Policy provides statewide direction regarding the appropriate criteria to be used when issuing permits for recycled water projects. In addition, the Recycled Water Policy articulates the State Water Board's policy that every groundwater basin/sub-basin in California needs to have an effective salt and nutrient management plan. To ensure that such plans were developed in a timely manner, the Recycled Water Policy establishes criteria and timelines for their development. One of the overarching goals of the Recycled Water Policy is to develop salt and nutrient management plans (for groundwater basins or sub-basins) that

are sustainable on a long-term basis and to provide California with clean, abundant, local water.

In order to address the requirements of the Recycled Water Policy and also address legacy and ongoing salt and nitrate accumulation concerns, the SNMP is built on achieving the following prioritized Central Valley Region management goals for salt and nitrate:

- Goal 1: Ensure a safe drinking water supply.
- Goal 2: Achieve balanced salt and nitrate loadings, where reasonable, feasible and practicable.
- Goal 3: Implement managed aquifer restoration program, where reasonable, feasible, and practicable.

These management goals recognize the need to focus limited resources first on health risks associated with unsafe drinking water. Subsequent, but important, goals that will require longer implementation timelines include balancing salt and nitrate loading and restoring water quality, where reasonable and feasible. Throughout the process, it was recognized that to successfully achieve all three goals, stakeholders within the Central Valley as well as those that utilize water from the Central Valley would need to collaborate. Diverse activities from source control of individual and classes of discharges to stormwater capture and use to support and encourage water conservation, conjunctive use of surface and groundwater, and improve local water supplies and groundwater quality, would needed to be blended into the overall strategy.

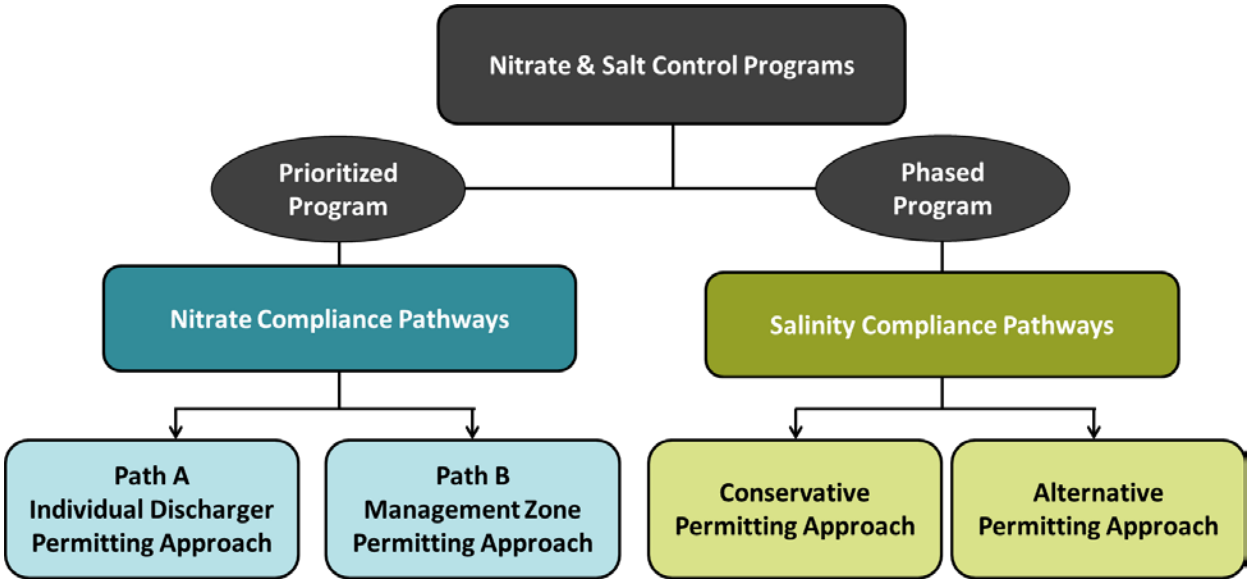
In January 2017, CV-SALTS provided their recommended Central Valley Salt and Nitrate Management Plan (SNMP) to the Central Valley Water Board and staff were directed to utilize the recommendations as appropriate and develop amendments to the Water Quality Control Plans for the Sacramento and San Joaquin River Basins and for the Tulare Lake Basin (Basin Plans) to incorporate a sustainable Salt and Nitrate Control Program that prioritized safe drinking water supplies and led to long-term, managed restoration of impaired water bodies, where reasonable, feasible and practicable.

This staff report provides the rationale and supporting documentation for those proposed amendments utilizing in part technical work completed under the CV-SALTS initiative that evaluated: current conditions and trends in water quality; beneficial use sensitivity to salt and nitrate concentrations; effectiveness and costs of various treatment alternatives and management practices; and potential approaches to address existing concerns as demonstrated by case studies. The proposed amendments include a phased salt control strategy, a prioritized nitrate control strategy with specific implementation activities required for salt and another set of implementation activities required for nitrate. Both implementation approaches provide dischargers the option to select their means of compliance: either through a conservative permitting approach focused on individual source control or through an alternative coordinated, multi-discharger management approach (Figure 1-1).

The Salt and Nitrate Control Program is implemented through a combination of Central Valley Water Board authorities. First, to ensure timely implementation, a Conditional Discharge Prohibition has been established in the Basin Plans that will require that certain permittees begin to implement provisions of the Control Program upon receiving a Notice to Comply issued by the Board's Executive Officer. The Conditional Discharge Prohibition will assist in establishing enforceable conditions until the Board revises permits to incorporate applicable requirements from the Control Program or determines that existing permit requirements are adequate. Second, for certain other permittees subject to General Orders, the Board will hold a hearing to consider amending such Orders within 18 months of the effective date of the Salt and

Nitrate Control Program to incorporate timelines and milestones for complying with the Control Program. Long-term implementation of the Salt and Nitrate Control Program is achieved primarily through the Board's permitting actions (i.e., waste discharge requirements or conditional waivers); however, to be successful, coordination, funding and support will be required from multiple state, federal and local agencies as well as from local stakeholders and those benefitting from Central Valley waters.

Figure 1 - 1. Salt and Nitrate Management Strategy



The following list identifies the major components of the Salt and Nitrate Control Program and policies that support its implementation:

- Salt Control Program (Discharges to Surface and Groundwater)
- Nitrate Control Program (Discharges to Groundwater)
    - Prioritized Groundwater Basins
    - Management Zones
- Conditional Prohibition
- Surveillance and Monitoring
- Policies to Support Implementation
    - Variance Policy
    - Exception Policy
    - Drought/Conservation
    - Offsets Policy
    - Application of Secondary Maximum Contaminant Levels to Protect MUN

Each component is summarized in Table 1-1.

Table 1 - 1. Description of Major Components of the Proposed Salt and Nitrate Control Program

Component	Description
Salt Control Program	The Salt Control Program recommends a process for moving forward with a three-phased long-term salinity management program. Each phase is anticipated to have a duration of 10-15 years. • Phase I: Salinity Prioritization and Optimization Study (P&O Study) to convert current conceptual management projects into feasibility studies • Phase II: Project Development and Acquisition of Funds • Phase III: Project Implementation/Construction of Physical Project (e.g. salt management areas; treatment facilities; regulated brine line) Phase I includes adoption of a proposed Interim Salinity Permitting Approach for permittees who discharge salt whereby they may select to be regulated under conservative, source control limits or opt into participating in the funding and development of the P&O Study. A third party entity made up of a coalition of regulated dischargers and other entities will manage and fund the P&O Study. Timelines and milestones are identified.
Prioritized Groundwater Basins for Nitrate Control Program Implementation	Scores were assigned to one square mile grids based on the ambient nitrate as nitrogen concentration in the Upper Zone, for each basin identified in the Central Valley Hydrologic Unit Model (Faunt, 2009). Based on the aggregate score within the basin boundaries, the basins were prioritized for implementation of the Nitrate Control Program. Permitted dischargers to groundwater within Priority 1 basins will be notified within one year of the effective date of the amendments of their need to comply with the Nitrate Control Program. Permittees in Priority 2 basins will receive notification within two to four years of the effective date. The remaining basins will be prioritized at the discretion of the Central Valley Water Board. The Central Valley Water Board will review the priorities no later than 1 January 2024 after considering water quality-based factors and other relevant information. Nothing in the program prevents interested parties from providing additional information and requesting a review of an area's priority.
Groundwater Management Zone Strategy (Nitrate Specific)	The Nitrate Control Program recommends that the Basin Plans be amended to allow and encourage management of nitrate through the establishment of Management Zones. In general, a Management Zone would consist of multiple permittees and other local stakeholders working collectively to first ensure safe drinking water, then to manage nitrates to create a balance within the defined management area (where reasonable and feasible), and ultimately to develop and implement a long-term plan for restoration of groundwater (where reasonable, feasible and practicable) to meet applicable water quality objectives. Although the Basin Plans do not currently prevent the management of nitrates through the creation of Management Zones, the Program defines the characteristics, intent and purpose of a Management Zone as well required components for consideration of approval by the Central Valley Water Board.
Nitrate Control Program	The Nitrate Control Program provides two pathways for compliance for permitted discharges to groundwater. Pathway A is for individual permittees and sets conservative limitations for source control. Requirements are based on categories that take into account nitrate concentrations in the discharge as well as in the Shallow Zone of the aquifer. Pathway B is for permittees proposing to be regulated under a Management Zone. Both Pathways have their own specific milestones and timelines. However, both Pathways require the development of an Early Action Plan (EAP) to identify means of providing short term safe drinking water supplies to users impacted by nitrate concentrations in their groundwater source which falls within the permittee's zone of contribution. When needed, both Pathways also require development of an alternate compliance project to allow continued discharge into a threatened or impaired groundwater basin while the permittee develops a long-term solution to ensure safe drinking water and move toward balanced loading and restoration. The Control Program includes guidance on the minimum requirements for an alternative compliance project which relies in part on the Conditional Exceptions Policy (discussed below).

Table 1 - 1. Description of Major Components of the Proposed Salt and Nitrate Control Program

Component	Description
Conditional Prohibition	A Conditional Prohibition will apply to all permittees discharging salt or nitrate, except permittees regulated under the Board's Irrigated Lands Regulatory Program (ILRP) and potentially other General Orders, from the time the permittee receives a Notice to Comply until such time that the permittees' existing waste discharge requirements are updated or amended through a public hearing to reflect requirements of the Salt and Nitrate Control Program, including incorporation of any proposed Alternate Compliance Project or Management Zone Implementation Plan. The Central Valley Water Board will consider updating ILRP General Orders within 18 months of the effective date of the amendments. Conditions will include meeting Control Program requirements including meeting timelines for response to Notice to Comply, selection of permitting pathway, submittal of justification for pathway selection, implementation of Early Action Plans when needed, and submittal of any needed Alternate Compliance Project or Management Zone Proposal and associated Implementation Plan.
Surveillance and Monitoring	The goals of the Salt and Nitrate Monitoring Program are to: assess the effectiveness of the Control Program; develop statistically-representative ambient water quality determinations and trends; and maximize the use of existing monitoring programs. Information gathered will be consolidated and evaluated by the entity leading the monitoring study. Within two years of the effective date of the Salt and Nitrate Control Program, the lead entity will submit a Work Plan and a Quality Assurance Project Plan for Central Valley Water Board approval. Permittees with salt or nitrate discharges must either gather needed information required by the plan for their area of contribution and provide the information to the lead entity in a readily available format or must demonstrate their support for the lead entity to gather needed information by submitting documentation of such support from the lead entity. An assessment of ambient water quality and trends and a review of the overall progress of the Salt and Nitrate Control Program based on water quality trends will be completed at least once every 5-years or other time schedule approved by the Central Valley Water Board.
Variance Policy	The existing conditional Salinity Variance Program applies to salinity water quality standards for the following constituents: electrical conductivity, total dissolved solids, chloride, sulfate and sodium, and was developed to allow permittees to continue to meet performance based standards while supporting the CV-SALTS initiative. The current Salinity Variance Program prohibits the Central Valley Water Board from approving any salinity variance after June 30, 2019, because it was intended that any extension, or permanent, long-term Salinity Variance Program should be developed through the CV-SALTS process and that stakeholders needed to make appropriate recommendations for such a policy in the SNMP. The Salt and Nitrate Control Program recommends that the Salinity Variance Program be extended for an additional 15 years to allow permittees to participate in the P&O Study. Permittees who do not participate in the P&O Study are not eligible for a salinity variance.
Exceptions Policy	The existing Salinity Exceptions Policy that only applies to TDS/EC, chloride, sulfate and sodium, prohibits the Central Valley Water Board from authorizing new exceptions or reauthorizing previously approved exceptions after June 30, 2019. This Salt and Nitrate Control Program recommends revising the existing Exceptions Policy by amending the Basin Plans to (a) add nitrate to the list of chemical constituents for which the Central Valley Water Board may authorize an exception; (b) expand/revise conditions or authorization of an exception to reflect the requirements of the Salt and Nitrate Control Program (no separate application for an exception is needed if meeting Phase I Alternative Salinity Compliance provisions and implementation of an approved alternate nitrate compliance project, respectively); (c) remove the existing sunset provision that prohibits the granting of exceptions beyond June 30, 2019; and (d) delete the current provision limiting the term of an exception to no more than 10 years and add a new provision stating that when authorizing an exception, the Central Valley Water Board shall generally not exceed a term of 10-years and may only exceed 50-years if management practices under the exception are resulting in significant, measurable and continuing improvements in water quality. Exception application provisions specific to boron are also included.

Table 1 - 1. Description of Major Components of the Proposed Salt and Nitrate Control Program

Component	Description
Drought and Water Conservation Policy	The effects of drought and the implementation of encouraged or mandated water conservation practices can significantly impact effluent quality in discharges to surface water or groundwater and compliance issues for some permittees because of increased TDS/EC and other salinity-related constituents in influent and effluent. Historically, WDRs/Conditional Waivers rarely have included any special provision or consideration for variations in effluent quality, directly or indirectly related to recurrent drought conditions that are beyond the control of the permittee or for ongoing, expanding and sometimes mandated conservation practices. The Salt and Nitrate Control Program proposes interim salinity effluent limits during periods of drought or increased implementation of water conservation practices. During periods of drought the interim effluent limit for electrical conductivity (EC) is not to exceed 2,200 uS/cm as a 30-day running average. The limits may be established in terms of concentration or total dissolved solids (TDS) loading. Interim limits for conservation efforts shall be based on either not exceeding the receiving water concentration and not causing down gradient impacts or maintaining TDS loading consistent with historical load (with consideration given to reasonable increment of use or change in source water salinity concentration) while not exceeding the numeric limitations noted above. The Drought and Conservation Policy is proposed to guide interim effluent limits as needed under the Variance Policy during Phase 1 of the Salt Control Program and may become generally applicable during future phases based upon review of the overall program.
Offsets Policy	An offset is an alternative means of achieving compliance with a WDR, either alone or in combination with other actions, for a given pollutant or pollutants. An offset allows for the management of other sources and loads (not directly associated with the regulated discharge) so that the combined net effect on receiving water quality from the discharge and the offset is functionally-equivalent to or better than that which would have occurred by requiring the permittee to comply with its WDR at the point-of-discharge. The Salt and Nitrate Control Program includes an Offsets Policy, which recommends that the Basin Plans be amended to provide authority for the Central Valley Water Board to allow the use of offset projects to comply with WDRs, but only for groundwater. In general, offsets are to be utilized in the same groundwater basin/sub-basin where the discharge occurs, however, offsets may also be used to incentivize implementation of some large-scale projects such as a regional regulated brine line. Offsets may be proposed to support a request for either an allocation of available assimilative capacity or an exception but cannot result in unmitigated localized impairments. Offsets must be (1) proposed by permittee (individual or group of permittees) as an Alternative Compliance Project (ACP, see below); (2) approved by the Central Valley Water Board; and (3) enforceable through a WDR or other orders issued by the Board. The approved offset must specify the time period for which it applies, a monitoring and reporting program, and remedial actions that must be undertaken by the permittee if the offset project fails.

Table 1 - 1. Description of Major Components of the Proposed Salt and Nitrate Control Program

Component	Description
Clarified Water Quality Objectives and Guidance to Implement Secondary Maximum Contaminant Levels to Protect MUN	The Salt and Nitrate Control Program proposes to incorporate guidance into the Basin Plans to clarify implementation of SMCLs (Title 22) in permits for discharge to surface water and groundwater. These recommendations include: ▪ Under Chapter 3 Water Quality Objectives: incorporate guidance from Title 22 for utilizing the applicable "Recommended", "Upper", or "Short Term" concentrations included in Table 64449-B; clarify consideration of natural background concentrations; and specify annual averaging for surface water and appropriate long-term averaging for groundwater. ▪ Under Chapter 4 Implementation: • Consider "Recommended" concentrations as goals and allow concentrations ranging to the "Upper" level if it is demonstrated that it is neither reasonable nor feasible to achieve lower levels. "Short Term" level may be authorized on a temporary basis consistent with Title 22 or with the Drought and Conservation Policy • Clarify the use of filtered samples using a 1.5-micron filter to remove suspended solids to measure compliance for aluminum, color, copper, iron, manganese, silver, turbidity and zinc.. • The Central Valley Water Board may adjust the filter size where necessary to more accurately represent site-specific conditions based on scientific evidence submitted for their consideration and after consultation with Division of Drinking Water and public comment.
Guidance for Developing Alternative Compliance Projects (ACP) for Nitrate Discharges	When an individual or group of permittees is unable to demonstrate that their discharge is not individually or collectively causing nitrate degradation above the triggers identified in the Nitrate Control Program, they have an opportunity to request either allocation of available assimilative capacity or an exception. In most cases, the request for the granting of assimilative capacity[28] or an exception in these circumstances requires submittal of a proposed ACP. This request may be made as an individual permittee (which includes a third party group subject to a general order) or permittees working collaboratively as part of a groundwater management zone. Any proposed ACPs submitted for consideration must contain specific components; accordingly, guidance is provided that describes the components recommended for submittal of an ACP for approval. At a minimum any proposed ACP must include but is not limited to: • Identification of public water supply and domestic wells within the discharge area zone of contribution that exceed nitrate water quality objectives • Milestones and timelines to address the drinking water issues (short and long-term) • Milestones and timelines to meet long term management goals of balanced loading and restoration, which may be phased over time
SMCL Considerations when Developing WDRs	Source water protection is a critical component to protect drinking water consumers. Since clarifications are proposed to address the application of SMCLs to protect MUN, guidance is also proposed on considerations when evaluating permit conditions related to SMCLs in order to clarify the current process of evaluating potential individual and cumulative impacts on instream and downstream beneficial uses.

[28] Conditions with respect to granting of assimilative capacity will vary, depending on how the receiving water is defined for the discharge(s) in question. In some cases, the receiving water will be considered to be shallow groundwater, while in others, it may be the upper zone.

Table 1 - 1. Description of Major Components of the Proposed Salt and Nitrate Control Program

Component	Description
Definitions Specific to Salt and Nitrate Control Program	A series of definitions have been proposed for incorporation as part of the Salt and Nitrate Control Program amendment in order to add clarity and provide consistency in implementation.

The proposed amendments provide the regulatory authority to sustainable manage salt and nitrate within the Central Valley while ensuring safe drinking water supplies and moving toward long-term, managed restoration of groundwater basins, where reasonable, feasible and practicable. The proposed amendments do not remove any existing authorities of the Central Valley Water Board, which may use its discretion whether a discharge needs more prescriptive regulation. The proposed Salt and Nitrate Control Program is designed to address both legacy and ongoing salt and nitrate accumulation issues in surface and groundwater for salt and groundwater for nitrate; however, the primary focus of early actions (first ten years) is on groundwater quality and in particular nitrate impacts to drinking water supplies.

This report is focused on the public process utilized, project alternatives that were developed, selection of the preferred alternative, consistency of those alternatives with State and Federal laws, plans and policies, and the results of California Environmental Quality Act (CEQA), antidegradation, and economic evaluations of the preferred alternatives. Appendices have been included to summarize background water quality conditions, current regulatory framework, guidelines and considerations when utilizing various components of the proposed amendments, and examples of intent for the Salt Control Program and Nitrate Control Program, in addition to the environmental checklist.

1.1 Purpose and Function of this Document

Implementation of the Salt and Nitrate Control Program and related policies will occur through adoption, by the Central Valley Water Board, of amendments to the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* and the *Water Quality Control Plan for the Tulare Lake Basin* (Basin Plans). The Central Valley Water Board amends its Basin Plans through a structured process involving peer review (as necessary), public participation, and environmental review. The Board must comply with the California Environmental Quality Act (CEQA) (Pub. Res. Code, § 21000 et seq.) when amending its Basin Plans. However, the Secretary of Natural Resources has certified the Board's basin planning process as exempt from the CEQA requirement to prepare an environmental impact report because a sufficiently rigorous environmental review is incorporated into the basin planning process itself. (Pub. Res. Code, § 21080.5.; Cal. Code Regs., tit.14, § 15251(g).) Before adopting amendments to the Basin Plans, the Board prepares and circulates substitute environmental documentation or an "SED", rather than an environmental impact report. In the SED, the Board analyzes any potential adverse environmental effects associated with the proposed amendment(s). This document was prepared to serve as part of the overall SED for adoption of the proposed Salt and Nitrate Control Program and components of related policies into the Basin Plans, and addresses the impacts associated with implementing the proposed Salt and Nitrate Control Program and related policies on the affected environment of the Central Valley.

1.2 SCOPE OF ASSESSMENT

The analysis in this staff report is a program level (i.e., macroscopic) analysis of environmental impacts. CEQA describes a program-level environmental analysis as one prepared for a series of actions that can be characterized as one large project and are related either (1) geographically, (2) as logical parts in the chain of contemplated actions, (3) in connection with issuance of rules, regulations, or plans, or (4) as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways. (Cal. Code Regs., tit.14, § 15168.)

In accordance with Public Resources Code section 21159(a), this staff report does not engage in speculation or conjecture. This staff report identifies the reasonably foreseeable environmental impacts associated with the reasonably foreseeable actions to be implemented, based on information developed before, during, and after the CEQA Scoping Meeting. When the CEQA analysis identifies a potentially significant environmental impact, the accompanying analysis identifies reasonably foreseeable feasible mitigation measures. (Pub. Res. Code, § 21159(a)(2).)

Subsequent project-level environmental analyses will be performed, as required by CEQA, by the local agencies that will implement projects resulting from the Salt and Nitrate Control Program, by the Central Valley Water Board, or by other state agencies or departments. (Pub. Res. Code, §21159.2.) Notably, the Central Valley Water Board is prohibited from specifying the manner of compliance with its regulations (Wat. Code, § 13360.), and accordingly, the actual environmental impacts of specific projects will necessarily depend upon the compliance strategy selected by the local implementing agencies and other permittees. The environmental analysis of the Proposed Project presented in this staff report assumes that the permittees will design, install, and maintain projects following all applicable laws, regulations, ordinances, and formally adopted municipal and/or agency codes, standards, and practices.

2 ENVIRONMENTAL AND REGULATORY SETTING

This section discusses current environmental and regulatory conditions in the Central Valley related to salt and nitrate concentrations in surface waters and groundwater. The section is divided into discussions on: overall basin characteristics including current water quality concentrations in surface and groundwater; current regulatory framework governing discharges to surface waters and groundwater; and perceived limitations in regulatory authority to continue to permit discharges of salt and nitrate while ensuring safe drinking water supplies and addressing ongoing and legacy impacts to groundwater basins.

2.1 ENVIRONMENTAL SETTING

2.1.1 Basin Characteristics

The affected environment for the Salt and Nitrate Control Program is the jurisdictional area of the Central Valley Water Board. The Central Valley Region stretches from the Oregon border to the Kern County/Los Angeles County line. It is bounded by the Sierra Nevada Mountains on the east and the Coast Range on the west. Three distinct hydrologic regions comprise the Central Valley Region (California Department of Water Resources, 2013a) (California Department of Water Resources, 2013b) (California Department of Water Resources, 2013c).

- The northern third of the valley falls within the “Sacramento River Hydrologic Region” and is referred to as the Sacramento Valley.
- The southern two-thirds of the valley is referred to as the San Joaquin Valley, which contains two hydrologic regions:
    - The “San Joaquin River Hydrologic Region” in the north.
    - The “Tulare Lake Hydrologic Region” in the south.

The Delta is contained in and receives flows from both the Sacramento River and San Joaquin River hydrologic regions. The flows are then redistributed throughout California via federal and state water projects. Figure 2-1 shows the hydrologic region boundaries and location of the Delta as well as the area representing the “valley floor” within the Central Valley Water Board jurisdiction.

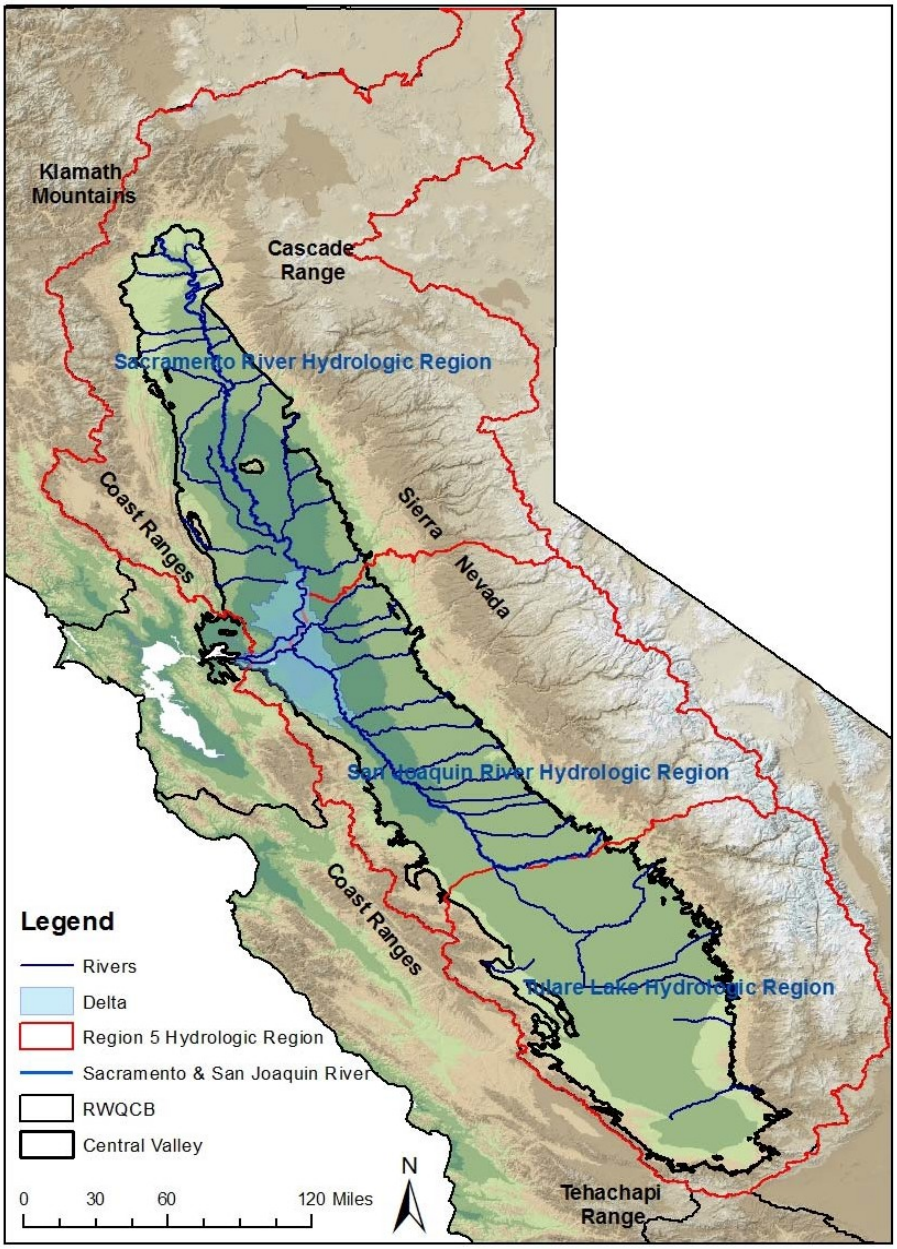
The Central Valley is generally characterized by a Mediterranean climate, though there is significant variation at various latitudes. Summers are long, hot, and dry throughout the region. In the region, roughly 85 percent of annual precipitation falls during November through April, with half of it falling in December through February in average years (Faunt, 2009). Snow falls at the higher elevations and tends to support year-round flows in water bodies at lower elevations as the snow melt is captured in dams and metered out during the year. Climate change is expected to result in more precipitation to fall as rain instead of snow and a faster rate of snow melt, which will alter surface water runoff and flow patterns in the future (California Department of Water Resources, 2013a).

The annual variability in precipitation within the Central Valley is reflected in the Sacramento Valley and San Joaquin Valley water year hydrologic classification indices (California Department of Water Resources, 2018). Water years are classified as wet, above normal, below normal, dry, or critical, based on measured unimpaired runoff in valley rivers, according to the

San Francisco Bay/Sacramento-San Joaquin Delta Water Quality Control Plan (State Water Board, 2006).

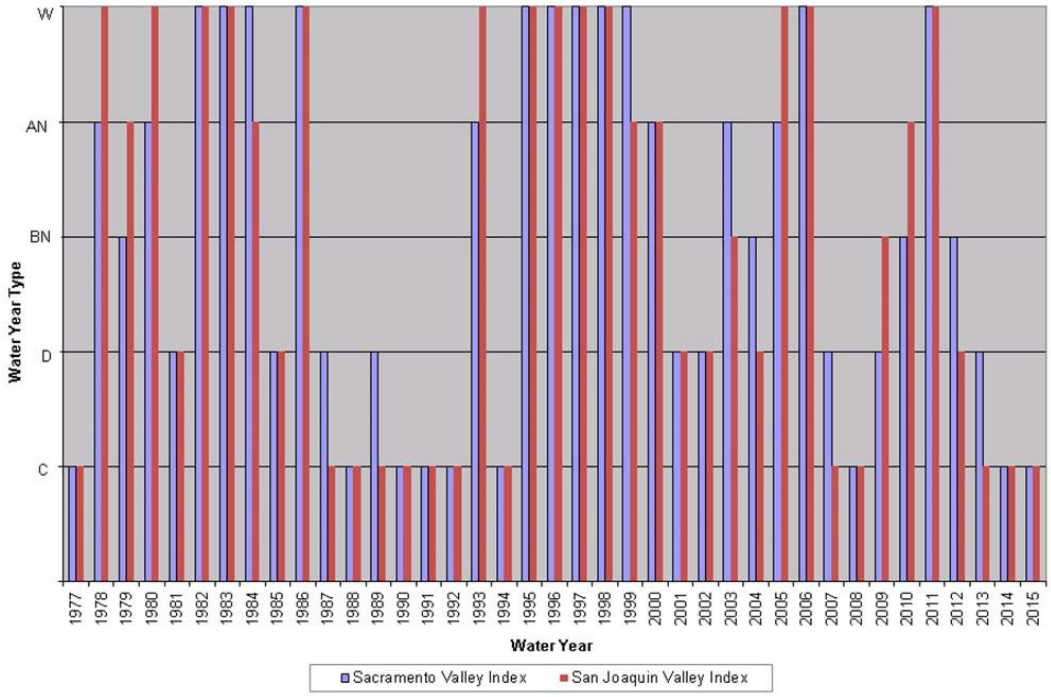
Figure 2-2 depicts water year types from 1977 through 2015, and shows that both valleys can experience extended periods with back-to-back dry and critical water years, such as from 1987–1992 and 2013–2015, as well as back-to-back wet periods, such as water years 1995–1999. Climate change is expected to result in more variable weather patterns and longer, more severe droughts (California Department of Water Resources, 2013a).

Figure 2 - 1. Map of Hydrologic Regions Within the Central Valley Water Board Jurisdiction



Source: CV-SALTS SNMP (2016)

Figure 2 - 2. Sacramento Valley and San Joaquin Valley Water Year Type for 1977-2015

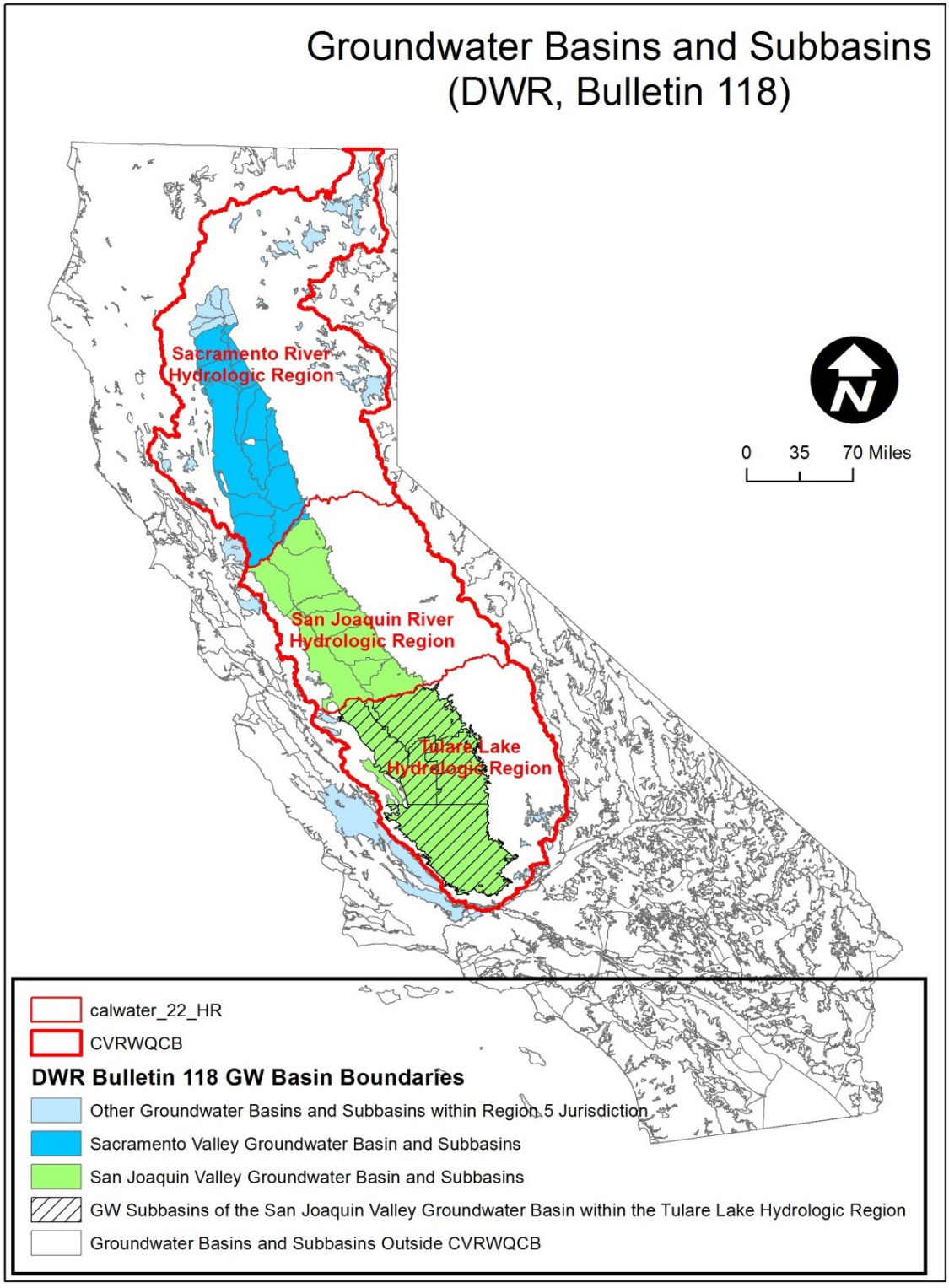


Notes: C = Critical; D = Dry; BN = Below Normal; AN = Above Normal; W = Wet
Source: California Data Exchange Center (http://cdec.water.ca.gov/cgi-progs/iodir/wsihist)

An extensive array of reservoirs, channels, aqueducts, and pumps form a network of managed surface water storage and delivery systems to supply both a portion of the water needed throughout the Central Valley as well as supply water needs throughout California. The Central Valley Project (CVP) and State Water Project (SWP) move water from the Sacramento River and San Joaquin River through the Delta for delivery to users in the San Joaquin Valley as well as to the South Bay, the Central Coast and Southern California. East Bay Municipal Utility District delivers water from the Mokelumne and Sacramento Rivers to customers in its service area. The Tuolumne River is a primary water supply for the City of San Francisco.

California's groundwater provides approximately 30 to 46 percent of the State's total water supply, depending on water year type (e.g., wet or dry), and serves as a critical buffer against drought and climate change (California Department of Water Resources, 2013b). Some communities in California are 100 percent reliant upon groundwater for urban and agricultural use (California Department of Water Resources, 2013b). Within the Central Valley Region, there are 86 groundwater basins and 126 groundwater sub-basins, as defined by DWR Bulletin 118 (California Department of Water Resources, 2003), which are shown in Figure 2-3. The two main basins within the region are the Sacramento Valley Groundwater Basin and San Joaquin Valley Groundwater Basin. The San Joaquin Valley Groundwater Basin includes sub-basins that lie within the Tulare Lake Hydrologic Region. The main source of groundwater in the Central Valley is typically located within the upper 1,000 feet of deposits that contain the groundwater. In some places, saline water is found at shallow depths in continental deposits, which can result from upward migration of connate water, evaporative concentration, or estuarine water trapped during sedimentation (Page, 1986).

Figure 2 - 3. Central Valley Groundwater Basin Boundaries, Defined by DWR Bulletin 1



Additional information regarding climate, watershed characteristics and hydrology specific to the three hydrologic regions and Delta is provided in the following sections.

SACRAMENTO RIVER HYDROLOGIC REGION

The Sacramento River Hydrologic Region covers approximately 27,200 square miles and includes the entire area drained by the Sacramento River. For Central Valley Water Board basin planning purposes, this region includes all watersheds tributary to the Sacramento River that are north of the Cosumnes River watershed. It also includes the closed basin of Goose Lake and drainage sub-basins of Cache and Putah Creeks. (Central Valley Water Board, 2016).

Climate

Precipitation in the Sacramento River Hydrologic Region generally decreases from north to south and east to west. The mountain regions to the north and the east experience cold, wet winters, with most precipitation falling as snow. The northernmost area is dominated by a high desert plateau and also receives the majority of precipitation as snow. (California Department of Water Resources, 2013a). Precipitation on the valley floor varies from an annual average of 34 inches in Redding to 17 inches in Sacramento (Western Regional Climate Center, 2018).

Land Cover and Land Uses

Of the Sacramento River Region's 27,200 square miles, 11 percent (about 1.95 million acres) is occupied by irrigated agriculture. Crop type varies by location within the region; main crops on the valley floor include rice, walnuts, almonds/pistachios, pasture, alfalfa and grain. Of the region's 1.95 million acres of irrigated agriculture, roughly 1.58 million acres are located on the valley floor and approximately 370,000 irrigated acres are located in the surrounding mountain valleys, which is primarily pasture and alfalfa. In 2010, the population of the region was 2.93 million. Cities and towns north of Sacramento are located in predominantly agricultural areas. (California Department of Water Resources, 2013a)

Hydrology

The principal surface water feature of the region is the Sacramento River. Major tributaries include the Feather River and American River. Flows in the Sacramento River are influenced by precipitation (rainfall and snowpack/snowmelt), but are also influenced by several reservoirs on the tributaries and main stem, which are managed for flood control, water supply, and hydroelectric power generation by federal, state, and local water projects. Irrigation diversions and agricultural return flows also affect the river regime.

The Sacramento Valley Groundwater Basin is the main groundwater basin located in the Sacramento River Hydrologic Region. The basin is divided into 18 groundwater sub-basins, based on hydrologic, geologic, and political boundaries, covering 6,057 square miles of the Central Valley floor. Other groundwater basins within the Sacramento River Hydrologic Region are identified in Figure 2-3. Groundwater generally flows from the foothills on either side, toward the Sacramento River, and south toward the Delta.

SAN JOAQUIN RIVER HYDROLOGIC REGION

The San Joaquin River Hydrologic Region 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. For basin planning purposes, this region excludes the Tulare Lake Basin. (Central Valley Water Board, 2016)

Climate

Precipitation in the San Joaquin River Hydrologic Region generally decreases from north to south with annual average ranging from 14 inches in Stockton to 10 inches in Madera on the valley floor (California Department of Water Resources, 2013c) (Western Regional Climate Center, 2018). Although the Coast Ranges tend to prevent marine temperature effects, the northern portion of the valley receives a Delta breeze, decreasing temperatures during summer evenings. The southern portion of the region does not tend to experience this cooling effect. The warmer and drier conditions in the San Joaquin River watershed result in considerably less runoff compared to the Sacramento River watershed. (California Department of Water Resources, 2013c).

Land Cover and Land Uses

The San Joaquin River Hydrologic Region contains roughly 3.5 million acres of valley floor, 5.8 million acres of mountains and eastern foothills, and 900,000 acres of coastal mountains. The San Joaquin Valley is one of the world's most productive agricultural regions and agriculture remains the dominant economic sector in the region. Most of the valley floor is privately owned agricultural land, while much of the Sierra Nevada is national forest and government-owned public lands. Approximately 22 percent of the region (about 2.17 million acres) is occupied by irrigated agriculture. Main crops grown in the region include almonds, corn, alfalfa, grapes and processing tomatoes. The agricultural output is valued annually at more than $9.3 billion. (California Department of Water Resources, 2013c).

Urban developments have increased in size over the last two decades, expanding onto the surrounding agricultural lands. Approximately 5 percent of the state's population lives in the region and in 2010, the population was 2.10 million. A number of disadvantaged communities reside in the region and four of the most populous cities in the region qualify as disadvantaged. In addition, eleven federally recognized tribes live in the region. (California Department of Water Resources, 2013c).

Hydrology

The San Joaquin River is the principal surface water body in the hydrologic region. The major tributaries that drain from the Sierra Nevada to the San Joaquin River within the hydrologic region are the Calaveras, Mokelumne, Cosumnes, Merced, Tuolumne, and Stanislaus rivers. As with the Sacramento River, flows in the San Joaquin River are influenced by precipitation (rainfall and snowpack/snowmelt), as well as reservoirs on the main stem and tributaries, which are managed for flood control, water supply, and/or hydroelectric power generation by the federal CVP, regional, and local water projects.

The San Joaquin Groundwater Basin is the main groundwater basin in the region. This basin covers both the San Joaquin River and the Tulare Lake Hydrologic Regions, and is divided into 16 groundwater sub-basins, based on hydrologic, geologic, and political boundaries, covering 10,591 square miles of the Central Valley floor. Groundwater movement in the San Joaquin Valley is driven by local pumping stresses, but generally flows from the eastern foothills of the Sierra Nevada to the west, toward pumping depressions. Regionally, groundwater flows to the north toward the Delta.

TULARE LAKE HYDROLOGIC REGION

The Tulare Lake Hydrologic Region comprises the drainage area of the San Joaquin Valley south of the San Joaquin River. Valley floor lands make up slightly less than one-half of the total basin land area (Central Valley Water Board, 2015).

Climate

The Tulare Lake Hydrologic Region experiences scarce amounts of precipitation, ranging from an annual average of 11 inches in Fresno to 6 inches in Bakersfield (Western Regional Climate Center 2016). Temperatures on the valley floor are usually mild during the winter months; however, heavy frost occurs during most years and during cold spells the air temperature occasionally drops below freezing (California Department of Water Resources, 2013d).

Land Cover and Land Uses

Of the Tulare Lake Hydrologic Region's 17,000 square miles, 27 percent (about 2.9 million acres) is occupied by irrigated agriculture. Main crops grown in the region include almonds/pistachios, vineyards, corn, grain and cotton. In 2010, the population of the region was 2.27 million. Main cities include Fresno, Bakersfield and Visalia. Although agriculture remains the dominant form of land use in the basin, urban land use is increasing (California Department of Water Resources, 2013d)

Hydrology

The Tulare Lake Hydrologic Region has few natural surface water sources; most of these originate from Sierra Nevada snowmelt and are concentrated in the eastern portion of the basin. The basin is essentially a closed system, draining only into the San Joaquin River in extreme wet years (Central Valley Water Board, 2015). This hydrologic region is part of the San Joaquin Groundwater Basin, comprised of the Tulare Lake, Kings, Westside, Tule, Kern County, and Kaweah sub-basins, covering 4,783 square miles. Primary sources of water into the basin are imports through state and federal water projects.

SACRAMENTO-SAN JOAQUIN DELTA

Surface water from the Sacramento River Hydrologic Region and the San Joaquin River Hydrologic Region meet at the Delta, which ultimately drains to San Francisco Bay. The Delta is a maze of river channels and diked islands covering roughly 1,150 square miles, including 78 square miles of water area (Central Valley Water Board, 2016).

Two major water projects, the Central Valley Project (CVP) and the State Water Project (SWP), 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. Table 2-1 presents primary inflow and outflow quantities for the Delta. The primary source of inflow to the Delta is the Sacramento River. The largest Delta outflow is to the San Francisco Bay, followed by SWP and CVP exports to south of Delta water users.

Table 2 - 1. Sacramento-San Joaquin Delta Inflows and Outflows.

Delta Inflows and Outflows	Annual Total (Thousand Acre-Feet) [a]	Percent of Inflow
Inflows		
Sacramento River	12,777	80%
East Side Tributaries	633	4%
San Joaquin River	659	4%
Yolo Bypass	1,829	12%
Outflows		
North Bay Aqueduct	43	0%
Contra Costa Canal	94	1%
State Water Project	2,496	16%
Central Valley Water Project	2,141	13%
Outflow to San Francisco Bay	10,247	64%

Notes: [a]Volumes reported are for water year 2010 (a dry water year in the Sacramento Valley and a below normal year in the San Joaquin Valley).
Source: California Department of Water Resources 2013b, Figure D-1.

The Delta is a primary source water for agricultural and municipal drinking water supplies. As such, salinity levels and concentrations of constituents with drinking water standards are of concern to these users.

2.1.2 Water Quality Conditions

Information from several studies conducted under the CV-SALTS initiative were utilized to evaluate salt and nitrate conditions in the Central Valley (Table 2-2). Summary tables and figures of the resulting data are included in Appendix A and Appendix B for surface waters and groundwater, respectively. Additional data was also compiled from the California Environmental Data Exchange Network (CEDEN) and United States Geological Survey (USGS) Water Quality Portal. The data compilation focused on electrical conductivity (EC) and nitrate as well as aluminum, manganese, turbidity, and other constituents with secondary drinking water maximum contaminant levels (SMCLs). The additional information on SMCLs provides background for proposed new polices, strategies, and guidance that may affect the regulation of these parameters. In addition, several watershed sanitary surveys were reviewed to supplement the information developed from the data compilation (Larry Walker Associates, 2016b).

Table 2 - 2. CV-SALTS Technical Studies Completed to Satisfy Specific Recycled Water Policy SNMP Requirements for the Evaluation of Salt and Nitrate

Required Recycled Water Policy Component	Relevant CV-SALTS Studies[1]
Salt and nutrient (nitrate) source identification	• Larry Walker Associates et al. 2013. 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*. December 2013. • Larry Walker Associates et al. 2016. *Management Zone Archetype Analysis Report: Alta Irrigation District*. July 2016. • CDM Smith. 2016a. *Nitrate Implementation Measures Study*. March 2016. • CDM Smith 2013 and 2014. SSALTS *Final Phase 1 Report: Identification and Characterization of Existing Salt Accumulation Areas*; and *Final Phase 2 Report: Development of Potential Salt Management Strategies*. December 2013 and October 2014, respectively.
Basin/subbasin assimilative capacity	• Larry Walker Associates et al. 2013. 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.* December 2013. • Luhdorff & Scalmanini Consulting Engineers and Larry Walker Associates. 2016a. *Region 5: Updated Groundwater Quality Analysis and High Resolution Mapping for Central Valley Salt and Nitrate Management Plan*; July 2016.
Basin/subbasin loading estimates	• Larry Walker Associates et al. 2013. 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.* December 2013.
Fate and transport of salts and nutrients (nitrate)	• Larry Walker Associates et al. 2013. 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.* December 2013.
Source: [1] Referenced CV-SALTS studies may be accessed at: http://www.cvsalinity.org/index.php/committees/technical-advisory/technical-projects-index.html	

2.1.2.1 Surface Water Quality

Summary information on the overall salt, as electrical conductivity (EC), and nitrate (as nitrogen) conditions in the Central Valley is presented in Table 2-3. For context, salt concentrations measured EC are evaluated against the “recommended” secondary maximum contaminant level (MCL) of 900 µS/cm EC, which was developed to reflect consumer preferences for drinking water. Nitrate concentrations are evaluated against the primary MCL of 10 mg/L-N. Additional information by basin is provided below.

Table 2 - 3. Summary of EC and Nitrate (as N) Water Quality Conditions in Surface Waters in the Central Valley Region

Hydrologic Region	EC Conditions	Nitrate (as N) Conditions
Sacramento River	• Water quality is good in this region, with median and 1st through 3rd quartile values at all monitoring locations below 900 µS/cm.	• Nitrate water quality is very good, with median and 1st through 3rd quartile observations at all monitoring locations well below the primary MCL of 10 mg/L as N, with some sites typically below 0.5 mg/L.
San Joaquin River	• Eastside Tributaries - Lower than the recommended SMCL of 900 µS/cm. • Westside Tributaries – EC values between the 1st and 3rd quartiles are at or above the recommended SMCL objective. • Mainstem – Wide range of values; concentrations are dependent on water year type and the water quality and flows of the east side tributaries.	• Eastside Tributaries – Lower than the primary MCL of 10 mg/L as N, with values often less than 1.0 mg/L. • Westside Tributaries – Nitrate values are higher than eastside tributaries, but median values are still below the primary MCL. • Mainstem – Median nitrate values generally are around 1 to 2 mg/L nitrate as N; one site with a median level near 10 mg/L has a limited dataset.
Tulare Lake	• Median and calculated values within the 1st and 3rd quartiles are lower than the recommended SMCL with the exception of the Main Drain Canal, where high EC levels above 900 µS/cm have been observed during irrigation events	• All observations in this region are well below the primary MCL of 10 mg/L as N with median values in the 0.1 to 0.2 mg/L range.
Delta Region	• EC levels rarely exceed the recommended SMCL of 900 µS/cm	• All observations are well below the primary MCL with median values around 0.5 mg/L.

Salt and Nitrate Concentrations

Sacramento River Basin

Surface waters in the Sacramento River Hydrologic Region generally support their beneficial uses, including drinking and irrigation water, recreation, and protection of fish and other aquatic life. Primary water quality concerns include potential aquatic life toxicity and domestic water supply use impacts associated with pesticides, mercury and methylmercury accumulation in the food chain, erosion and sediment transport/deposition, and temperature impacts to coldwater species (Sacramento River Watershed Program, 2018).

When compared to other areas within the Central Valley, surface waters in the region generally have low salt and nitrate levels. The northern reaches of the Sacramento River have very low salt concentrations. As the water travels south through the valley, contact with natural salts in the soil, as well as agricultural and industrial anthropogenic activities can elevate salt and nitrate concentrations. Surface waters within the Sacramento Valley consistently have total nitrate concentrations less than 10 mg/L as nitrogen (mg/L-N) and EC levels less than 1,000

µmhos/cm. The EC levels at the evaluated stations are typically in the low 100 µmhos/cm, with the exception of the Colusa Basin Drain, which has levels upwards to 1,000 µmhos/cm.

San Joaquin River Basin

The surface water quality of the San Joaquin River Hydrologic Region is primarily dependent upon the source of the water, geologic influence, land use, and reservoir operations. Streams in the western portion of the region are mainly ephemeral, with the downstream channels mainly being used to transport high salinity agricultural return flows to the main channel of the San Joaquin River. The eastern portion of the region is generally characterized by higher quality surface water derived from Sierra Nevada snowmelt. Maintaining surface water quality for beneficial use protection is a significant issue for the river, with elevated concentrations of salts being of primary concern.

The compiled water quality data indicates that within the San Joaquin River Hydrologic Region, the eastside tributaries (Cosumnes, Merced, Stanislaus, and Tuolumne rivers) show EC levels lower than the recommended secondary MCL of 900 µmhos/cm, whereas tributaries to the west and southwest of the San Joaquin River (Mud Slough, Salt Slough, and Orestimba Creek) have EC levels that typically fall at or above 900 µmhos/cm. EC levels within the main stem San Joaquin River are highly variable and tend to decrease from Crows Landing downstream toward Vernalis, likely due to higher quality inflows from the east side tributaries.

Nitrate concentrations in the tributaries to the east of the San Joaquin River (Cosumnes, Merced, Stanislaus, and Tuolumne rivers) are lower than the primary MCL of 10 mg/L-N. Nitrate concentrations are higher in tributaries to the west and southwest of the San Joaquin River, with historical concentrations greater than 10 mg/L-N (Mud Slough, and Salt Slough), but with a median still below the primary MCL.

Tulare Lake Basin

Where measured, nitrate concentrations in natural source waters are generally below 10 mg/L-N. EC levels in natural source waters are variable, but are typically below 1,000 µmhos/cm.

However, irrigation drainage and canals can experience EC levels above 1,000 µmhos/cm (Buena Vista Coalition, 2014; Larry Walker Associates, 2016b). Water bodies on the valley floor of the Tulare Lake Basin are primarily comprised of irrigation and drainage canals.

Sacramento-San Joaquin Delta

The primary water quality concerns facing municipal water suppliers that rely on the Delta as a source water are high concentrations of organic carbon and bromide in the source water (which can contribute to the formation of disinfection byproducts), pathogens, high nutrient concentrations (and associated taste and odor problems from algal blooms), and high TDS concentrations due to associated challenges with blending, groundwater recharge, and wastewater recycling (Archibald Consulting et al., 2012). The primary sources of salinity in the Delta are from tidal seawater intrusion from the Pacific Ocean through the San Francisco Bay and, to a lesser extent, from agricultural and other discharges in the Central Valley. The timing and distribution of salinity is primarily affected by flow, which is largely determined by water management in the Delta and its watersheds (California Department of Water Resources, 2013b).

Concentrations of Secondary Maximum Contaminant Levels (SMCLs)

Information on total and dissolved surface water concentrations of constituents identified with secondary maximum contaminant levels is summarized in tables as part of Appendix A.

Compiled data indicates that within the Sacramento River Basin aluminum (dissolved), iron (dissolved), and manganese (dissolved) levels are typically below secondary MCLs. Sample concentrations of total aluminum, iron, and manganese concentrations were found to be greater than secondary MCLs. Notably, three water treatment plants (WTP) on the Sacramento River – George Kristoff WTP, Sacramento River WTP, and Vineyard Surface WTP – are able to treat iron and aluminum to non-detectable levels or very low detectable levels in treated water with levels below than secondary MCLs (Starr Consulting et al., 2015). These WTPs also are able to treat the source river water to meet the manganese secondary MCL (Starr Consulting et. al 2015).

Turbidity levels are seasonably variable, with the highest levels occurring in the wet season, typically in January and February.

In the San Joaquin River Basin, aluminum (dissolved), iron (dissolved), and manganese (dissolved) levels are typically below secondary MCLs. The exceptions are Mud Slough and Salt Slough, where median and average dissolved manganese concentrations are above the secondary MCL.

Turbidity levels in the San Joaquin River are high when flows first increase following storm events, then decrease during prolonged periods of high flows. In the summer months, San Joaquin River turbidity increases as flow decreases, possibly due to the greater influence of agricultural return flows.

CWA 303(d) Listed Impairments

Certain water bodies in the region have been listed on the state's CWA section 303(d) list of impaired water bodies due to exceedance of water quality objectives for constituents addressed by the proposed amendments (i.e., salinity parameters, nitrate, constituents with secondary MCLs). Of these constituents, only impairments associated with salinity parameters (i.e., EC, total dissolved solids [TDS]) are listed for the Sacramento River Hydrologic Region (Table 2-4). There are no CWA section 303(d) listings of metals or nitrate associated with protection of municipal water supplies in the Sacramento River Hydrologic Region

Certain water bodies within the San Joaquin River Basin have been listed on the state's CWA section 303(d) list of impaired water bodies due to exceedance of water quality objectives for salinity parameters and select secondary MCLs (Table 2-5). Salinity water quality objectives based on EC, as well as an implementation program for the reach of the Lower San Joaquin River upstream of Vernalis, were adopted by the Central Valley Water Board (Resolution R5-2017- 0062) and approved by the State Water Board (Resolution No. 2018-0002) as one of the case studies for the proposed Salt and Nitrate Control Program. The new objectives and implementation program will become effective in 2019 and are anticipated to resolve the salinity impairments within the river from the mouth of the Merced River to the Delta noted in Table 2-5.

There are no CWA section 303(d) listings of nitrate associated with protection of municipal water supplies in the San Joaquin River Hydrologic Region.

Table 2 - 4. Clean Water Act Section 303(d) Listings for Salinity-related Parameters and Constituents with Secondary MCLs in the Sacramento River Hydrologic Region

Pollutant	Water Body	Rationale for Listing
Electrical Conductivity (EC) / Specific Conductance (SC) / Total Dissolved Solids (TDS)	**Knights Landing Ridge Cut (Yolo County)**	Levels exceeded TDS secondary MCL of 500 mg/L and SC secondary MCL of 900 umhos/cm.
	Spring Creek (Colusa County)	Levels exceeded TDS secondary MCL of 500 mg/L and SC secondary MCL of 900 umhos/cm.
	Tule Canal (Yolo County)	Levels exceeded TDS secondary MCL of 500 mg/L and SC secondary MCL of 900 umhos/cm.
	Pit River, South Fork	Levels exceeded and SC secondary MCL of 900 umhos/cm.
Source: (State Water Board, 2015)		

Table 2 - 5. Clean Water Act Section 303(d) Listings for Salinity-related Parameters and Constituents with Secondary MCLs in the San Joaquin River Hydrologic Region

Pollutant	Water Body	Rationale for Listing
Aluminum	Carson Creek (WWTP to Deer Creek)	Concentrations exceeded secondary MCL of 200 µg/L.
Chloride	Mountain House Creek (from Altamont Pass to Old River, Alameda and San Joaquin Counties; partly in Delta Waterways, southern portion)	Concentrations exceeded chloride secondary MCL of 250 mg/L.
Iron	Deer Creek (Sacramento County)	Concentrations exceeded secondary MCL of 300 µg/L.
Manganese	Carson Creek (WWTP to Deer Creek)	Concentrations exceeded secondary MCL of 50 µg/L.
Electrical Conductivity (EC) / Specific Conductivity (SC) / Total Dissolved Solids (TDS)	Del Puerto Creek	Levels exceeded TDS secondary MCL of 500 mg/L and SC secondary MCL of 900 umhos/cm.
	Grasslands Marshes	Exceedance of agricultural supply EC objectives (objectives not specified – pre-2006 listing)
	Ingram Creek (from confluence with San Joaquin River to confluence with Hospital Creek)	Levels exceeded TDS secondary MCL of 500 mg/L and SC secondary MCL of 900 umhos/cm.
	Hospital Creek	Levels exceeded TDS secondary MCL of 500 mg/L and SC secondary MCL of 900 umhos/cm.

Table 2 - 5. Clean Water Act Section 303(d) Listings for Salinity-related Parameters and Constituents with Secondary MCLs in the San Joaquin River Hydrologic Region

Pollutant	Water Body	Rationale for Listing
	Mud Slough (upstream and downstream of San Luis Drain)	Exceedance of agricultural supply EC objectives (objectives not specified – pre-2006 listing)
	Newman Wasteway	Levels exceeded TDS secondary MCL of 500 mg/L and SC secondary MCL of 900 umhos/cm.
	Ramona Lake (Fresno County)	Levels exceeded TDS secondary MCL of 500 mg/L and SC secondary MCL of 900 umhos/cm.
	Salado Creek	Levels exceeded TDS secondary MCL of 500 mg/L and SC secondary MCL of 900 umhos/cm.
Electrical Conductivity (EC) / Specific Conductivity (SC) / Total Dissolved Solids (TDS)	Salt Slough	Exceedance of agricultural supply EC objectives (objectives not specified – pre 2006 listing)
	San Joaquin River (Bear Creek to Mud Slough; Mud Slough to Merced River; Merced River to Tuolumne River; Tuolumne River to Stanislaus River; Stanislaus River to Delta Boundary)	Levels exceeded SC secondary MCL of 900 umhos/cm and southern Delta EC objectives for agricultural beneficial uses (0.7/1.0 mmhos/cm). [a]
	Temple Creek	Exceedance of agricultural supply EC objectives (objectives not specified – pre 2006 listing).
Zinc	Camanche Reservoir	Exceedance of 500 mg/L primary drinking water MCL.

Notes: [a] Listing is for exceedance of Bay-Delta Water Quality Control Plan EC objectives for the Southern Delta, which are 30-day running average mean daily EC of 0.7 mmhos/cm for April 1 through August 30 and 1.0 mmhos/cm for September 1 through March 31.

Source: (State Water Board, 2015)

Few surface water bodies within the Tulare Lake Basin are identified as impaired under CWA 303(d) due to the fact that the majority of water bodies with elevated salinity, nitrate or SMCL concentrations are located on the valley floor of the basin and are not designated with the MUN beneficial uses so are not subject to meeting water quality objectives to protect that use. A segment of the Kings River is identified in Table 2-6.

Table 2 - 6. Clean Water Act Section 303(d) Listings for Salinity-related Parameters and Constituents with Secondary MCLs in the Tulare Lake Hydrologic Region

Pollutant	Water Body	Rationale for Listing
Electrical Conductivity (EC)	Kings River, Lower (Island Weir to Stinson and Empire Weirs)	Levels exceeded Tulare Basin Plan EC objective of 300 µmhos/cm.
Source: (State Water Board, 2015)		

Certain water bodies in the Delta have been listed on the state's CWA section 303(d) list of impaired water bodies due to exceedance of water quality objectives associated with salinity parameters (i.e., EC, TDS), and are listed in Table 2-7.

Table 2 - 7. Clean Water Act Section 303(d) Listings for Salinity-related Parameters and Metals with Secondary MCLs in the Delta Region Associated with Municipal and Domestic Supply (MUN) and Agricultural (AGR) Beneficial Use Impairments

Pollutant	Water Body	Rationale for Listing
Chloride	Tom Paine Slough (in Delta Waterways, southern portion)	Concentrations exceeded chloride secondary MCL of 250 mg/L.
Electrical Conductivity (EC) / Specific Conductivity (SC) / Total Dissolved Solids (TDS)	Delta waterways (export area, northwestern portion, southern portion, western portion)	Exceedance of agricultural supply EC objectives
	Kellogg Creek (Los Vaqueros Reservoir to Discovery Bay; partly in Delta Waterways, western portion)	Levels exceeded TDS secondary MCL of 500 mg/L and SC secondary MCL of 900 umhos/cm.
	Mountain House Creek (from Altamont Pass to Old River, Alameda and San Joaquin Counties; partly in Delta Waterways, southern portion)	Levels exceeded TDS secondary MCL of 500 mg/L and SC secondary MCL of 900 umhos/cm.
	Old River (San Joaquin River to Delta-Mendota Canal; in Delta Waterways, southern portion)	Levels exceeded SC secondary MCL of 900 umhos/cm and southern Delta EC objectives for agricultural beneficial uses (0.7/1.0 mmhos/cm). [a]
	Sand Creek (tributary to Marsh Creek, Contra Costa County; partly in Delta Waterways, western portion)	Levels exceeded TDS secondary MCL of 500 mg/L and SC secondary MCL of 900 umhos/cm.

Notes: [a] Listing is for exceedance of Bay-Delta Water Quality Control Plan EC objectives for the Southern Delta, which are 30-day running average mean daily EC of 0.7 mmhos/cm for April 1 through August 30 and 1.0 mmhos/cm for September 1 through March 31.

2.1.2.2 *Groundwater Quality*

Groundwater

Groundwater quality analyses and mapping using high-resolution techniques were prepared for CV-SALTS SNMP (2016) and are described in the Updated Groundwater Quality Analysis and High Resolution Mapping (Luhdorff & Scalmanini and Larry Walker Associates, 2016a). The high resolution work provides a detailed look at groundwater quality conditions for nitrate and TDS throughout the Central Valley floor and groundwater basins/sub-basins within the Central Valley Region, including those located outside of the Central Valley floor. Summary tables and figures of the groundwater quality information, including aggregate (volume-weighted) nitrate and TDS concentrations by sub-basin are contained in Appendix B. General groundwater quality information is provided below.

Groundwater quality in the Sacramento River Hydrologic Region is considered, generally, to be excellent. There are natural water quality impairments at the north end of the Sacramento Valley and along the margins of the valley and around the Sutter Buttes, where marine sedimentary rocks containing brackish to saline water are near the surface, as well as other localized areas with natural saline upwelling that are contributing to high TDS in these areas. Human-induced impairments are generally associated with individual septic system development or other activities in shallow unconfined portions of aquifers or in fractured hard rock areas where insufficient soil depths are available to properly leach effluent before it reaches the local groundwater supply. Manganese and iron have been found in wells at concentrations greater than secondary MCLs (California Department of Water Resources, 2003). Elevated nitrate has also been found in localized areas.

In general, groundwater constituents of concern in the San Joaquin River hydrologic area include TDS, nitrate, boron, and chloride. Areas of high TDS content are primarily along the west side of the San Joaquin Valley and in the trough of the valley. The high TDS on the west side is primarily due to recharge of streamflow originating from marine sediments in the Coast Ranges. The high TDS in the valley trough is primarily associated with the concentration of salts due to evaporation and poor drainage. Nitrate may occur naturally or as a result of disposal of human and animal waste products and as a result of fertilizer application. Boron and chloride are likely a result of concentration from evaporation near the valley trough. Aluminum, manganese and iron have been found in wells at concentrations greater than secondary MCLs (California Department of Water Resources, 2003).

East side waters in the Tulare Lake Basin originate from the Sierra Nevada and reflect their source in the crystalline granitic rocks. Due to mineralogy, TDS concentrations are low, in the 100–300 mg/L range. West side waters originate from marine sediments, which are high in sulfate and sodium. TDS concentrations can be >1,000 mg/L. Because groundwater in the valley originates from the west side and east side, water quality is variable. The organic-rich fine grained sediments in this area can result in reducing conditions that cause metals such as iron and manganese to become soluble, sometimes in excess of drinking water MCLs. (Sholes 2006, California Department of Water Resources 2003) Aluminum has been detected in wells above drinking water MCLs as well as arsenic and hexavalent chromium in some of the deeper portions of the aquifer (California Department of Water Resources, 2003).

High Resolution Mapping Results

The CV-SALTS SNMP (2016) summarizes detailed information on salinity and nitrate concentrations in surface water and groundwater basins within the Central Valley. The

information includes source identification, ambient concentrations, available assimilative capacity, trends in water quality and fate and transport of salt and nitrate between sub-basins. Groundwater quality analyses and mapping using high resolution techniques were prepared as part of the Updated Groundwater Quality Analysis and High Resolution Mapping for Central Valley Salt and Nitrate Management Plan (Luhdorff & Scalmanini and Larry Walker Associates, 2016a). The high resolution work provides a detailed look at groundwater quality conditions throughout the Central Valley Floor and groundwater basins/sub-basins within Region 5, including those located outside of the Central Valley Floor.

The high resolution work includes the following analysis at the basin/sub-basin scale:

- Basic statistical analyses, including minimum, maximum, average, and median values for nitrate and TDS, for the 41 groundwater basins/sub-basins overlying the Central Valley Floor and for the other 85 basins/sub-basins in Region 5 that are located or partially located outside the Central Valley Floor.
- High resolution ambient groundwater quality maps (nitrate and TDS) for the Central Valley Floor (for three defined zones: Upper, Lower, and Production Zones) and for basins/sub-basins outside the Central Valley where sufficient data are available;
- High resolution assimilative capacity maps (nitrate and TDS) for the Central Valley Floor (Upper, Lower, and Production Zones) and for basins/sub-basins outside the Central Valley where sufficient data are available;
- Groundwater quality trends for the Central Valley Floor in the upper, lower, and production zones for both nitrate and TDS; and
- Maps featuring predicted future groundwater quality conditions for the 10, 20, and 50 year time frame.

As noted, the assessment focused on describing salt and nitrate conditions in the “upper,” “lower,” and “production” zones within each groundwater basin/sub-basin. The upper zone represents the majority of domestic well users who typically draw their supplies from shallower portions of the aquifer than agricultural, municipal or industrial users. The production zone represents the area of the aquifer screened for use from the surface of the groundwater to the lowest screened level. The only exception is if the area under consideration contains the confining Corcoran Clay layer. The top of the Corcoran Clay layer would be considered the bottom of the production zone. The Lower Zone is the area of the Production Zone below the Upper Zone. Figures 2-4 and 2-5 illustrate the vertical relationship of these zones relative to well types and the Central Valley’s Corcoran Clay layer, respectively.

Figure 2 - 4. Schematic of Aquifer System (Where Corcoran Clay Absent)

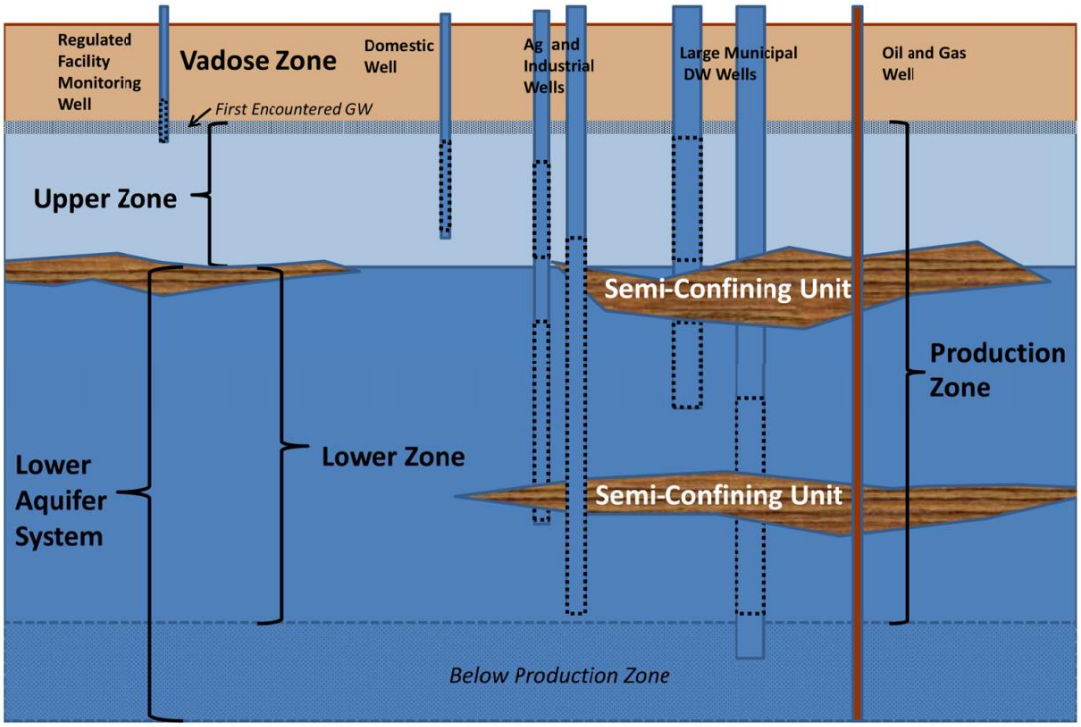
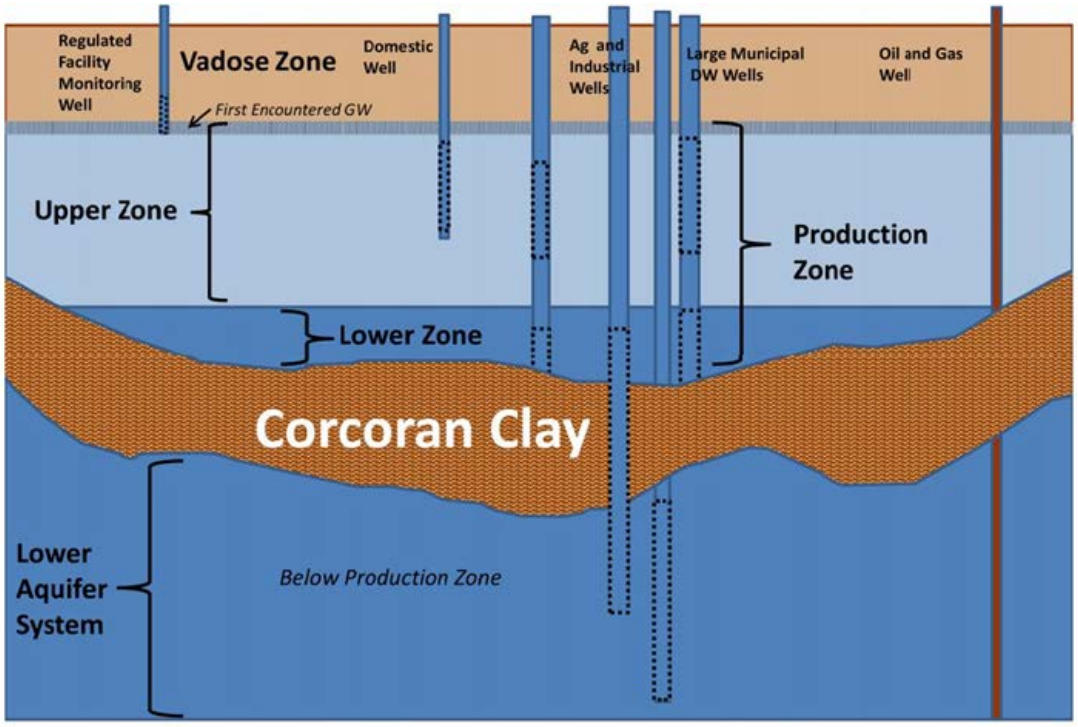


Figure 2 - 5. Schematic of Aquifer System (Where Corcoran Clay Layer Present)



The CV-SALTS database provided the water quality data used to support the various water quality analyses completed to describe salt and nitrate conditions in Central Valley Region. One square mile grid data were aggregated for each groundwater basin/sub-basin to describe volume-weighted salt and nitrate concentrations and estimate volume-weighted assimilative capacity.

Aggregate findings by groundwater basin/sub-basin are provided in Appendix B. Summary findings and resulting issues are discussed below.

Salt

Accumulation in the soil profile and groundwater are an ongoing concern. Many areas within the Central Valley have had historically elevated salinity concentrations due to the hydro-geologic nature of the basin, where water moved to low lying areas and continually evaporated over millions of years. Along the west side of the Central Valley, the water also moved through sedimentary marine layers with naturally elevated salt concentrations. When compounded by an extensive, impermeable clay lens (Corcoran Clay) that covers approximately half of the valley floor in the San Joaquin and Tulare Lake Basins (Figure 2-6), extensive areas either historically contained or are poised for elevated salinity concentrations.

Consumptive use through irrigation practices can also lead to accumulation of salt in the soil profile and, in turn, reduce productivity unless sufficient leaching is applied to move excess salt below the root zone. Due to the accumulation in the soil profile, 1.5 million acres of irrigated land has been identified as salinity-impaired, and a quarter million acres have been taken out of production (California Department of Water Resources communication, Jose Faria, Fresno Office). Accumulation in the groundwater is also widespread. Figure 2-7 depicts ranges of salinity concentrations in groundwater as measured in the production zone (area of the aquifer utilized by domestic, municipal, agricultural and industrial supply wells).

Concentrations of TDS below 450 mg/L are not anticipated to impact irrigated agriculture while concentrations above 2,000 mg/l are anticipated to have a severe impact (Ayers & Westcot, 1985). For municipal and domestic supply, TDS concentrations at or below 500 mg/L are recommended with an upper range of 1,000 mg/L and a short-term range up to 1,500 mg/L to protect human welfare (such as limiting corrosion of pipes) and provide for consumer acceptance. As noted in Figure 2-7, broad areas along the western side of the valley floor of the San Joaquin River and Tulare Lake Basins and more limited areas within the Sacramento River Basin have groundwater production zone concentrations exceeding 500 mg/L TDS.

Nitrate

Excessive nitrates are a significant issue for public health and safety. In some areas, high nitrate concentrations have rendered drinking water supplies unusable. Numerous communities in the Central Valley have nitrate levels in groundwater supplies that exceed the maximum contamination level of 10 mg/L nitrate as nitrogen (Central Valley Water Board, 2010). Figure 2-8 identifies ranges in nitrate concentration in the upper zone of groundwater aquifers on the floor of the Central Valley. The upper zone represents the majority of domestic well users who typically draw their supply from shallower portions of an aquifer than irrigation, industrial or municipal users. Unlike salinity, elevated levels of nitrate occur toward the eastside and central portions of the valley floor rather than along the west side. Similar to salinity, the areas of concern are broadly dispersed. Sources of nitrate include farming practices that have occurred for generations as well as wastewater treatment plants and food processing waste discharge,

onsite waste disposal systems (septic systems), urban land use, corrals and lagoons. The studies found that while current management actions are addressing sources of nitrates from farming practices and other activities, past activities have left legacy contamination in the groundwater as well as potential future contamination from the vadose zone (Harter, et al., 2012).

Figure 2 - 6. Extent of the Corcoran Clay in the Central Valley Floor

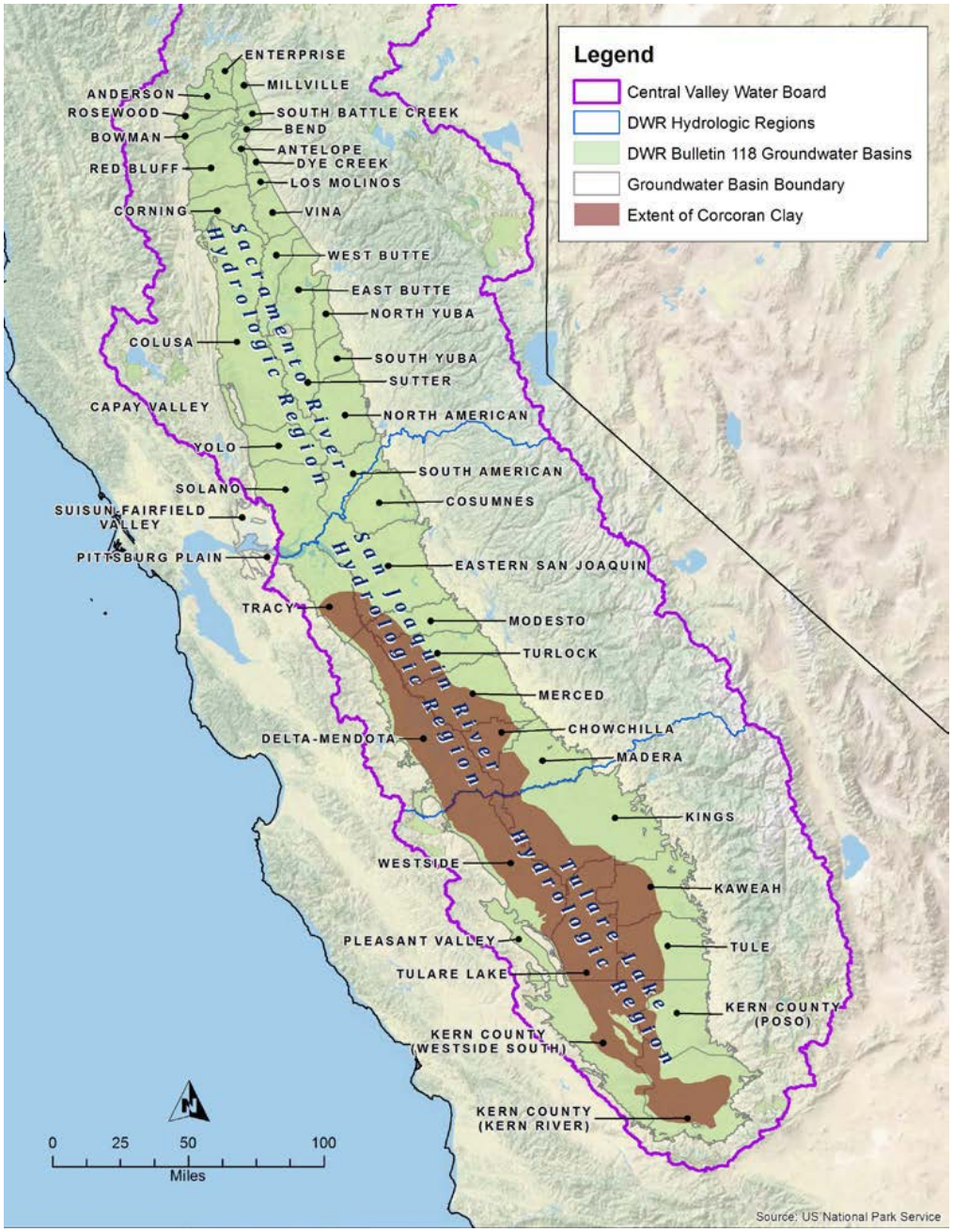


Figure 2 - 7. Ambient Groundwater Quality for Production Zone (TDS) mg/L

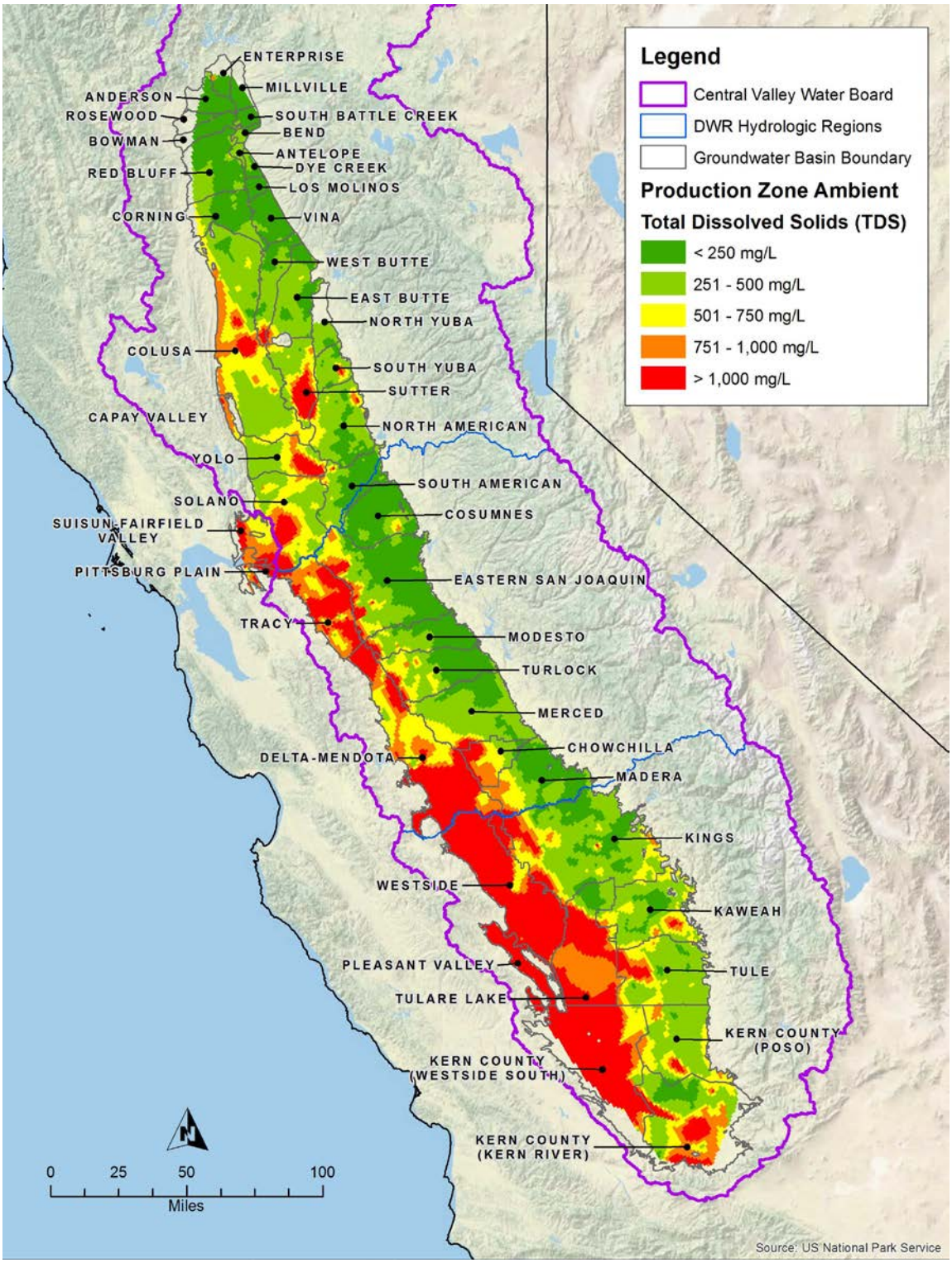
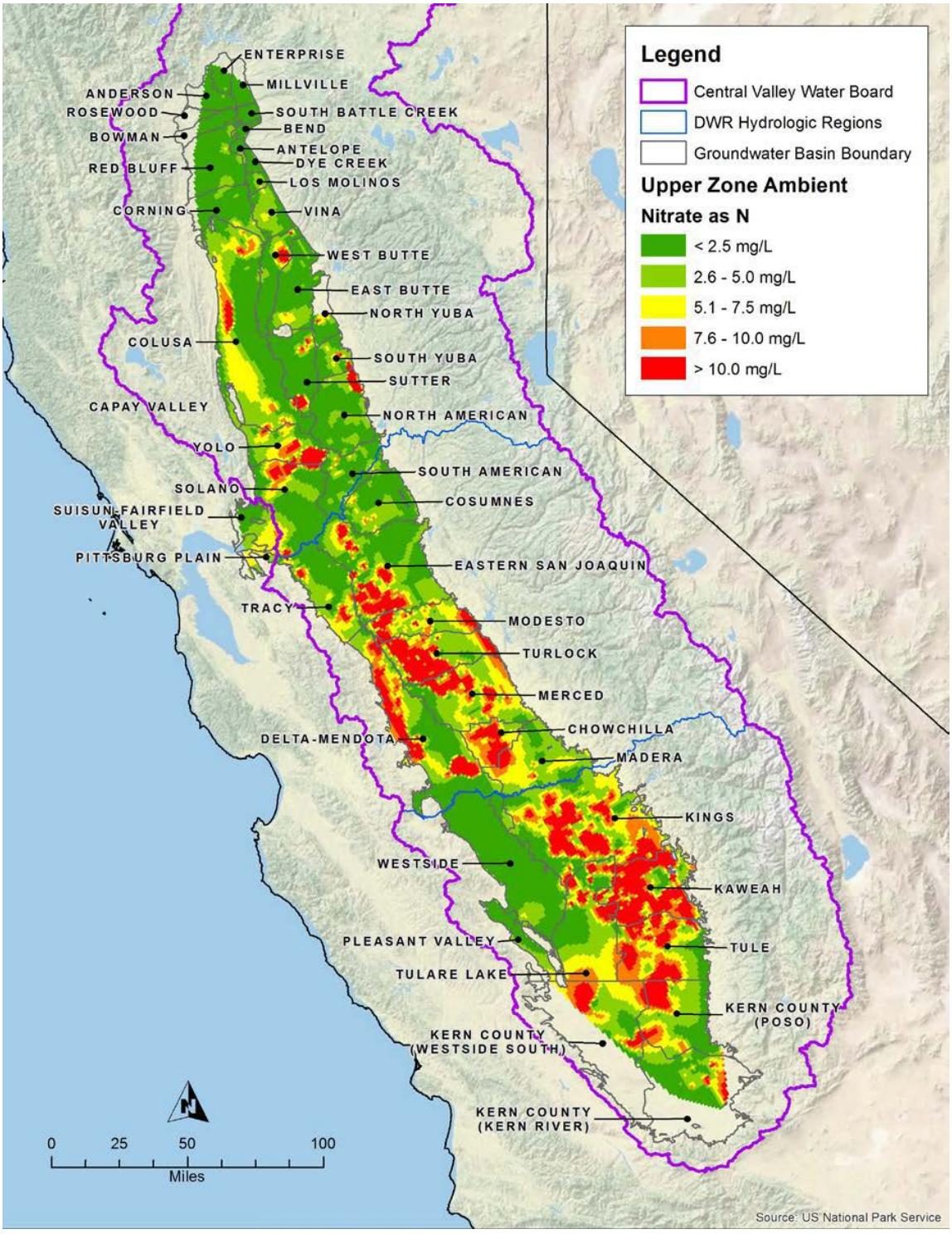


Figure 2 - 8. Ambient Conditions for Nitrate (mg/L as N) in the Upper Zone of Groundwater Basins/Subbasins in the Central Valley Floor



2.2 REGULATORY SETTING

Current Regulatory Authority and Process
This section describes key elements in the current Central Valley Water Quality Control Plans that govern the regulation of salt and nitrate discharges to surface waters and groundwater including designation of beneficial uses, water quality objectives to protect those uses and implementation strategies and/or policies related to salt and/or nitrate. Specific provisions for regulation of wastewater discharges to surface waters and groundwater from municipal, industrial, stormwater, agriculture and dairy sources are provided in Appendix C.

2.2.1 Central Valley Water Board Water Quality Control Plans (Basin Plans)

The Central Valley Water Board has adopted two water quality control plans: 1) *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (Sacramento-San Joaquin Basin Plan) and *Water Quality Control Plan for the Tulare Lake Basin* (Tulare Basin Plan; collectively Basin Plans). The Basin Plans define beneficial uses, water quality objectives, implementation programs, and surveillance and monitoring programs. Within the Sacramento River, San Joaquin River, and Tulare Lake Basins, unless otherwise designated by the Central Valley Water Board, all groundwaters in the Region are considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO). Further, the Basin Plans specifically identify the designated beneficial uses for major surface water bodies in the Region in a table of beneficial uses (Table II-1 of the Basin Plans). Unless specifically identified in the Basin Plans, all surface waters in the Region are designated with the MUN beneficial use. The Basin Plans identify water quality objectives that are applicable based on the designated beneficial uses of surface water bodies and groundwater or by geographic area.

MUN Objectives and Related Regulatory Requirements

The Basin Plans define MUN as “uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.”.

Water quality objectives applicable when MUN is a designated beneficial use include the Chemical Constituents objective, which states, in part:

> “At a minimum, water[s] 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.” [The final sentence is included only in the Chemical Constituents objective for inland surface waters.]

The primary MCL specified for nitrate specified in Title 22 of the California Code of Regulations (Title 22) Table 64431-A is 10 mg/L-N; there is no secondary MCL.

The above-referenced secondary MCL tables, Tables 64449-A and 64449-B are provided in Table 2-8 and Table 2-9, respectively. These tables list the chemical constituents along with

their respective MCLs for Table 64449-A or "Recommended", "Upper", and "Short Term" levels for Table 64449-B.

Table 2 - 8. Secondary Maximum Contaminant Levels (Consumer Acceptance Contaminant Levels) in California Code of Regulations Table 64449-A

Constituent	Maximum Contaminant Level
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-tert-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 2 - 9. Secondary Maximum Contaminant Levels (Consumer Acceptance Contaminant Levels) in California Code of Regulations Table 64449-B

Constituent (units)	Recommended	Upper	Short Term
Total Dissolved Solids (TDS) (mg/L) or Specific Conductance, µS/cm1	500	1,000	1,500
	900	1,600	2,200
Chloride (mg/L)	250	500	600
Sulfate (mg/L)	250	500	600
Notes: For purposes of implementation in WDRs, the MCL values for specific conductance are expressed as electrical conductivity.			

While the Title 22 section 64449 tables are referenced in the Basin Plans, the associated text contained in sections 64449 and 64449.2, with emphasis on 64449 (d) and (e), which provides context for the listed values, is not currently included or referenced in the Basin Plans. Consequently, neither of the Basin Plans provides guidance or policy on implementation when the Central Valley Water Board is developing permit requirements to implement secondary MCL-based objectives.

The Chemical Constituents also acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations, the Basin Plans provide no implementation provisions for this text.

AGR Objectives and Related Regulatory Requirements

The Basin Plans define the AGR beneficial use as follows:

- Sacramento-San Joaquin Basin Plan: "Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation (including leaching of salts), stock watering, or support of vegetation for range grazing." (Central Valley Water Board, 2016)
- Tulare Basin Plan: "Uses of water for farming, horticulture, or ranching, including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing." (Central Valley Water Board, 2015)

The one difference between the two is the inclusion of the phrase "(including leaching of salts)" in the Sacramento-San Joaquin Basin Plan definition.

The Basin Plans establish criteria for making exceptions to the presumptive application of the AGR beneficial use to groundwater. Of relevance to the proposed amendments is the exception to the AGR beneficial use where, "There is pollution, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for agricultural use using either Best Management Practices or best economically achievable treatment practices."

Salinity-related water quality objectives specified in the Sacramento-San Joaquin Basin Plan for protection of the AGR beneficial use in groundwater consist only of the narrative Chemical Constituents objective, which states, "Groundwaters shall not contain chemical constituents in concentrations that adversely affect beneficial uses." The Tulare Basin Plan includes the same narrative Chemical Constituents objective but also establishes a policy that allows for controlling the rate of increase of salinity by regulating both the maximum increase in salinity concentrations attributable to consumptive use ("maximum EC shall not exceed the quality of the source water plus 500 µmhos/cm") and the maximum average annual increase in groundwater salinity on a basin-specific basis:

- "All groundwaters shall be maintained as close to natural concentrations of dissolved matter as is reasonable considering careful use and management of water resources."
- "No proven means exist at present that will allow ongoing human activity in the Basin and maintain groundwater salinity at current levels throughout the Basin. Accordingly, the water quality objectives for groundwater salinity control the rate of increase."
- "The maximum average annual increase in salinity measured as electrical conductivity shall not exceed the values specified in Table III-4 for each hydrographic unit shown on Figure III-1."
- "The average annual increase in electrical conductivity will be determined from monitoring data by calculation of a cumulative average annual increase over a 5-year period."

The maximum average increase in EC allowed varies by hydrographic unit, ranging from 1 microseimen per centimeter (µS/cm) to 6 µS/cm in the west side (north and south) and Tule River and Pose hydrographic units, respectively.

Additional Salinity-Related Objectives for Inland Surface Waters

In addition to the above described EC and TDS objectives for protection of MUN and AGR beneficial uses, both Basin Plans contain water quality objectives for EC and TDS for inland surface waters that are not tied to a named beneficial use, but were developed to protect the most sensitive beneficial use at the time of development.

The Sacramento-San Joaquin Basin Plan, Table III-3, lists site-specific salinity objectives for inland surface waters for:

- EC for portions of the Sacramento River, Feather River (including North Fork and Middle Fork), and San Joaquin River, expressed as a 50^{th} percentile and 90^{th} percentile for the Sacramento River, and a 90^{th} percentile for the Feather River and San Joaquin River; and
- TDS for the American River (including North Fork, Middle Fork, and South Fork) and Folsom Lake, expressed as a 90^{th} percentile.

To the extent of any conflict with the Chemical Constituents objectives, the more stringent shall apply.

The Tulare Basin Plan contains a general salinity objective, which states, "Waters shall be maintained as close to natural concentrations of dissolved matter as is reasonable considering careful use of the water resources." In addition, the Tulare Basin Plan contains site-specific objectives for EC for specific locations on the Kings, Kaweah, Tule, and Kern rivers that are expressed as maximum, 90^{th} percentile, median, and mean values.

San Joaquin River Salt and Boron Control Program

The goal of the San Joaquin River 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. The San Joaquin River Salt and Boron Control Program has three specific purposes (Central Valley Water Board, 2004):

1. "To identify and quantify the sources of salt and boron loading to the river;
2. To determine the load reductions necessary to achieve attainment of applicable water quality objectives in order to protect the beneficial uses of water; and
3. To allocate salt and boron loads to the various sources and source areas within the watershed which, once implemented, will result in attainment of applicable water quality objectives."

To account for differences in salt and boron loading between different geographic areas, the watershed was divided into seven component subareas so that salinity management practices could be site specific. Using existing salt and boron water quality objectives for the Lower San Joaquin River at the Airport Way Bridge near Vernalis as a numeric target (Table 2-10), the TMDL established waste load allocations for point sources and load allocations for nonpoint sources in the Lower San Joaquin River watershed. A linkage analysis of electrical conductivity and boron showed that compliance with the salt load allocations is expected to result in attainment of the boron objectives. The Central Valley Water Board is to use waivers of WDRs or WDRs to apportion load allocations to the seven component subareas. In lieu of strict salt load allocations under WDRs, dischargers may participate in a Central Valley Water Board-

approved Real Time Salinity Management Program. Participation in an approved Real Time Salinity Management Program and attainment of permit requirements at Vernalis constitutes compliance. The Central Valley Water Board approved a Real Time Salinity Management Program in December 2014.

Table 2 - 10. Salt Water Quality Objectives at Vernalis and Boron Water Quality Objectives for the Lower San Joaquin River Between the Mouth of the Merced River and Vernalis

Parameter	Season	
	Irrigation Season (Apr 1 – Aug 31 salinity) (Mar 15 – Sep 15 boron)	Non Irrigation (Sep–Mar 31 salinity) (Sept 16–Mar 14 boron)
Salinity (EC) [a]	700 µS/cm	1,000 µS/cm
Boron [b]	0.8 mg/L (2.0 monthly maximum)	1.0 mg/L (2.6 monthly maximum)
Boron Critically Dry Water Years	1.3 mg/L	1.3 mg/L
Notes: [a] Expressed as maximum 30-day running average. [b] Expressed as monthly mean.		

Salinity water quality objectives for the Lower San Joaquin River upstream of Vernalis to the mouth of the Merced River are being addressed through the second phase of the Control Program's implementation. Salinity objectives were adopted by the Central Valley Water Board through Resolution R5-2017-0062 and approved by the State Water Board through Resolution No. 2018-0002 on 9 January 2018. The upstream salinity objectives include interim salinity objectives to be applied during extended dry periods. Specific requirements are noted in Table 2-11 and narratively below. The amendment will be fully effective after USEPA approval. Development of the upstream salinity objectives served as a case study to determine guidelines for interpreting appropriate salinity concentrations when evaluating protection of AGR as well as the development of interim limits during extended dry periods.

Table 2 - 11. LSJR Reach 83 WQOs and Performance Goal (PG) for Seasonal and Water Year Considerations (µS/cm) during Non-Extended Dry Periods.

Water-Year Type	Irrigation Season		Non-irrigation Season
	March – June	July - September	October - February
Wet	**1,350 (PG)** & 1,550 (WQO)		1,550 (WQO)
Above Normal	**1,350 (PG)** & 1,550 (WQO)		1,550 (WQO)
Below Normal	**1,350 (PG)** & 1,550 (WQO)	1,550 (WQO)	
Dry	**1,350 (PG**) & 1,550 (WQO)	1,550 (WQO)	
Critical	1,550 (WQO)		

An Extended Dry Period definition was established using the State Water Board's San Joaquin Valley "60-20-20" Water Year Hydrologic Classification[29] included in revised Water Right Decision 1641 to assign a numeric indicator to a water-year type as follows (State Water Board, 2000):

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

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

- An Extended Dry Period shall begin when the sum of the current year's 60-20-20 indicator value and the previous two year's 60-20-20 indicator values total six (6) or less.
- An Extended Dry Period shall be deemed to exist for one water year (12 months) following a period with an indicator value total of six (6) or less.
- Interim limits during an Extended Dry Period are:
    - 2,200 uS/cm EC as an annual average to protect MUN
    - 2,470 uS/cm EC as a 30-day running average to protect AGR

Consideration of Natural Background Concentration

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

- The Tulare Basin Plan states, "The objectives of this plan do not require improvement over naturally occurring background concentrations."

- The Sacramento-San Joaquin Basin Plan states, "These objectives do not require improvement over naturally occurring background concentrations."

- Both Basin Plans include the following text within Chapter 4 of the Basin Plans (Policy

[29] The method for determining the San Joaquin Valley Water Year Hydrologic Classifications (e.g., critical, dry, below normal, above normal, wet) is defined in the SWRCB Revised Decision 1641, March 2000, Figure 2, page189. This method uses the best available estimate of the 60-20-20 San Joaquin Valley water year hydrologic classification at the 75% exceedance level using the best available data published in the California Department of Water Resources' ongoing Bulletin 120 series.

> 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.

The Tulare Basin Plan also includes specific salinity implementation provisions in Chapter 4 governing consumptive use and controlled degradation. In particular:

- 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…."

- For Discharges to Land "… maximum EC shall not exceed the EC of the source water plus 500 micromhos/cm."

- 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 groundwater salinity at current levels in the Basin."

San Francisco Bay/Sacramento-San Joaquin Delta Water Quality Control Plan

The *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (or Bay-Delta Plan) establishes water quality control measures that contribute to the protection of the beneficial uses of the Delta. As with other state water quality control plans, the Bay-Delta Plan identifies the beneficial uses to be protected, the water quality objectives for reasonable protection of the beneficial uses, and a program of implementation for achieving the water quality objectives. Elements of the Bay- Delta Plan include export-to-inflow ratios intended to reduce entrainment of fish at the export pumps, Delta Cross Channel gate closures, minimum Delta outflow requirements, and San Joaquin River salinity and flow standards. The Bay-Delta Plan contains specific numeric water quality objectives for chloride and EC at various locations in the Delta. Chloride objectives are for protection of municipal and industrial beneficial uses and EC objectives are protection of agricultural and fish and wildlife beneficial uses.

The Bay-Delta Plan includes water quality objectives for EC for the South Delta. The EC objectives are 30-day running average mean daily EC of 0.7 mmhos/cm for April 1 through August 30 and 1.0 mmhos/cm for September 1 through March 31. On 1 June 2011, the Superior Court for Sacramento County entered a judgment and peremptory writ of mandate in the matter of *City of Tracy v. State Water Resources Control Board* (Case No; 34-2009-8000-392-CU-WM-GDS), ruling that the South Delta salinity objectives shall not apply to the City of Tracy and other municipal dischargers in the South Delta area pending reconsideration of the South Delta salinity objectives under Water Code section 13241 and adoption of a proper program of implementation under Water Code section 13242 that includes municipal dischargers.

Policies and Regulatory Provisions Incorporated into the Basin Plans Related to Salt and Nitrate Management

The policies that have been incorporated into the Basin Plans are considered in detail in Section 6.0 Consistency with Laws, Plans and Policies.

Regulatory Provisions: Specific Requirements Regarding Salinity, Nitrate and Secondary MCL Parameters

A review of current regulatory provisions to govern wastewater discharges is provided in Appendix C. Special provisions related to salinity, nitrate and/or SMCL parameters are repeated below.

Surface Water

Municipal Wastewater

Most Central Valley wastewater NPDES permits include an effluent limitation for EC. The EC limitation is typically an annual average based on current performance. Water conservation and recent drought have led to reduced flows to municipal wastewater treatment plants, which in some cases have resulted in increasing concentrations of salinity-related parameters, such as EC. However, in many cases, the total load of salts discharged remains relatively constant.

Therefore, performance-based limitations may increase without resulting in any increase in load to the receiving water.

Municipalities also have a provision in their permits to develop and implement a salinity minimization and evaluation plan or salinity source control program to minimize salinity in effluent discharges.

Effluent limitations are also included for nitrate in some permits. Discharges found to have reasonable potential to cause or contribute to the exceedance of the primary MCL for nitrate in a receiving water designated as supporting the MUN beneficial use will be given an effluent limitation for nitrate set equal to the MCL of 10 mg/L-N, particularly where water bodies are considered impaired for nutrients.

In addition, non-salinity secondary MCL parameters (e.g., manganese, iron, and aluminum) that may be found at levels of concern in municipal wastewater also will be assigned effluent limitations. Turbidity is usually controlled through operational specifications or through a receiving water limit.

There are TMDLs for salt and boron applicable to the Lower San Joaquin River that also contain requirements for managing salts.

Industrial

Hatchery discharges to surface water have limitations included for EC and TDS based on each Basin Plan and groundwater limitations are specified for nitrate (10 mg/L-N) and TDS (500 mg/L).

Stormwater Municipal Permit

The technology-based standard for implementation of municipal storm water management programs to reduce pollutants in storm water is specified in Clean Water Act section 402(p)(3)(B)(iii), which requires that municipal stormwater permits " require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as

the Administrator or the State determines appropriate for the control of such pollutants." MEP is the cumulative effect of implementing, evaluating, and making corresponding changes to a variety of technically appropriate and economically feasible BMPs, ensuring that the most appropriate controls are implemented in the most effective manner. To achieve the MEP standard, municipalities must employ whatever BMPs are technically feasible and are not cost prohibitive.

The primary location for parameter-specific requirements is within the TMDL portion of the general permits. The permits include TMDLs that have been adopted by the Central Valley Water Board or USEPA for pollutant specific issues within water bodies or segments of water bodies in the Central Valley region. All permittees that are assigned a waste load allocation or identified as a responsible party where urban runoff is listed as the source must comply with the requirements as specified within the permit. Currently, there are no adopted TMDLs for salinity, nitrate or secondary MCL parameters that are applicable to MS4s in the Central Valley. The Lower San Joaquin River Salt and Boron TMDL concluded that stormwater contributes negligible salinity loads to the Lower San Joaquin River; less than one quarter of one percent of the river's total salt load as measured at the Airport Way Bridge near Vernalis (Central Valley Regional Water Quality Control Board 2004).

Stormwater Industrial General Permit (IGP)

While the IGP monitoring program includes some salinity, nitrate, or secondary MCL-related analytical parameters based on the type of industrial facility, the IGP does not contain specific programs or studies directed at these parameters. The following IGP requirements would trigger monitoring for salinity, nitrate, or secondary MCL-related analytical parameters:

- Facilities subject to additional analytical parameters identified in IGP Table 1;
- Facilities that identify these parameters on a facility-specific basis that serve as indicators of the presence of all industrial pollutants identified in the pollutant source assessment;
- Facilities that identify these parameters associated with the industrial source assessment related to receiving waters with CWA section 303(d) listed impairments or approved TMDLs; and
- Additional parameters required by the Central Valley Water Board.

These parameters may also be identified within the TMDL portion of the IGP. The IGP includes TMDLs that have been adopted by the applicable regional water quality control board or USEPA for pollutant specific issues within water bodies or segments of water bodies throughout the state that are applicable to industrial dischargers. Currently, there are no TMDLs listed for Region 5. The State Water Board is in the process of amending the IGP to incorporate TMDL-specific requirements.

Irrigated Agriculture

The Irrigated Lands Regulatory Program (ILRP) was created to address discharge of wastes (e.g., pesticides, nitrate, turbidity, etc.) from commercially irrigated lands. The goals of the ILRP are to protect surface water and groundwater and to reduce impacts of irrigated agricultural discharges to waters of the state. This is done by issuing WDRs directly to growers or through a coalition-based permitting program. The ILRP's WDRs contain conditions requiring water quality

monitoring of receiving waters and corrective actions when impairments are found. Options for regulatory coverage include joining a coalition, obtaining coverage as an individual grower under general WDRs, or obtaining an individual permit. All growers are required to submit a farm evaluation, either to their coalition or the Central Valley Water Board. The farm evaluation helps determine what farm practices are currently being implemented and whether any improvements can be made to protect water quality. Growers in areas where groundwater is susceptible to pollution or is known to be impacted by nitrate or other constituents associated with agriculture are required to have a certified nitrogen management plan. The number of acres of agricultural land enrolled in the ILRP is about six million acres and the number of growers enrolled is approximately 30,000.

Receiving water limitations are applied to surface water as narrative objectives stating that wastes discharged from coalition member operations shall not cause or contribute to an exceedance of a water quality objective. Trigger limits are established for constituents of concern. If the trigger is exceeded two or more times in a three-year period at a given sampling location, then a surface water quality management plan must be developed and implemented. A time schedule for addressing the water quality problem is required to be included in the surface water quality management plan and may not exceed ten years.

Dairies

Dairies in the Central Valley are regulated by General Order R5-2013-0122 that include requirements for testing wells, applying fertilizer and manure to crops at agronomic rates, and meeting standards for properly storing and handling manure to minimize leaching and runoff. Requirements cover the facilities where animals are housed, waste facilities, and associated croplands. Discharges of dairy wastes to surface waters is prohibited under the General Order.

Groundwater

Municipal Wastewater

Central Valley WDRs generally include effluent limitations for TDS or EC, and nitrate. In addition, if necessary, effluent limitations are established on a case-by-case basis for other constituents with secondary MCLs. Groundwater limitations are also established such that effluent will not cause an exceedance of a water quality objective or MCL in the groundwater. In addition, specific wells may be designated for determining compliance with groundwater limitations.

Effluent limitations are often included for nitrate or total nitrogen. In the Tulare Lake Basin, effluent limitations for EC are set equal to 1,000 µmhos/cm or set equal to source water EC concentration plus 500 µmhos/cm, whichever is more stringent. Effluent limitations may also be set for secondary MCLs to support the MUN beneficial use. In addition, effluent limitations for salts (e.g., sodium, chloride, boron) may be established to protect the AGR beneficial use.

Industrial

Effluent limitations for TDS are established as performance-based annual average limitations. For dischargers with levels of nitrogen that are a concern, nitrogen limitations are generally expressed as the nitrogen mass loadings that will not exceed the agronomic rate when applied to land application areas. Groundwater limitations are set depending on the ambient groundwater quality. Solids, salinity or nitrogen management plans may be required. Other

forms of requiring assessments of salt and nitrate include biochemical oxygen demand and nitrogen application and irrigation management reports and/or groundwater limitation compliance assessment plans. Monitoring for TDS, nitrate, MCLs and standard minerals in effluent and groundwater is also generally required.

Oil Field Program

The Oil Field Program regulates four primary oil field-related activities: well development drilling mud disposal, production well produced water disposal and reuse, underground injection control (UIC) practices, and well stimulation practices under Senate Bill 4 (or SB 4). Permits cover discharges of drilling muds, discharges of produced wastewater, including, but not limited to, discharges to ponds, discharges to roads for dust control, irrigation with produced water; and discharges of solids mixed with clean soil as road mix and berm material. These activities are generally regulated under individual and general waste discharge requirements (WDRs). The activities are regulated based on the quality of the discharged wastewater and the quality of the receiving waters, in most cases, groundwater. Unpermitted discharges, spills, and other illicit discharges are subject to enforcement actions by the Board.

The federal Safe Drinking Water Act (SDWA) regulates the injection of wastes associated with oil and natural gas operations into underground formations through Class II injection wells, referred to as the UIC Program. Oil field wastes may only be injected into aquifers that are not classified as underground sources of drinking water under the SDWA. The California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) has regulatory primacy over the UIC program. The Central Valley Water Board and State Water Board coordinate with DOGGR on aquifer exemption applications and UIC project approvals to ensure the protection of water quality.

DOGGR and the Central Valley Water Board and State Water Board also coordinate on the regulation of well stimulation activities, including hydraulic fracturing, pursuant to SB 4 statutory authority. SB 4 requires, as of July 2015, that groundwater monitoring or an exclusion from monitoring must be in place prior to well stimulation. Staff review well stimulation applications, proposed monitoring plans, and proposed groundwater monitoring exclusions to ensure that well stimulation treatments and activities will not adversely affect water quality

Irrigated Agriculture

The WDRs require each member to develop a farm-specific nitrogen management plan. There are no specific requirements for salts or other constituents regulated by secondary MCLs.

Triggers have been established for TDS (450 mg/L for the East San Joaquin Watershed Coalition and 125 mg/L for the Sacramento River Watershed Coalition) and nitrate (10 mg/L-N for the East San Joaquin Watershed Coalition) as stated in the monitoring and reporting program. If the trigger is exceeded, then a surface water quality management plan or groundwater quality management plan must be developed. Depending on the location or region, triggers are also established for other constituents with secondary MCLs. The WDRs also note that actions associated with achieving compliance with water quality objectives for salts and nitrate should be coordinated with the policies and actions of CV-SALTS.

Dairies

Groundwater limitations are narrative, and state that the discharge of waste at existing milk cow dairies shall not cause the underlying groundwater to exceed water quality objectives, unreasonably affect beneficial uses, or cause a condition of pollution or nuisance. The General Order contains requirements associated with the management of nutrients, solids and salinity. Milk cow dairies regulated under the General Order are currently under a time schedule under which they are collectively evaluating the effectiveness of their management practices. After the evaluation is complete, dairies regulated under the General Order will be required to upgrade their management practices (if such practices are found not to be protective of underlying groundwater) on a time schedule that is as short as practicable, but that shall not extend beyond 2029.

2.3 Salt and Nitrate Issues Identified and Constraints Under Current Regulatory Framework

Salinity Issues

Salt moves with water and in the highly modified Central Valley, water from the Sacramento and San Joaquin River Basins travels to the Sacramento-San Joaquin Delta where it is exported to both the San Joaquin River and Tulare Lake Basins as well as to the Central Coast and Southern California (Figure 2-9). Water imported from the Sacramento-San Joaquin Delta brings an average of 250 tons of salt a day into the San Joaquin Valley via the State and Federal water project canals. With limited or no outlet to the ocean, more salt is being imported into the San Joaquin Valley than is being exported, with estimates that approximately 2 million tons of salt accumulate in the San Joaquin Valley every year (Central Valley Water Board, 2006). Salts are conservative, so when water is consumed through use, the majority of its salt load remains at or near the site of consumption. When water is reused, salinity increases as each use subjects the water to evaporation. Climate change is anticipated to exacerbate increasing salinity concentrations, as there is a reduction in freshwater dilution flows and increased reuse and conservation of available supplies.

Two major issues must be addressed with salt management: near-term impacts from elevated concentrations, and, long-term impacts from displacing large loads of salt into areas where they can accumulate – the soil profile and ground water. Elevated concentrations impact beneficial uses of the water body in question. Two beneficial uses sensitive to elevated salinity concentrations include agricultural irrigation and stock watering supply (AGR) and municipal and domestic supply (MUN). Select species of fish (green and white sturgeon as well as striped bass) are also sensitive to elevated salinity concentrations, especially during spawning (Klimley, et al., 2015). Fifty-one Central Valley surface water bodies were identified as impaired by salinity in the 2014-2016 Draft Integrated Report with the majority of those water bodies located in the San Joaquin River Basin (State Water Board, 2017).

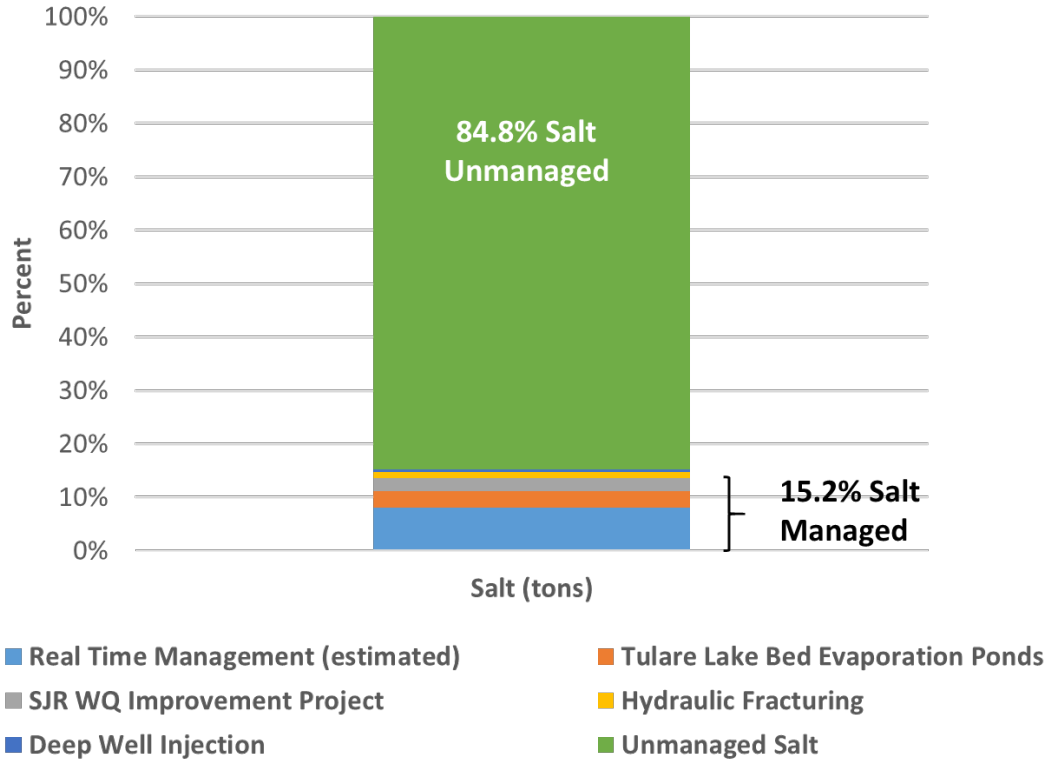
Since salt is conservative, once the groundwater concentrations are elevated, the only means of reducing the concentrations is pumping, removing the brine and re-injecting the treated water, or providing alternative freshwater supplies (such as through stormwater recapture) to dilute the elevated levels.

The CV-SALTS initiative conducted phased studies as part of the Strategic Salt Accumulation and Land Transport Study (CDM Smith, 2013) (CDM Smith, 2014) (CDM Smith, 2016b). The three phases: 1) identified and characterized existing salt accumulation study areas; 2)

developed potential salt management strategies; and 3) evaluated potential salt disposal alternatives to identify acceptable alternatives for future management. The conclusions of the studies noted, in part, that maximizing current management, treatment and disposal options such as deep well injection, utilizing available assimilative capacity, and reducing anthropogenic sources, would only address approximately 15% of the salt load in the identified salt accumulation study areas such as the westside of the San Joaquin River Basin and Tulare Lake Bed. Unless specific changes were made to the overall infrastructure of the Central Valley to allow movement of salts away from salt sensitive areas and eventually out of the valley, roughly 85% of the accumulating salt would continue to remain unmanaged with continued impacts to beneficial uses (Figure 2-10).

Figure 2 - 9. Central Valley Surface Water Flows

Figure 2 - 10. Bar Graph of Managed/Unmanaged Salt



Nitrate Issues

The CV-SALTS initiative conducted a Nitrate Implementation Measures Study (CDM Smith, 2016a) to evaluate means of reducing current ambient nitrate groundwater concentrations to protect and restore beneficial uses. The NIMS effort broadly evaluated alternatives for providing safe drinking water supplies to impacted groundwater users as well as alternatives to restore groundwater basins utilizing targets of 4 mg/L, 5 mg/L, 8 mg/L and 10 mg/L nitrate as nitrogen. The alternatives evaluated to restore groundwater basins and associated their associated costs are listed in Table 2-12. The 10 mg/L nitrate as nitrogen is the current maximum contaminant level to protect drinking water supplies. A pilot study was conducted within a 200-square mile irrigation district that had groundwater nitrate concentrations exceeding drinking water standards and impacting municipal and domestic supplies. The study estimated both timelines to meet targets within the groundwater basin as well as costs for restoration and cost for providing safe drinking water. Two broad scenarios (with several sub-scenarios using different assumptions for existing concentrations and pumping rates) were evaluated: pump, treat and reinject; and pump, treat and serve to meet potable demands. Based on initial results, the pump, treat, and serve sub-scenarios took longer to reach a performance target of 10 mg/L than the pump, treat and reinject scenarios (121 years vs 37 to 73 years). The pump, treat and serve options did provide treated water to meet potable demand and had significantly lower costs than the re-inject alternative, with an annual cost ranging from $2.2M to $8.7M as opposed to $5.9M to $14.2M.

Table 2 - 12. Concept Level Costs for Pump and Treat for Various Scenarios

Scenario	Treatment Type	Groundwater Treated (MGD)	Time to Reach Performance Target of 10 mg/L (years)[1]	Capital Low ($M)	Capital High ($M)	O&M Low ($M)	O&M High ($M)	Equivalent Annual Costs Low ($M)	Equivalent Annual Costs High ($M)
Scenario 1a	Reverse Osmosis	13.58	73	$106.9	$106.9	$8.0	$8.0	$14.2	$14.2
	Ion Exchange			$70.2	$87.4	$1.8	$4.3	$5.9	$9.3
	Biological Denitrification			$82.1	$87.8	$3.6	$4.6	$8.4	$9.7
Scenario 1b	Reverse Osmosis	27.16	37	$187.5	$187.5	$15.9	$15.9	$26.8	$26.8
	Ion Exchange			$114.1	$148.4	$3.6	$8.5	$10.2	$17.1
	Biological Denitrification			$137.8	$149.3	$7.2	$9.2	$15.2	$17.8
Scenario 2a	Reverse Osmosis	7.05	121	$53.0	$61.2	$3.1	$5.2	$6.2	$8.7
	Ion Exchange			$31.4	$49.5	$1.2	$3.2	$3.0	$6.1
	Biological			$40.4	$45.6	$0.8	$1.2	$2.2	$2.7
Scenario 2b	Reverse Osmosis	7.05	121	$47.8	$56.1	$3.1	$5.2	$5.9	$8.4
	Ion Exchange			$26.3	$44.3	$1.2	$3.2	$2.7	$5.8
	Biological Denitrification			$35.3	$40.5	$0.8	$1.2	$2.9	$3.5
Scenario 2c	Reverse Osmosis	7.05	121	$39.0	$46.4	$2.8	$4.6	$5.1	$7.3
	Ion Exchange			$25.3	$41.5	$1.2	$3.2	$2.6	$5.6
	Biological Denitrification			$27.8	$32.4	$0.8	$1.1	$2.4	$2.9
Scenario 2d	Reverse Osmosis	7.05	121	$50.3	$58.5	$3.1	$5.2	$6.0	$8.6
	Ion Exchange			$28.8	$46.8	$1.2	$3.2	$2.8	$5.9
	Biological Denitrification			$37.8	$43.0	$0.8	$1.2	$3.0	$3.7
Scenario 3	Reverse Osmosis	2.16	12 - 33	$16.8	$19.3	$1.0	$1.6	$1.9	$2.7
	Ion Exchange			$10.7	$16.3	$0.4	$1.0	$1.0	$1.9
	Biological Denitrification			$13.5	$15.1	$0.3	$0.4	$1.0	$1.2

Based on the findings, an Aggressive Restoration Study was initiated (Luhdorff & Scalmanini and Larry Walker Associates, 2016b). The aggressive restoration study focused on the same pilot area of the Tulare Lake Basin with elevated groundwater nitrate concentrations that were impacting local communities and domestic users. A more rigorous review was conducted

focused on reducing nitrate concentrations in two distinct areas directly impacting communities: a 10.25-square mile area near Dinuba and 7.8-square mile area near Cutler/Orosi. The baseline (Plan A) for the effort included increased irrigation efficiency, decreased nitrate loading, and enhanced on-farm winter recharge from November to March. The modeling then focused on increasing the number of extraction and recharge wells to allow for pumping, treating and reinjecting the treated water. In the Dinuba area 67 wells were added (26 extraction and 41 injection) and in the Cutler/Orosi area 11 wells were added (four extraction and seven injection). Three additional sensitivity alternatives were also evaluated: B) a 50% reduction in nitrate loading; C) increasing pumping and recharge rates by 1.5 to increase the hydraulic gradient; and D) doubling the pumping and recharge rates. Tables 2-13 and 2-14, show the number of years to reach targets of 5 mg/L and 7.5 mg/L nitrate as nitrogen under each alternative as well as the modeled concentrations in each of the Upper, Lower and Production Zones after 100-years of simulated time under each alternative, for the Dinuba and Cutler/Orosi areas, respectively. Time series maps from the study are included in Appendix B and depict the variability in groundwater quality at different depths. The simulation demonstrates areas that respond relatively quickly to reinjection and enhanced winter recharge with better water quality as well as areas that demonstrated movement of nitrate downward into lower zones in response to increased pumping and increased winter recharge. In addition to the extensive amount of time and cost involved in restoration of these case study areas, the Aggressive Restoration Study provided some conclusions and lessons learned when addressing the complexities of restoring groundwater basins with elevated nitrate concentrations including but not limited to:

- A targeted approach for restoration works better in smaller geographic settings where there is more control and knowledge about transport of water and nitrate mass. Larger regional areas contain too many complications from other pumping stresses (local, rural, urban, domestic) and lateral influxes to be practicable.

- On-farm recharge is advantageous for flushing the root zone with clean water, but can also result in displacement of existing poor shallow water quality

- On-farm and enhanced recharge are greatly dependent on the ability of the aquifer materials to accept additional water.

- Pump, treat and serve efforts are an excellent way to provide clean drinking water to communities, but the approach does not serve as a particularly beneficial tool for restoration.

- Restoration is not likely feasible on the scale of the Central Valley with current technology due to the number of additional extraction and injection wells needed. Localized priority areas may be ideal for such efforts, but the activities may take decades to result in satisfactory declines in impaired groundwater quality.

To expand on the last point, the Aggressive Restoration Study extrapolated the pump, treat and reinject option throughout the 200-square mile irrigation district using a simple mixing model to represent the complex hydrogeology of the groundwater aquifer to determine the number of additional extraction and injection wells that would be needed to reach a target concentration of 5 mg/L nitrate as nitrogen over a 20-year period. The result was a total of 1,600 new wells (615 extraction and 985 injection). At an estimated cost of $1.4 million/well, capital costs alone would exceed $2.24 billion.

Table 2 - 13. Summary of Dinuba Design Area Extraction/Injection Simulation Results

Aquifer Zone	Number of Years to Reach:								Nitrate Concentrations (mg/L as N)				
	5 mg/L as N				7.5 mg/L as N				Initial	After 100 Years of Simulation Time			
	Plan A	B	C	D	Plan A	B	C	D		Plan A	B	C	D
Upper Zone	-	-	-	-	-	-	-	-	19.9	23.8	12.8	11.4	10.0
Lower Zone	-	-	60	34	37	20	12	9	9.0	7.8	5.6	4.9	4.6
Production Zone	-	-	-	-	-	95	29	21	11.9	12.1	7.5	6.7	6.3

Table 2 - 14. Summary of Cutler/Orosi Design Area Extraction/Injection Simulation Results

Aquifer Zone	Number of Years to Reach:								Nitrate Concentrations (mg/L as N)				
	5 mg/L as N				7.5 mg/L as N				Initial	After 100 Years of Simulation Time			
	Plan A	B	C	D	Plan A	B	C	D		Plan A	B	C	D
Upper Zone	-	-	-	-	-	12	7	5	11.4	11.3	7.3	6.9	6.6
Lower Zone	-	23	14	11	-	-	-	-	6.0	5.5	4.5	4.1	4.0
Production Zone	-	-	-	-	-	3	2	2	8.6	8.3	5.9	5.5	5.2

Constraints Under Current Regulatory Authority

The Central Valley Water Board has broad regulatory authority to regulate discharges to surface waters and/or groundwater throughout the Central Valley Region in order to protect existing and potential uses of those water bodies. The framework for the regulation is documented in the Basin Plans, which designate beneficial uses for the surface waters and groundwater bodies, identify water quality objectives to protect those uses, specify the implementation measures to be taken to meet the objectives and provide the surveillance and monitoring requirements to evaluate results. The Basin Plans also identify the policies that must be considered when regulating dischargers. Discharge permit conditions must reflect Basin Plan requirements and guidelines. The current regulatory framework and process are documented in Section 2.2 and Appendix C.

The Basin Plans were first established in the early 1970's and utilized available information to designate beneficial uses in specific water bodies. When the Basin Plans were established, they broadly designated agricultural supply (AGR) in almost all groundwater basins. When the Central Valley Water Board incorporated the Sources of Drinking Water Policy into the Basin Plans, all surface waters and groundwater was designated as supporting the MUN use unless waters were already listed in the Basin Plans as a water body that does not support MUN. Surface streams that are not specifically named in the Basin Plans are considered to support

the beneficial uses of the first identified downstream water body. Any changes to these designations require amending the appropriate Basin Plan.

When regulating discharges to protect these and other beneficial uses, the current framework is primarily focused on source control from individual permit locations. The framework has been expanded to broader-based general orders for coalitions of growers representing broad regional areas and/or commodities under the Irrigated Lands Regulatory Program and the Dairy Program – but the focus is still source control. The current authorities were not designed to address the broad areas of elevated groundwater concentrations of salt or nitrate that occurred naturally or through the modern management of water supplies and generations of agricultural practices. Nor is the current regulatory framework structured to address the decades that restoration measures would need while still allowing for regulated discharges or account for changes in water quality that result from extended dry periods and/or drought which are expected to increase due to climate change or from continued reuse and recycling of limited water supplies.

For instance, nitrate farming practices have historically used nitrogen fertilizers to boost crop productivity. While current regulation is focused on farm management plans to apply at agronomic rates, treatment technologies are limited and not structured to apply to the vast aquifers currently impacted. Under the existing regulatory framework, discharges that exceed nitrate water quality objectives would be prohibited from discharging to groundwater aquifers that exceed water quality objectives – even if that discharge is of better quality than the impacted groundwater. Under Water Code section 13304, if the Board found that a permittee had caused or contributed to the nitrate pollution, the Board could order the permitee to clean up the aquifer and mitigate any damage to users of that aquifer. While desirable to do, the reality is that there is limited technology to address the legacy issues. Extremely high costs would be faced by permittees whose discharges would be legally prohibited due to their effects on groundwater, meaning that those dischargers that lacked the resources to simultaneously implement costly measures to treat their wastewater, undertake efforts to restore impacted aquifers, and mitigate the damages caused by past practices would be forced out of business.

Permittees discharging salt are faced by similar issues, but with less ability to control the source. Salt accumulation poses many challenges. Many city and regional wastewater facilities cannot meet current Basin Plan water quality objectives, industries struggle to comply with salinity limitations, which often places limitations on their growth, agricultural activities are limited and face increased costs due to the management of saline waters, and drinking water sources face increased challenges with consumer acceptance as salinity levels increase. Since any consumptive use increases the levels of salt, there is a need for broad-based management rather than point-by-point regulation in order to allow salt to be moved out of sensitive areas until it can be economically treated and disposed of or reused. While current regulatory authorities do not prohibit a basin-wide management approach, there is no systematic framework for moving forward. Reuse and conservation, while desirable and needed in times of scarcity, would be in conflict with current regulations that require that all discharges meet conservative salinity water quality objectives.

Examples of some of the inconsistencies and constraints to managing salt and nitrate in a broad based, sustainable manner under the current framework are identified below.

Implementation of Secondary MCLs to Protect MUN

Lack of guidance or policy in the Basin Plans for implementation of secondary MCL-based objectives has resulted in permitting and compliance challenges when implementing the secondary MCL-based water quality objectives for EC and TDS in WDRs for dischargers to

surface waters and groundwater, because often the lower "Recommended" value is used as the basis for establishing WDRs. In July 2009, the State Water Board adopted Order WQ 2009-0005, which remanded in part the City of Lodi NPDES 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 Sacramento-San Joaquin Basin Plan objectives for EC. In the order, the State Water Board noted that the Chemical Constituents narrative water quality objective in the SRSJR Basin Plan incorporates only the secondary MCLs specified in tables from Title 22 of the California Code of Regulations section 64449 with their 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. The State Water Board also found that the "Short Term" value of 2,200 µS/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."

The Chemical Constituents water quality objectives in Chapter 3 acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations, however, the Basin Plans provide no implementation provisions for this text. Lack of guidance or policy in the Basin Plans for implementation of secondary MCL-based objectives does not clarify whether compliance with secondary MCL-based provisions in WDRs should be assessed conservatively using measurements of total recoverable fractions, or should be assessed using an alternative approach such as dissolved fraction or using a filtered sample that better represents water supplied to consumers after conventional treatment practices or groundwater that is naturally filtered through the soil profile. The Basin Plans also do not provide implementation guidelines for a compliance assessment time period for the secondary MCLs.

Interpreting Narrative Objectives to Protect AGR

To interpret the narrative Chemical Constituents objective for protection of the AGR beneficial use when developing WDRs, the Central Valley Water Board has, at times, used 450 mg/L as the threshold for TDS and 700 µmhos/cm for EC, which are based on guidelines in Ayers and Westcot (Ayers & Westcot, 1985). This guideline was developed to protect all crops at all times under all management practices. The guideline does not account for modern irrigation techniques or other limiting factors such as soil conditions or climate that may limit more salt sensitive crops.

The Central Valley Water Board, consistent with *In re Matter of the City of Woodland*, State Water Board Order No. WQO 2004-00 10 (2004), is required to consider site-specific factors, such as leaching by rainfall or flooding, local cropping patterns, etc., to the extent this data is available, in selecting an appropriate salinity values to implement the narrative chemical constituents objective and developing appropriate permit limits to control for salinity. To resolve the inconsistencies, provide clarity and/or provide the Central Valley Water Board with additional authority to evaluate and permit innovative solutions, requires amending the Basin Plans. Section 3.0 identifies specific laws, plans and policies that must be considered when amending a Basin Plan.

3 LAWS, REGULATION, AND POLICIES RELEVANT TO BASIN PLANNING

This staff report proposes amendments to the Basin Plan. There are a number of federal and state laws, regulations and policies that are specifically relevant to the Basin Planning process. This chapter summarizes these laws, regulations, and policies. Although all of the proposed Amendments will need to be adopted by the Central Valley Water Board and approved by the State Water Board and Office of Administrative Law (OAL) prior to becoming effective, not all the proposed amendments fall under federal jurisdiction and require approval by USEPA prior to becoming effective. The following list clarifies those amendments that will be effective after OAL approval and those that must receive USEPA approval in addition.

Table 3 - 1 Basin Plan Amendment Approval Requirements

Basin Plan Chapter	Basin Plan Amendment Component	Effective after approval from Office of Administrative Law	Effective after approval by U.S. Environmental Protection Agency
3 (Water Quality Objectives)	Revisions to Water Quality Objectives		
	o Application Water Quality Objectives – Fourth Point (revision)		X
	o Secondary Maximum Contaminant Levels (revisions)	X (for groundwater)	X (for surface water)
4 (Implementation)	Salt and Nitrate Control Program (new)		
	o Program to Control and Permit Salt Discharges to Surface and Groundwater	X (for groundwater components)	X (for surface water components)
	o Program to Control and Permit Nitrate Discharges to Groundwater	X	
	o Conditional Prohibition of Salt and Nitrate Discharges	X	
	o Surveillance and Monitoring Program	X	
	o Recommendation to Other Agencies	X	
	o Definitions and Terminology Specific to Salt and Nitrate Control Program	X (as applicable to groundwater components)	X (as applicable to surface water components)
	Supporting Policies		
	o Variance Policy (revised)		X
	o Exceptions Policy (revised)	X	
	o Drought and Conservation Policy (new)	X (for groundwater components)	X (for surface water components)

Basin Plan Chapter	Basin Plan Amendment Component	Effective after approval from Office of Administrative Law	Effective after approval by U.S. Environmental Protection Agency
	o Offsets Policy (new)	X	
	Application of Secondary Maximum Contaminant Levels to Protect Municipal and Domestic Supply (new)	X (as applicable to groundwater discharges)	X (as applicable to surface water discharges)
	Estimated Costs to Agriculture	X	
Appendix XX	Nitrate Control Program Non-Prioritized Groundwater Basins (new)	X	

3.1 Legal Requirements for Establishing and Amending the Basin Plan

In the Porter-Cologne Water Quality Control Act, the Legislature found and declared that activities and factors which may affect the quality of the waters of the state shall be regulated to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible.

The State Water Board and the nine Regional Water Quality Control Boards (Regional Water Boards) are the state agencies with primary responsibility for coordination and control of water quality. (Wat. Code, § 13000.) Each Regional Water Board is required to adopt a water quality control plan, or Basin Plan, which provides the basis for regulatory actions to protect water quality. (Wat. Code, § 13240 et seq.) Basin plans designate beneficial uses of water, water quality objectives to protect the uses, and a program of implementation to achieve the objectives. (Wat. Code, § 13050, subd.(j).) Basin plans, once adopted, must be periodically reviewed and may be revised. (Wat. Code, § 13240.)

Under the Federal Clean Water Act (CWA) (33 USC section 1251 et seq.), the states are required to adopt water quality standards for surface waters. (33 USC § 1313(c).) Water quality standards consist of: 1) designated uses and 2) water quality criteria necessary to protect designated uses. (33 USC § 1313 (c)(2)(A) and (c)(2)(B); Title 40 Code of Federal Regulations (CFR) §131.6.) Under the CWA, the states must review water quality standards at least every three years.

Regional Water Boards adopt and amend basin plans through a structured process involving peer review, public participation, and environmental review. Regional Water Boards must comply with the CEQA (Pub. Res. Code. § 21000 et seq.) when amending their basin plans. The Secretary of Natural Resources has certified the basin planning process as exempt from the CEQA requirement to prepare an environmental impact report or other appropriate environmental document. (Pub. Res. Code, § 21080.5; Cal. Code Regs., tit. 14, § 15251, subd. (g).) Instead, State Water Board regulations on its exempt regulatory programs require the Regional Water Boards to prepare a written report and an accompanying CEQA Environmental Checklist and Determination with respect to Significant Environmental Impacts. (CEQA Checklist) (Cal. Code Regs., tit. 23, § 3775 et seq.)

The Central Valley Water Board's environmental review of the proposed Basin Plan Amendments is contained in this Staff Report, in particular Section 7.0, Section 8.0, and Appendix K, which is considered to be part of the SED.

Basin Plan amendments are not effective until they are approved by the State Water Board and the regulatory provisions are approved by the State OAL. The USEPA also must review and approve amendments that add or modify water quality standards for waters of the United States.

The next sections detail the laws, regulations, and policies that apply to Basin Planning and are relevant to the proposed amendments.

3.2 LEGAL REQUIREMENTS FOR ESTABLISHING, DESIGNATING AND MODIFYING BENEFICIAL USES

3.2.1 Federal Regulations and Guidance

Federal regulations require the protection of designated uses in waters of the United States. Federal regulations establish special protections for the uses specified in CWA section 101, subdivision (a)(2). CWA section 101, subdivision (a)(2) states that it is a national goal that wherever attainable, water quality should be sufficient "for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water." These uses are also referred to as "fishable/swimmable" uses.

Under 40 CFR section 131.10, subdivision (j), a state must conduct a "use attainability analysis" (defined in 40 CFR § 131.3, subd.(g).) whenever a state wishes to remove a designated fishable/swimmable use from a waterbody that falls within the jurisdiction of the CWA. 40 CFR section 131.10, subdivision (g) defines six circumstances where it would be appropriate for a state to remove a fishable/swimmable use.

When establishing, designating, or revising beneficial uses that are not "fishable/swimmable" beneficial uses (like the MUN beneficial use) in water subject to federal jurisdiction, states must submit documentation to USEPA justifying how their consideration of the use and value of water appropriately supports the state's action. A use and value demonstration consists of, at a minimum, a showing that the state has considered:

- Relevant descriptive information about the waterbody itself;
- The use and value of the waterbody as a public water supply (40 CFR 131.10, subd. (a).);
- The impact that the change could have on the protection and propagation of fish, shellfish, and wildlife (*Id.*);
- The impact that the change could have on recreation in and on the water (*Id.*);
- The use and value of the waterbody for agricultural, industrial, and other purposes, including navigation (*Id.*);
- The impact that the change in use could have on the protection of downstream uses (40 CFR 131.10, subd. (b).);
- Whether or not the use to be changed is an existing use in the waterbody (40 CFR 131.10, subd. (h)(1).); and

3.2.1.1 *Whether or not the beneficial use could be attained in the waterbody, using the factors in 40 CFR 131.10, subd. (g) as a general guide[30].*

As described below, many of these considerations are already required by state laws and regulations when the Board considers a change to a beneficial use designation in any waterbody, not just those waterbodies subject to federal jurisdiction. Therefore, the requirements of a "use and value" demonstration are largely satisfied whenever the Board considers a change to a beneficial use designation, irrespective of whether the water body is considered a "water of the United States" within the meaning provided by the CWA.

3.2.2 State Regulations and Guidance

The Water Code includes designation of beneficial uses in both basin plans and statewide plans. (Wat. Code, §13050, subd. (j).) The Water Code defines beneficial uses of water as including, but not limited to: "domestic, municipal, agricultural, and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves." (Wat. Code, §13050, subd. (f).)

Designated uses are those uses specified in the water quality standards for each water body or segment whether or not they are being attained. (40 CFR §131.3(f).) In Table II-1 of the Basin Plan, beneficial uses for listed water bodies within the Sacramento and San Joaquin River are identified as Existing, Limited, or Potential.

The Sacramento and San Joaquin River Basin Plan lists beneficial uses for surface water bodies (Table II-1). The beneficial uses of the Sacramento and San Joaquin River basins include: municipal and domestic supply (MUN), agricultural supply (AGR), industrial process supply (PRO), industrial service supply (IND), hydropower generation (POW), water contact recreation (REC-1), non-contact water recreation (REC-2), warm freshwater habitat (WARM), cold freshwater habitat (COLD), migration of aquatic organisms (MIGR), spawning, reproduction, and/or early development (SPWN), wildlife habitat (WILD), navigation (NAV), commercial and sport fishing (COMM), shellfish harvesting (SHELL),and preservation of biological habitats of special significance (BIOL).

All ground waters in the Sacramento and San Joaquin River basins are considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO), unless otherwise designated by the Central Valley Water Board.

The Tulare Lake Basin Plan lists beneficial uses for surface water bodies (Table II-1) and groundwater (Table II-2).The beneficial uses of the Tulare Lake Basin include: municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), industrial process supply (PRO), hydropower generation (POW), water contact recreation (REC-1), non-contact water recreation (REC-2), warm freshwater habitat (WARM), cold freshwater habitat (COLD), wildlife habitat (WILD), spawning, reproduction, and/or early development (SPWN), migration of aquatic organisms (MIR), ground water recharge (GWR), freshwater replenishment (FRSH), aquaculture (AQUA), preservation of biological habitats of special significance (BIOL), and navigation (NAV).

The groundwater beneficial uses of the Tulare Lake Basin as listed in Table II-2 include: municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply

[30] USEPA Guidance materials (80 FR 51019) suggest the consideration of the 40 CFR 131.10(g) circumstances that could warrant the removal of a "fishable/swimmable" beneficial use when the state submits a "use and value" demonstration, even though "use and value" demonstrations are required when the state is providing a justification for a change in *non*-fishable/swimmable beneficial use designations.

(IND), industrial process supply (PRO), water contact recreation (REC-1), non-contact water recreation (REC-2), and wildlife habitat (WILD). Groundwater areas exempted from MUN are footnoted in Table II-2. Unless otherwise designated by the Central Valley Water Board, all ground waters in the Region are considered suitable or potentially suitable, at a minimum, for agricultural supply (AGR), industrial supply (IND), and industrial process supply (PRO) (Basin Plan pg. II-2).

Page II-1.00 of the Basin Plan describes several points that need to be considered in setting and protecting beneficial uses:

- *"All water quality problems can be stated in terms of whether there is water of sufficient quantity or quality to protect or enhance beneficial uses".*
- *"Beneficial uses do not include all of the reasonable uses of water. For example, disposal of wastewaters is not included as a beneficial use. This is not to say that disposal of wastewaters is a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of other beneficial uses. Similarly, the use of water for the dilution of salts is not a beneficial use although it may, in some cases, be a reasonable and desirable use of water."*
- *"The protection and enhancement of beneficial uses require that certain quality and quantity objectives be met for surface and ground waters."*
- *"Fish, plants, and other wildlife, as well as humans, use water beneficially."*

Beneficial use designation (and water quality objectives, see Chapter III of the Basin Plan) must be reviewed at least once during each three-year period for the purpose of modification as appropriate (40 CFR 131.20)."

3.2.3 State Water Board Sources of Drinking Water Policy (Resolution 88-63)

The *Sources of Drinking Water Policy* establishes state policy that all waters are considered suitable or potentially suitable to support the MUN beneficial use, with certain exceptions.

The Basin Plan implements *Sources of Drinking Water Policy* by assigning the MUN beneficial use to all water bodies that do not have their individual uses specifically listed in Table II-1. Exceptions to the MUN designation through *Sources of Drinking Water Policy* are allowed in surface water for:

1. Surface and ground waters where:
    a. The TDS exceed 3,000 mg/L (5,000 uS/cm, EC) and it is not reasonably expected by Regional Boards to supply a public water system, or
    b. There is contamination, either by natural processes or by human activity (unrelated to the specific pollution incident), that cannot reasonable be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or
    c. The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.
2. Surface waters where:

a. The water is in systems designed or modified to collect or treat municipal or industrial wastewaters, process waters, mining wastewaters, or storm water runoff, provided that the discharge from such systems is monitored to assure compliance with all relevant water quality objectives as required by the Regional Boards; or,

b. The water is in systems designed or modified for the primary purpose of conveying or holding agricultural drainage waters, provided that the discharge from such systems is monitored to assure compliance with all relevant water quality objectives as required by the Regional Boards.

The *Sources of Drinking Water Policy* addresses only designation of water as drinking water sources; it does not establish objectives for constituents that are protective of the designated MUN use.

A water body only needs to meet one of the exceptions to be eligible to have the MUN beneficial use removed. However, water bodies designed or modified for the primary purpose of conveying or holding agricultural drainage, as described in Exception 2b, may meet additional *Sources of Drinking Water Policy* exceptions. For example, water bodies that meet the Exception 2b criteria may also meet the Exception 1b criterion, which allows the de-designation of the MUN beneficial use in waters where there "is contamination, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices."

3.3 Laws that Apply to the Establishment of Water Quality Objectives

3.3.1 Federal Regulations and Guidance

Federal regulations require States to adopt narrative or numeric water quality criteria to protect designated beneficial uses in water bodies subject to federal jurisdiction (40 CFR §131.11(a)(1).) When establishing, designating, or revising beneficial uses that are not "fishable/swimmable" beneficial uses (like the MUN beneficial use), 40 CFR section 131.10, subdivision (a) requires that states take into consideration the use and value of the water body or water bodies where the beneficial use will be modified. The considerations that must be made as part of a "use and value" determination are described in section 3.1.1 of this Staff Report.

3.3.2 State Statute, Regulations and Guidance

Water Code section 13050, subdivision (h) defines water quality objectives as "…the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area." Pursuant to Water Code section 13241, when establishing WQOs, the Central Valley Water Board is required to consider:

(a) Past, present, and probable future beneficial uses of water;
(b) Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto;
(c) Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area;
(d) Economic considerations;

(e) The need for developing housing within the region;
(f) The need to develop and use recycled water; and
(g) The Program of Implementation (Wat. Code, §13242)

Note that some of the above factors such as (a) through (d) have elements that overlap with the considerations that support a use and value demonstration under 40 CFR section 131.10, subdivision (a).

3.4 LAWS THAT APPLY TO THE ESTABLISHMENT OF AN IMPLEMENTATION PROGRAM IN THE BASIN PLAN

3.4.1 Federal Regulations and Guidance

Section 402 of the CWA requires a permitting system which USEPA addressed by promulgating 40 CFR, part 122, which are the regulations pertaining to the NPDES program. The State's regulations pertaining to NPDES permits must be consistent with the federal regulations.

40 CFR section 122.44, subd. (d)(1)(ii) sets forth the criteria for establishing a procedure for determining whether a discharge has a reasonable potential to cause or contribute to a violation of water quality standards. It states, "When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water." While the federal regulations do not contain explicit procedures to derive effluent limitations, USEPA has provided guidance (United States Environmental Protection Agency, 1991) that includes explicit procedures.

3.4.2 State Statues, Regulations, and Guidance

3.4.2.1 Water Code sections 13050 and 13242

Pursuant to Water Code section 13050, subdivision (j)(3), a basin plan amendment must include an implementation program to achieve water quality objectives. Water Code section 13242 dictates that a program of implementation must include the following:

- description of the actions necessary to achieve the water quality objectives;
- a time schedule for the actions to be taken; and
- a monitoring and surveillance program.

3.4.2.2 Water Code section 106.3

In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. (See section 3.7.2 for discussion.)

3.5 ECONOMIC REVIEW

California Law requires a consideration of economics when: (i) establishing water quality objectives (Wat. Code, § 13241, subd. (d).); (ii) before implementing an agricultural water quality control program (Wat. Code, § 13141.); and (iii) when adopting an amendment that will require

the installation of pollution control equipment or is a performance standard or treatment requirement (Pub. Resources Code, § 21159.).

3.5.1 Water Code section 13241

Requires economics as one of the seven factors that must be considered when developing water quality objectives (See the fourth factor (d) in Section 3.2.2).

3.5.2 Water Code section 13141

Water Code section 13141 states that, "prior to implementation of any agricultural water quality control program, an estimate of the total cost of such a program, together with an identification of potential sources of financing, shall be indicated in any regional water quality control plan." Section 8.1.2 describes the costs for implementing agricultural water quality control program in the no-action alternative. Section 8.2.6 describes the identification of potential sources of financing and the need to develop a comprehensive and regional financial strategy.

3.5.3 Public Resources Code section 21159

Public Resources Code section 21159 requires that an agency must perform "an environmental analysis of the reasonably foreseeable methods of compliance" for "…a rule or regulation that requires the installation of pollution control equipment or a performance standard or treatment requirement…The environmental analysis shall take into account a reasonable range of environmental, economic, and technical factors, population and geographic areas, and specific sites."

3.6 ENVIRONMENTAL REVIEW – CEQA

The Central Valley Regional Water Quality Control Board, when acting as a Lead Agency under CEQA, is responsible for evaluating all the potential environmental impacts that may occur due to changes made to the Basin Plan. The Secretary of Resources has determined that the Central Valley Water Board's basin planning process qualifies as a certified regulatory program pursuant to Public Resources Code section 21080.5 and California Code of Regulations, title 14, section 15251(g). This determination means that the Central Valley Water Board's is exempt from the requirement to prepare an environmental impact report. Instead, this Staff Report and the Environmental Checklist provided in Appendix K satisfy the requirements of State Water Board's Regulations for Implementation of CEQA, Exempt Regulatory Programs, which are found at California Code of Regulations, title 23, sections 3775 et seq.

3.7 ANTIDEGRADATION POLICIES

The USEPA has established a federal antidegradation policy applicable to water quality programs in 40 CFR section 131.12 (*Federal Antidegradation Policy*). The State Water Resources Control Board has established an antidegradation policy for the State of California by adopting State Water Board Resolution 68-16, the Statement of Policy with Respect to Maintaining High Quality of Waters in California (*State Antidegradation Policy*). The Central Valley Water Board must ensure that its basin planning actions are consistent with the *Federal Antidegradation Policy* and the *State Antidegradation Policy*.

3.7.1 Federal Antidegradation Policy

The *Federal Antidegradation Policy* states:

(a) The State shall develop and adopt a statewide antidegradation policy and identify the methods for implementing such policy pursuant to this subpart. The antidegradation policy and implementation methods shall, at a minimum, be consistent with the following:

(1) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

(2) Where the quality of the waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

(3) Where high quality waters constitute an Outstanding National Resource Waters, such as waters with exceptional ecological, recreational or environmental assets, that water quality shall be maintained and protected.

(4) In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with section 316 of the Act.

3.7.2 State Antidegradation Policy

The *State Antidegradation Policy* states, in relevant part:

(1) Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State 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.

(2) Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet 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.

3.8 State Laws and Regulations Relevant to Salt and Nitrate Management

3.8.1 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Wat. Code § 13000 et seq) is California's statutory authority for the protection of water quality. The act requires the nine regional water quality control boards to adopt water quality control plans, which must consist of designation of beneficial uses, water quality objectives, and a program of implementation for achieving

water quality objectives (Wat. Code §13050(j)). The implementation program for a basin plan must include: 1) a description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate action by any entity, public or private; 2) A time schedule for the actions to be taken; and 3) a description of surveillance to be undertaken to determine compliance with the objectives. (Wat. Code § 13242.)

Water quality objectives are used to protect beneficial uses that require a certain level of water quality for the uses to be attained. The Porter-Cologne Water Quality Control Act defines water quality objectives as "…the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area." (Wat. Code § 13050(h).) Water quality objectives may be stated in either numerical or narrative form. Water quality objectives may be applied on a geographic basis or applied to all waters within a surface water or groundwater resource for which beneficial uses have been designated.

The act also authorizes the State Water Board and regional water quality control boards to issue and enforce permits containing requirements for the discharge of waste to waters of the state, which is defined to mean "any surface water or groundwater, including saline waters, within the boundaries of the state." (Wat. Code § 13050(e).) Regional water quality control boards may authorize discharges of waste to waters of the state by issuing discharge requirements referred to as waste discharge requirements (WDRs) (Wat. Code § 13263.), or may issue waivers of discharge requirements. (Wat. Code § 13269.) Regional water quality control boards can also prohibit the discharge of certain types of wastes or the discharge of wastes in certain geographic areas. (Wat. Code § 13243.)

3.8.2 Human Right to Water

With the enactment of Water Code section 106.3, on September 25, 2012, California became the first state in the nation to recognize legislatively the human right to water, following two other state's recognition of the right in their respective constitutions. Water Code section 106.3 states, in full:

(a) It is hereby declared to be the established policy of the state that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.
(b) All relevant state agencies, including the department, the state board, and the State Department of Public Health, shall consider this state policy when revising, adopting, or establishing policies, regulations, and grant criteria when those policies, regulations, and criteria are pertinent to the uses of water described in this section.
(c) This section does not expand any obligation of the state to provide water or to require the expenditure of additional resources to develop water infrastructure beyond the obligations that may exist pursuant to subdivision (b).
(d) This section shall not apply to water supplies for new development.
(e) The implementation of this section shall not infringe on the rights or responsibilities of any public water system."

The State Water Board adopted Resolution No. 2016-0010 on February 16, 2016, adopting "the human right to water as a core value and adopts the realization of the human right to water as a top priority for the Water Boards." The resolution includes a number of directives to State Water Board staff, including continued consideration of the human right to water in all activities that could affect existing or potential sources of drinking water, including revising

water quality control plans and policies and permitting. This resolution does not expand the legal scope of the human right to water as described in Water Code section 106.3, alter the State Water Board or Central Valley Water Board authority and obligations under applicable law, or impose new requirements on the regulated community. The Central Valley Water Board adopted a similar resolution on April 21, 2016 (Resolution R5-2016-0018).

3.8.3 Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act, which went into effect January 1, 2015, gives local agencies the authorities to manage groundwater in a sustainable manner and allows for limited state intervention when necessary to protect groundwater resources. The act specifically:

- Establishes a definition of sustainable groundwater management.
- Establishes a framework for local agencies to develop plans and implement strategies to sustainably manage groundwater resources.
- Prioritizes basins with the greatest problems (ranked as high- and medium-priority).
- Sets a 20-year timeline for implementation.

The act includes provisions to promote the formation of a groundwater sustainability agency, which is made up of one or more local agencies overlying a groundwater basin, and development and implementation of a groundwater sustainability plan. Overdrafted basins must achieve groundwater sustainability by 2040 or 2042, predicated on the completion of plans. Under the act, DWR has the lead role in working with local agencies in implementing its provisions (Water Education Foundation, 2015).

4 ALTERNATIVES

4.1 PROCESS TO DEVELOP ALTERNATIVES TO ADDRESS SALT AND NITRATE CONCERNS

As described in Section 2.3, salt and nitrate problems in the Central Valley are complex and multi–faceted. Sources for both constituents are diverse and include ongoing activities as well as legacy deposits. Expansive areas of groundwater basins already contain concentrations in excess of levels known to impact beneficial uses. While some of the areas of elevated salinity represent natural background conditions, natural background concentrations of nitrate are considered to range from 0.1 to 2 mg/L nitrate as nitrogen (United States Geological Survey, 1999) and some groundwater sub-basins are documented to exceed 50 mg/L nitrate as nitrogen (Larry Walker Associates, 2013). Historical activities have resulted in elevated concentrations of both salt and nitrate in many groundwater basins. Studies documenting restoration alternatives indicate that current technologies are expensive and will take decades to implement.

Given these significant challenges, the State Water Resources Control Board (State Water Board) and Central Valley Water Board held a public forum in 2006 to discuss the salinity conditions and concerns and initiated a stakeholder lead process to develop recommendations for a salinity management plan for the Central Valley. As a result of the initial meeting, a broad group of agriculture, cities, industry, and regulatory agencies joined together to form the Central Valley Salinity Alternatives for Long-term Sustainability (CV–SALTS) initiative. As more information became available on elevated levels of nitrate in groundwater drinking water supplies, CV-SALTS also took on the challenge of developing recommendations for a Central Valley–wide nitrate management strategy to ensure safe drinking water supplies.

4.1.1 CV-SALTS Initiative

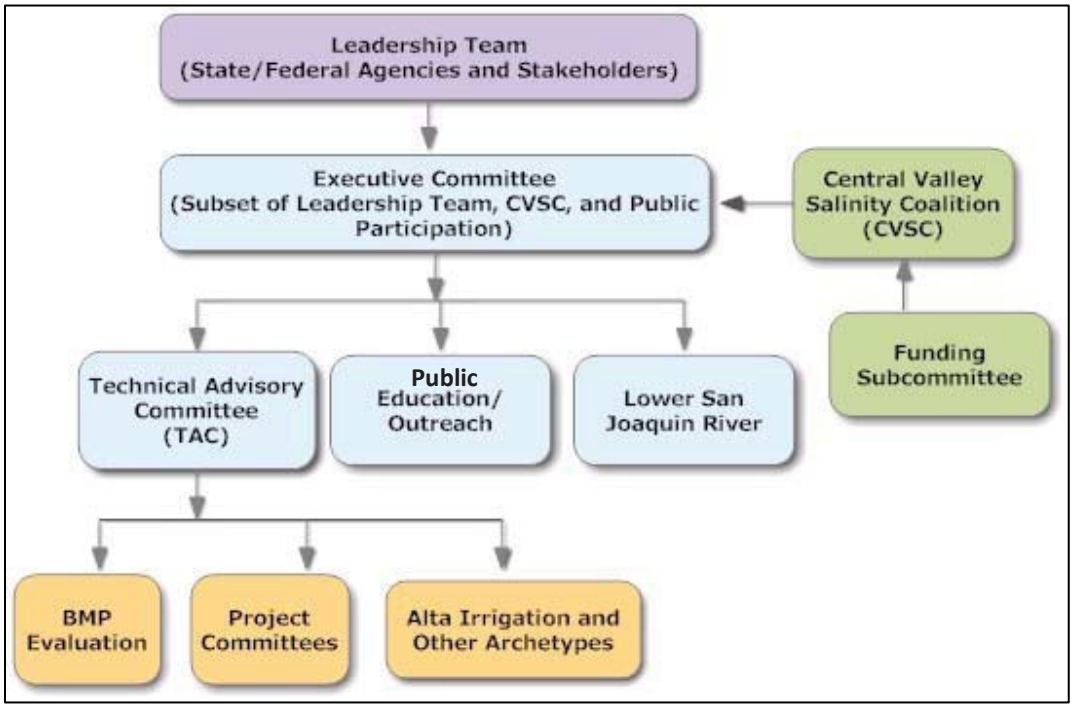
The CV-SALTS initiative developed a governance and management structure to ensure representation by a broad stakeholder base as well as to ensure that resulting recommendations were based on sound science and open policy discussions. The organizational structure for the effort is depicted in Figure 4–6 and includes an Executive Committee, non–profit Central Valley Salinity Coalition, Technical Committee, Public Education and Outreach Committee, and several sub-committees. The CV-SALTS Executive Committee is a decision-making body with 30 voting members that represent diverse stakeholder groups, including agriculture, cities, industry, regulatory agencies, and community and environmental justice representatives. The non–profit Central Valley Salinity Coalition was formed by dischargers to manage and fund the effort, and in 2010, the coalition entered into a Memorandum of Agreement with the State Water Board and the Central Valley Water Board to formalize their commitment. Goals adopted by CV-SALTS include:

- Sustain the Valley's lifestyle
- Support regional economic growth
- Retain a world–class agricultural economy
- Maintain a reliable, high–quality water supply
- Protect and enhance the environment

These goals were further articulated into three over–arching management priorities:

- Ensure safe drinking water supplies
- Achieve balanced salt and nitrate loadings
- Implement long-term, managed restoration where feasible, practicable and reasonable.

Figure 4 - 1. CV-SALTS Organizational Structure



CV-SALTS participants, including the Central Valley Water Board, worked together to develop a Central Valley–wide Salt and Nitrate Management Plan (SNMP) to address salinity and nitrate concerns in the Central Valley Region in a comprehensive, consistent, and sustainable manner. The CV-SALTS SNMP was submitted to the Central Valley Water Board in January 2017 and included recommended actions to identify drinking water users impacted by elevated nitrate and to provide short-term and long-term supplies of safe drinking water. Although broader in overall scope, the CV-SALTS SNMP was also developed to meet requirements set forth in the State Recycled Water Policy (Resolution 2009–0011) to ensure that every groundwater basin/sub-basin in California has an effective salt/nutrient management plan.

The CV-SALTS initiative used an open, public process to develop the SNMP with recommendations discussed during Executive Committee meetings that occurred approximately twice a month. In addition, annual status reports were provided to the State Water Board during public hearings and included information on progress, expenditures and contributions of stakeholders, as well as future milestones and the timeline to complete the project. Public workshops were also held at the Central Valley Water Board on an annual basis to allow open discussion of emerging recommendations. Each subcommittee was chaired by a stakeholder and meeting schedules were posted on the CV-SALTS initiative website (www.cvsalinity.org) and open to the public. In summary, over 140 Executive Committee meetings were held as well as over 50 Technical Committee meetings. In addition,

52 meetings were held specific to the Lower San Joaquin River Sub–Committee, and over 45 meetings related to other sub–committees not including ongoing work by the Public Education and Outreach Committee (PEOC). The PEOC is comprised of 26 stakeholder members, including representatives from industry, agriculture and other water interests, and has prepared several outreach documents including bilingual fact sheets and audience–specific brochures, has held approximately 50 targeted meetings in 2017 within the industrial, agricultural, education and research communities, and has future plans to target outreach to communities and hold webinars. Additional information on the public process utilized including stakeholder groups who have had representative attend one or more CV-SALTS meetings are included in Appendix L. The basis for the discussions, recommendations and outreach material are the technical studies and case studies described below.

These technical studies and case studies also provide the foundation for the alternatives developed and evaluated to address salt and nitrate issues in the Central Valley.

4.1.2 Technical Studies

A guiding principal for the CV-SALTS initiative was to base decisions on sound science. A series of technical studies were completed to provide information on salinity impacts on beneficial uses as well as potential management measures and implementation actions to address the overarching goals of providing safe drinking water, balancing salt and nitrate loading, and long-term, managed restoration of groundwater basins. These studies are summarized in Table 4–1. Final recommendations needed to be based on understanding salt and nitrate sources, available assimilative capacity in receiving water bodies, fate and transport, and current loading estimates/trends. Studies addressing these technical aspects are summarized in Table 4–2. All identified studies are available at https://www.cvsalinity.org/docs/committee–document/technical–advisory–docs/3886–attachment–b–documentation–122216–v2–1/file.html.

Table 4 - 1. Regulatory and Technical Studies to Support CV-SALTS SNMP Development and Implementation.

Study	Purpose	Key Reference[1]
Regulatory Studies to Support SNMP Development		
Salinity Effects on MUN– related Uses of Water	Define what constitutes reasonable protection of existing and probable future MUN uses by evaluating the state of knowledge regarding the effects of elevated salinity concentrations on drinking water supply, including human health concerns, and other domestic uses of water, e.g., impacts of salinity on residential, commercial and industrial water–using devices	CDM Smith. 2016d. *Salinity Effects on MUN–related Uses*.
Salinity Effects on Agricultural Irrigation Uses	Define what constitutes reasonable protection of existing and probable future use of water for agricultural irrigation by evaluating the state of knowledge regarding the effects of elevated salinity concentrations on crop yields, wetland plants and vegetation commonly used for landscaping	CDM Smith. 2016c. *Salinity Effects on Agricultural Irrigation–related Uses*.
Stock Watering Protection	Identify water quality criteria that may be used to establish salinity and nitrate–related water quality objectives to protect stock watering supplies	Kennedy/Jenks Consultants. 2013. *Salt and Nutrients: Literature Review for Stock Drinking Water Final Report*.
Aquatic Life Protection	Evaluate potential water quality criteria that could be used to establish salinity–related water quality objectives to protect aquatic life	Buchwalter 2014. *Aquatic Life Study Final Report*.
Technical Studies to Support SNMP Implementation		
Nitrate Implementation Measures Study (NIMS)	Identify implementation measures to reduce current ambient nitrate concentrations in groundwater to protect and restore beneficial uses, consistent with the SNMP's management goals	CDM Smith. 2016a. *Nitrogen Implementation Measures Study Final Report*.
Aggressive Restoration Modeling Scenario	Understand better the types of nitrate control measures that would be necessary to meet the SNMP management goal to implement a managed aquifer restoration program	Luhdorff & Scalmanini Consulting Engineers and Larry Walker Associates. 2016b. *Alta Irrigation District Management Zone: Aggressive Restoration Alternative Modeling Scenario Results*.
Technical Studies to Support SNMP Implementation (continued)		
Alta Irrigation District Management Zone Archetype	Facilitate the development of the CV-SALTS Groundwater Management Zone Policy by evaluating issues that might affect the development and implementation of a management zone.	Larry Walker Associates et al. 2016. *Management Zone Archetype Analysis Report: Alta Irrigation District*.
Strategic Salt Accumulation Land and Transportation Study (SSALTS)	Phased study to provide the technical basis for the establishment of a salt management program to achieve the Central Valley's SNMP management goal and support implementation of the recommended Salinity Management Strategy	CDM Smith. 2013. *SSALTS Final Phase 1 Report: Identification and Characterization of Existing Salt Accumulation Areas*. CDM Smith. 2014. *SSALTS Final Phase 2 Report: Development of Potential Salt Management Strategies.* CDM Smith. 2016b. *SSALTS Final Phase 3 Report: Evaluate Potential Salt Disposal Alternatives to Identify Acceptable Alternatives for Implementation*.

Notes: [1] All referenced documents are available at:
http://www.cvsalinity.org/index.php/committees/technical–advisory/technical–projects–index.html

Table 4 - 2. CV-SALTS Technical Studies Completed to Satisfy Specific Recycled Water Policy SNMP Requirements for Evaluation of Salt and Nitrate

Required Recycled Water Policy Component	Relevant CV-SALTS Studies[1]
Salt and nutrient (nitrate) source identification	• Larry Walker Associates et al. 2013. *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*. December 2013. • Larry Walker Associates et al. 2016. *Management Zone Archetype Analysis Report: Alta Irrigation District*. July 2016. • CDM Smith. 2016a. *Nitrate Implementation Measures Study*. March 2016. • CDM Smith 2013 and 2014. *SSALTS Final Phase 1 Report: Identification and Characterization of Existing Salt Accumulation Areas; and Final Phase 2 Report: Development of Potential Salt Management Strategies*. December 2013 and October 2014, respectively.
Basin/subbasin assimilative capacity	• Larry Walker Associates et al. 2013. 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*. December 2013. • Luhdorff & Scalmanini Consulting Engineers and Larry Walker Associates. 2016a. *Region 5: Updated Groundwater Quality Analysis and High Resolution Mapping for Central Valley Salt and Nitrate Management Plan*; July 2016.
Basin/subbasin loading estimates	• Larry Walker Associates et al. 2013. 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*. December 2013.
Fate and transport of salts and nutrients (nitrate)	• Larry Walker Associates et al. 2013. 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*. December 2013.

Recommendations in this staff report utilize findings in the reports identified in Tables 4–1 and 4–2, particularly the modeling of fate and transport of salt and nitrate within groundwater sub-basins, trends over time, and simulations of restoration of impacted groundwater aquifers under different management scenarios. The conclusions based on these studies were submitted for independent scientific peer review.

4.1.3 Case Studies

Some of the recommendations in this staff report consider appropriate designation of beneficial uses and level of protection, as well as alternative approaches to regulating salt during extended dry periods. As proofs of concept, three separate Basin Plan Amendments were recommended addressing specific issues as noted below. Each amendment was adopted by the Central Valley Water Board and is either fully in effect or moving through additional levels of approval at the State Water Board, Office of Administrative Law, and, as appropriate, USEPA.

- Resolution R5–2017–0032 Basin Plan Amendment to de-designate MUN and AGR from a horizontally and vertically delineated portion of the Tulare Lake Bed

groundwater basin. (In effect)
    - Identified requirements for de-designation of MUN/AGR
        - Electrical conductivity concentration greater than 5,000 µS/cm
        - No existing or potential MUN or AGR use
    - Identified effective outreach process to communities and domestic well users
    - *Serves as a template to delineate areas that may serve as salt management zones so that salt may be moved out of salt sensitive areas and consolidated.*

- Resolution R5–2017–0088 Basin Plan Amendment to incorporate a MUN evaluation process for agriculturally dominated water bodies (scheduled for State Water Board approval hearing in 2018)

    - Develops categorization process for identifying constructed facilities vs. natural water bodies that are dominated by agricultural activities
    - Uses the categories to determine appropriate designation of MUN use and level of protection
        - De-designation when meeting Sources of Drinking Water Policy (88–63) exceptions
        - Limited MUN use designation and related water quality objectives when not meeting exceptions
    - Allows interim permit limits until designations approved through Basin Plan Amendment
    - Requires monitoring to ensure relevant water quality objectives are met
    - *Allows reuse of limited water supplies without the constraints of requiring dischargers to meet drinking water maximum contaminant levels in constructed ag drains and other facilities with no existing or potential MUN use*

- Resolution R5–2017–0062. Basin Plan Amendment to establish salinity objectives in the Lower San Joaquin River upstream of Vernalis (approved by State Water Board January 2018 (Resolution No. 2018–0002); scheduled for submittal of OAL and USEPA Spring 2018).
    - Identified process for determining appropriate salinity water quality objectives to protect AGR on a sub–watershed scale
        - Recommended model inputs for determining most sensitive crop; leaching fraction, and estimated dry year limitations
        - Approach to gain input from area growers
    - Establishment of extended dry year salinity objectives protective of AGR and MUN
    - Process for NPDES dischargers to conduct reasonable potential evaluations for salinity and account for conservation practices
    - *Provides example of process to determine appropriate level of AGR protection as well as considerations for extended dry year and/or conservation policies.*

The process identified and information gathered noted above was used to develop the CV-SALTS SNMP (2016) submitted to the Central Valley Water Board in January 2017. In March 2017, the Central Valley Water Board directed staff to develop Basin Plan Amendments to incorporate a Salt and Nitrate Control Program following the overall goals and framework of the CV-SALTS SNMP and to utilize specific recommendations on needed clarifications, policies and new regulatory tools (or strategies), as appropriate (Resolution R5–2017–0031).

Staff has continued working through the CV-SALTS initiative to refine the original recommendations and develop the current recommendations outlined in this staff report.

4.1.4 Criteria to Select Preferred Alternative

Given the impacts of elevated salt and nitrate concentrations occurring and anticipated to occur in the Central Valley (as documented in Section 2.0), stakeholders engaged in the CV-SALTS initiative developed five over–arching goals:

- Sustain the Valley's lifestyle
- Support regional economic growth
- Retain a world–class agricultural economy
- Maintain a reliable, high–quality water supply
- Protect and enhance the environment

Further review highlighted the immediate public health concerns from elevated nitrate concentrations in drinking water supplies and the longer term impacts to crop productivity from salt. Therefore, the CV-SALTS initiative further developed three prioritized management goals:

- Ensure a safe drinking water supply
- Achieve balanced salt and nitrate loading
- Implement long-term, managed restorations where feasible, reasonable and practicable

Considering the diversity of the sources of salt and nitrate, the hydrogeologic diversity of the Central Valley itself and the extensive hydromodification within the Central Valley, stakeholders recognized that any proposed project would need the flexibility to work at both the broad valley–wide scale as well as at the local level. Available resources would need to be leveraged and actions would need to be phased to ensure that public health issues could be quickly addressed while longer term management solutions were put in place. To determine whether proposed alternatives met the over–arching and prioritized management goals listed above, the following criteria were developed to determine if the alternative would establish:

- Mechanisms to provide alternative water supplies
- Means to legally authorize discharges from modern farming practices
- Strategies to prevent further water quality degradation
- Implementable plans to restore degraded groundwater where it is reasonable, feasible and practicable to do so
- An approach that recognizes diversity of conditions across the Central Valley
- An approach that leveraged and maximized available resources

These criteria are utilized as part of the evaluation of the alternatives presented below.

4.2 Proposed Control Program and Associated Policies

Utilizing the CV-SALTS SNMP as a foundation, staff worked through the CV-SALTS process to finalize recommendations for a Central Valley Salt and Nitrate Control Program. Two primary alternatives emerged: 1) No Action Alternative; and 2) Incorporation of a Salt and Nitrate Control Program with supporting policies and new regulatory tools and authorities.

The No Action Alternative would continue regulation of salt and nitrate under the current Basin Plan framework and authority as outlined in Section 2.2 and Appendix C.

The Salt and Nitrate Control Program alternative is designed to address both legacy and ongoing salt and nitrate accumulation issues in surface and groundwater. The primary focus of early actions (first ten years) is on groundwater quality and in particular nitrate impacts to drinking water supplies. The prioritized management goals were further clarified as follows:

- ***Goal 1: Ensure a Safe Drinking Water Supply***. The most important management goal for the Central Valley Region is to ensure that a safe, reliable drinking water supply is available to all residents of the region. The need to ensure a safe, reliable drinking water supply is the highest priority for the management of nitrate under the Salt and Nitrate Control Program and is to be complied with as quickly as possible in all areas in the Central Valley Region.

- ***Goal 2: Achieve Balanced Salt and Nitrate Loadings***. This goal seeks to establish a balance of the mass of salt and nitrate in groundwater underlying each permitted or managed area, where reasonable and feasible. With regard to salt, balance is defined as achieving a state where inputs of salt (salt flux in) into a managed area are equal to outputs (salt flux out) from the same area. Similarly, nitrate balance means a balance of nitrate flux in and nitrate flux out of the permitted managed area. The nitrate mass balance will need to account for hydrologic conditions as well as nitrate taken up by crops and losses of nitrate from the nitrogen cycle in soil, including denitrification in the root zone by soil microbial activity and volatilization to the atmosphere. Current regulatory activities are moving toward this goal through source control activities. Under the Control Program these activities are expected to continue and expand.

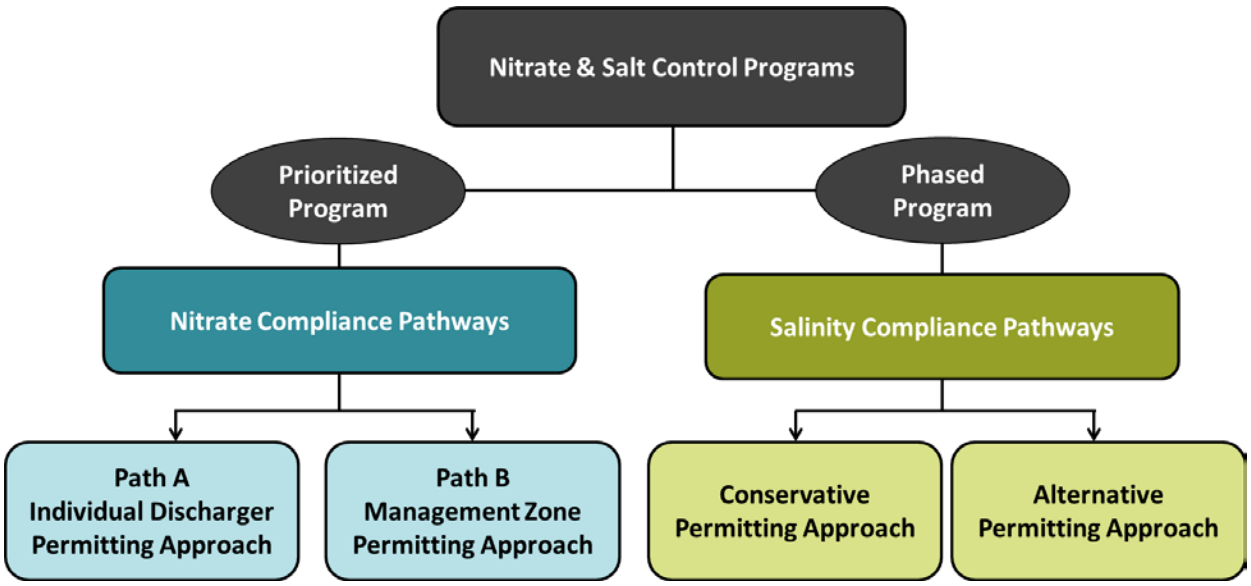
- ***Goal 3: Implement Managed Aquifer Restoration Program***. This goal seeks, where reasonable and feasible, to restore salt and nitrate levels within groundwater basins and subbasins or locally managed areas to concentrations that are below the applicable water quality objectives established for each constituent. Accordingly, Salt and Nitrate Control Program implementation not only focuses on restoring the beneficial use where reasonable and feasible, but it also seeks to minimize or prevent further degradation of groundwaters that are currently meeting water quality objectives so that they do not become impaired.

To meet these prioritized goals, the Salt and Nitrate Control Program has been phased with specific implementation activities required for salt and separate implementation activities required for nitrate. Both implementation approaches provide dischargers the option to select their means of compliance: either through a conservative permitting approach focused on individual source control, or through an alternative coordinated, multi–discharger management approach (Figure 4–2). When permittees elect alternative compliance, they are agreeing to participate collaboratively in valley-wide solutions, including under the proposed Nitrate Control Program, to provide replacement water and restoration (wherever reasonable, feasible and practicable) as part of permit provisions.

The proposed Control Program does not remove any of the current authority available to the Central Valley Water Board. Instead, it provides additional authority to allow the Board to consider innovative salt or nitrate management strategies where warranted, including strategies that are consistent with the intent and purpose of the Recycled Water Policy and the over–arching goals of the program.

The Salt and Nitrate Control Program is proposed to be implemented through a combination of Central Valley Water Board authorities. First, to ensure timely response and implementation of critical components to provide short-term safe water supplies, a Conditional Discharge Prohibition is proposed that will require that permittees to begin to implement provisions of the Control Program upon receiving a Notice to Comply issued by the Board's Executive Officer. The Conditional Discharge Prohibition will establish enforceable conditions until the Board revises permits to incorporate applicable requirements from the Control Program or determines that existing permit requirements are adequate. Second, for permittees subject to certain General Orders, the Board will hold a hearing to consider amending such Orders within 18 months of the effective date of the Salt and Nitrate Control Program to incorporate timelines and milestones for compliance. Long-term implementation of the Salt and Nitrate Control Program is achieved primarily through the Board's permitting actions (i.e., waste discharge requirements or conditional waivers); however, to be successful, coordination, funding and support will be required from multiple state, federal and local agencies as well as from local stakeholders and those benefitting from Central Valley waters.

Figure 4 - 2. Salt and Nitrate Management Strategy



The following identifies the major components of the Salt and Nitrate Control Program and policies that support its implementation:

- Salt Control Program (Discharges to Surface and Groundwater)
  - Phased Approach
- Nitrate Control Program (Discharges to Groundwater)
  - Prioritized Approach
  - Alternative Regulation Under a Management Zone
  - Alternative Compliance Projects
- Conditional Prohibition of Discharge (until Permits are updated to include control program provisions)

- Surveillance and Monitoring
- Policies to Support Implementation
    - Updated Variance Policy
    - Updated Exceptions Policy
    - Drought and Conservation Policy
    - Offsets Policy
- Application of Secondary Maximum Contaminate Levels (SMCLs) to Protect MUN
    - Revisions to SMCL Water Quality Objectives Section of Chapter 3
    - Clarification of Implementing SMCLs to Protect MUN in Chapter 4
- Definitions Specific to the Salt and Nitrate Control Program

Although the Salt and Nitrate Control Program alternative is to be considered as a whole, the components have been evaluated separately against the criteria and the no action alternative. Each component was discussed during the CV-SALTS public process with discussed alternatives for each element of each component summarized in Tables in Appendix D. Where consensus was achieved, only consensus recommendations are presented below. Where a primary recommendation was made but consensus not reached—notably for elements in the Nitrate Control Program, Offsets Policy, Drought and Conservation Policy, and proposed recommendations related to SMCLs, additional options are identified, discussed and evaluated.

4.2.1 Salt Control Program

When considering alternatives for salt control, stakeholders recognized five fundamental facts:

- Salt moves with water and consumptive use of that water increases the salt concentrations.
- No proven means exist at the present that will allow ongoing human activity in the Central Valley Region and maintain salinity levels throughout every groundwater basin.[31]
- Water conservation and increased recycled water is desired to maximize limited supplies but also results in increased salinity concentrations.
- Large portions of groundwater basins already contain concentrations of salinity that exceed narrative and numeric water quality objectives to protect AGR and MUN, respectively.
- Climate change will likely exacerbate existing issues by reducing available freshwater flows and increasing demands on more limited resources.

4.2.1.1 Alternatives

Two major alternatives were considered: 1) No Action Alternative; and 2) Incorporate a Salt Control Program.

4.2.1.1.1 No Action Alternative

The no action alternative is to continue regulation of salt discharges under the current regulatory framework discussed in Section 2.2 and Appendix C. The framework focuses on source control and implementation of state and federal antidegradation requirements to protect beneficial uses. Current regulatory authority is focused permit-by-permit and requires discharges to meet applicable water quality objectives if the receiving water already exceeds those objectives and

[31] TLB Basin Plan, Pg. III–8

provides for a limited time period for the permittees to come into compliance. The Tulare Lake Basin Plan identifies salt accumulation as the paramount water quality problem in the Basin and recognized that salinity levels in groundwater basins could not be maintained and still allow ongoing human activity. Therefore the Tulare Lake Basin Plan incorporated a framework that includes managed degradation from salt. The Sacramento–San Joaquin Basin Plan does not include a framework to control degradation or address conservation, recycling or restoration. Both Basin Plans recognize that ". . . a valley-wide drain to carry salts out of the valley remains the best technical solution . . ." for current salt accumulation. An economic study completed in 2009 (Howitt et al. 2009) indicated that if management of salt did not change, by 2030 annual economic cost would exceed $1.5 billion within the Central Valley.

4.2.1.1.2 Salt Control Program Alternative

Under the Salt Control Program alternative, there were specific elements recommended in the CV-SALTS SNMP and options to those elements identified through further stakeholder meetings and Board workshops. A list of Salt Control Program elements and options identified are provided in Table D–1 in Appendix D. Where agreement on approach was not reached, options are identified below by element.

4.2.1.1.2.1 Overview

The Salt Control Program utilizes a long-term Salinity Management Strategy that includes the following goals:

- Control the rate of degradation through a "managed degradation" program;
- Protect beneficial uses by applying appropriate antidegradation requirements for high quality water
    - Implement salinity management activities to achieve long-term sustainability and prevent continued impacts to salt sensitive areas; and
    - Where reasonable, feasible and practicable, protect beneficial uses by maintaining water quality that meets applicable water quality objectives and pursuing long-term managed restoration

Local salt management options in areas with significant salt concerns were evaluated (SSALTS 2016). These evaluations demonstrated that the volume and mass of unmanaged salt would remain high even under scenarios where existing salt management tools are widely adopted. A comprehensive solution to the salinity issues in the Central Valley will therefore need to rely on both local and sub–regional solutions as well as broad region-wide projects that will export salt out of the Central Valley. Additional studies are still needed to further define the range of solutions for surface and ground waters that may be deployed within each Central Valley hydrologic region to prevent continued impacts to salt sensitive areas in the Central Valley Region.

Given the need for these studies, a phased Salt Control Program consistent with the goals of the salinity management strategy is proposed. All permitted discharges of salt in the Central Valley are to comply with the provisions of this program. Two pathways to compliance are available during Phase I. Compliance pathways for subsequent phases will be identified prior to that phase. The Phase I Compliance pathways are:

1. ***Conservative Salinity Permitting Approach***, utilizes the existing regulatory structure that focuses on source control, use of conservative salinity permit limits, and limited use of assimilative capacity and/or compliance time schedules.

2. ***Alternative Salinity Permitting Approach***, is an alternative approach to compliance through implementation of specific requirements, rather than application of conservative effluent limits. Under Phase I, permittees must maintain current salinity control efforts and support facilitation and completion of the Salinity Prioritization and Optimization Study. Discharges to waste management units subject to the containment requirements of Division 2 of Title 27 of the California Code of Regulations are not eligible to be permitted under the Alternative Salinity Permitting Approach.

The primary goal of the Conservative Approach is to prevent degradation while the primary goal of the Alternative Approach is to manage degradation while long-term solutions are developed.

4.2.1.1.2.2 Phased Control Program

The Salt Control Program will be implemented in three phases, with each of the three phases having a duration of ten to fifteen years (Figure 4–3). Some portions of a subsequent phase may occur or be initiated prior to the end of an existing phase. At the discretion of the Central Valley Water Board Executive Officer, the completion date for any phase may be modified or extended up to five years based on the need to develop Basin Plan amendments to support implementation of the next phase, reduction in anticipated staff resources, need to extend milestones or other factors. The findings from each phase will inform the next phase, allowing for implementation of an adaptive management approach to salt management in the Central Valley Region.

The phases of the Salt Control Program are linked to activities that occur under the Alternative Salinity Permitting Approach, as follows:

Phase I – Prioritization and Optimization Study (P&O Study) – The P&O Study will facilitate the development of a long-term Salinity Management Strategy to achieve the goals of the Salt Control Program by coordinating and completing tasks and securing funding. The P&O Study will at a minimum:

- Develop groundwater and surface water–related salinity data and information for sensitive and non–sensitive areas for hydrologic regions within the entire Central Valley Region, including guidelines to protect salt–sensitive crops;
- Identify sources of salinity and actions that impact salinity in surface and ground waters;
- Evaluate impacts of state and federal policies and programs;
- Identify and prioritize preferred physical projects for long-term salt management (e.g. regulated brine line(s), salt sinks, regional/sub–regional de–salters, recharge areas, deep well injection, etc.);
- Develop the conceptual design of preferred physical projects and assess the environmental permitting requirements and costs associated with each of these projects;
- Identify non–physical projects and plan for implementation;
- Develop a governance structure and funding plan;
- Identify funding programs, including federal and state funds, and opportunities for future phase implementation; and
- Identify recommendations for Phase II of the Salt Control Program.

The P&O Study will inform Phases II and III of the Salt Control Program. Based on the findings of the P&O Study, the Central Valley Water Board, through a public process, will review the Basin Plan and consider whether modifications to the Basin Plan are required to facilitate implementation of Phases II or III.

Phase II – Project Development and Acquisition of Funds – Phase II of this Salt Control Program will begin no later than at the end of Phase I, but some activities may be initiated during Phase I. Phase II includes the following key elements:

- Using available funding sources, complete the engineering design and environmental permitting of preferred physical projects identified in Phase I;
- Initiating or continuing implementation of preferred non–physical projects identified during Phase I and, if appropriate, identifying new preferred non–physical projects and the process or milestones for implementation; and
- Identifying sources and securing the funding to implement the preferred physical projects.

Phase III – Project Implementation – During Phase III, construction of preferred physical projects will be completed, unless already completed during Phase II. Preferred project alternatives are anticipated to include salt management areas, de–salters and a regulated brine line. The focus of this phase is the physical movement of salt away from salt sensitive areas and into management areas as well as laying the foundation for long-term managed restoration efforts. For large–scale capital projects, such as construction of a regulated brine line, construction may occur over multiple phases and additional time may be required to complete full build–out of the project.

Funding and Overseeing the Prioritization and Optimization Study and Future Phases – Conducting the Prioritization and Optimization Study is anticipated to cost up to $10 million, and is expected to take 10 years to complete. In addition to natural processes and consumptive use, Central Valley salinity issues are a result of valley–wide modified hydrology and water/salt transport. In light of the cost and time associated with this comprehensive, valley–wide effort, the program is structured to encourage all (or almost all) dischargers of salt help fund its implementation. Entities beyond permittees that also benefit from salinity management in the Central Valley, such as those that import water from the Central Valley, are encouraged to participate in the Priority and Optimization Study as well as implementation of Phases II and III as applicable. For those participating in the P&O Study, their level of participation will be determined by a lead entity based, in part, on ambient conditions, proportional contribution of salts and other factors as determined appropriate.

The likely entity that would take the lead in moving forward with the P&O Study, including determining the appropriate level of financial participation for dischargers and others, is the existing Central Valley Salinity Coalition (CVSC). However, the CVSC may need to adjust its membership and policy structures with respect to conducting the P&O Study to ensure that the CVSC is properly organized for addressing Central Valley salinity issues and to ensure that membership and governance structure account for all those potentially impacted by its decisions. It is also anticipated that CVSC activities related to implementation of the P&O Study will be discussed in an open stakeholder process through an entity similar to the CV-SALTS Executive Committee. As the P&O Study moves forward, progress reports will be required by the Central Valley Water Board after critical milestones.

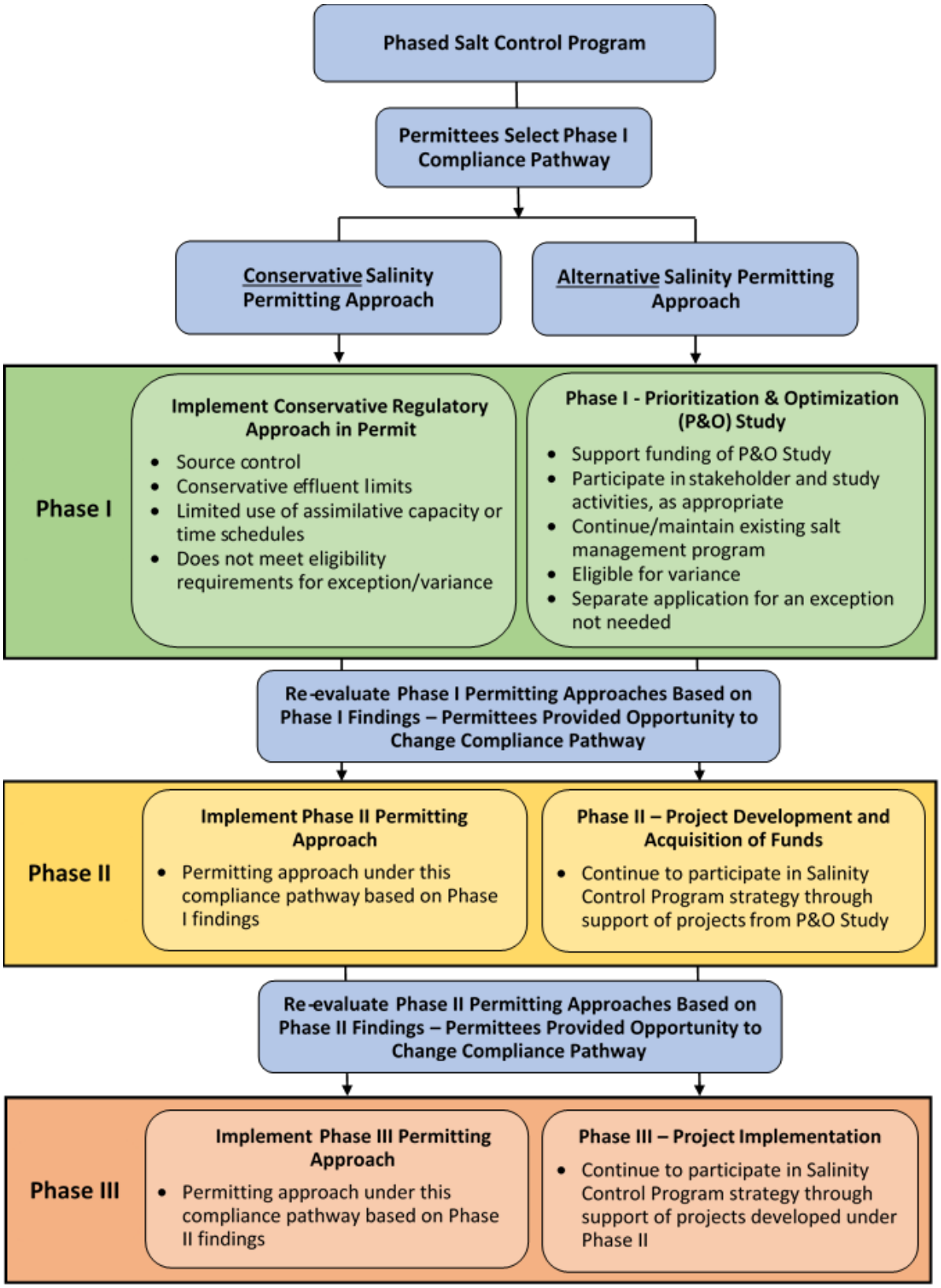
4.2.1.1.2.3 Salt Control Program Implementation

Table 4–3 depicts the key components of the two pathways to regulatory compliance under the Phase I Salt Control Program. The Conservative Pathway focuses on source control to ensure that beneficial uses are protected and restricts degradation without a finding that the discharge provides a greater benefit to the people of the state than participation in the Alternative Pathway. The Alternative Pathway approach allows the Central Valley Water Board to manage degradation while the long-term salinity efforts are being implemented. The Central Valley Water Board retains its discretion to adjust the established requirements on a case–by–case basis. However, application of such discretion is limited under the Conservative Salinity Permitting Approach in order to encourage permittees to participate in a valley–wide management solution.

Table 4 - 3. Comparison Between the Conservative and Alternative Salinity Permitting Approaches During Phase I

Conservative Salinity Permitting Approach	Alternative Salinity Permitting Approach
<u>All Permittees</u> • Apply conservative assumptions for interpretation of the narrative objectives and application of numeric water quality objectives to protect AGR and MUN beneficial uses • Limited availability of a compliance or time schedule to meet a salinity–related effluent limit or waste discharge requirement (subject to the discretion of the Central Valley Water Board) <u>Groundwater Discharge and Non-NPDES Discharge Permittees</u> • Limited new or expanded allocation of assimilative capacity subject to the discretion of the Central Valley Water Board • Does not meet eligibility requirements for an exception <u>NPDES Surface Water Discharge Permittees</u> • A new or expanded allocation of assimilative capacity may be authorized only where a permittee can demonstrate that the impact of the new discharge or the increased discharge will be spatially localized or temporally limited, a determination subject to the discretion of the Central Valley Water Board • Does not meet eligibility requirements for a variance	<u>All Permittees</u> • Participate in the Phase I Prioritization and Optimization Study throughout its duration • Continue implementing reasonable, feasible and practicable efforts to control salinity through performance–based measures as determined by the Central Valley Water Board, including: - Salinity management practices - Pollution prevention, watershed, and/or salt reduction plans - Monitoring - Maintenance of existing discharge concentration or loading levels of salinity <u>Groundwater and Non-NPDES Discharges</u> • Salinity limits not used as a compliance metric except to ensure implementation of performance–based measures; • Permittees that meet requirements of the alternative salinity permitting approach are considered in compliance with their salinity limits <u>NPDES Surface Water Discharges</u> • Eligible for a salinity variance

Figure 4 - 3. Salt Control Program Pathways to Compliance



Under Phase I of the Salt Control Program, permitted dischargers of salt (permittees) will be subject to the Conservative Salinity Permitting Approach unless the permittee elects to be permitted under the Alternative Salinity Permitting Approach.

A permittee may switch from one approach to another by submitting a written request to the Executive Officer of the Central Valley Water Board to change its selected compliance pathway. This request must include documentation regarding how the permittee will comply with the requirements applicable to the compliance pathway it is now requesting to be permitted under and the basis for the change. If the permittee requests to change from the Alternative to the Conservative Permitting Approach, the permittee must demonstrate to the Central Valley Water Board that it has complied with all provisions associated with the Alternative Compliance Permitting Approach, including financial support to the P&O Study, up through the time of permit revision to incorporate requirements for the Conservative Permitting Approach. If the permittee requests to change from the Conservative Permitting Approach to the Alternative Approach, the permittee shall meet the financial commitment requirements of the Alternative Approach as required by the entity conducting the P&O Study.

Prior to implementation of Phase II, the Central Valley Water Board, through a public process, must review the Salt Control Program and reconsider compliance pathways for Phase II. The compliance pathways for Phase II may be similar or different from those in Phase I. Permittees will have an opportunity to review and select Phase II compliance pathways upon implementation of Phase II. The process shall repeat itself prior to implementation of Phase III.

Compliance Pathway Requirements

Table 4–3 proves a general overview of the differences between the Conservative and Alternative Permitting Approaches. The following sections provide additional information regarding the requirements to comply with the Salt Control Program under each. The Conservative Approach will apply to all permitted dischargers of salt, unless the permittee elects to participate in the Phase I Alternative Approach.

Phase I Conservative Approach

The Conservative Approach was developed to ensure no further degradation to high quality waters. The approach generally utilizes conservative assumptions to interpret narrative objectives to protect AGR and numeric water quality objectives to protect MUN, while also requiring that the most salt sensitive beneficial use be protected. In addition, the approach limits the availability of a compliance or time schedule to meet a salinity–related effluent limit or waste discharge requirements as well as limiting the use of assimilative capacity unless a finding that the discharge provides a greater benefit to the people of the state than participation in the Alternative Pathway can be made by the Central Valley Water Board. Permittees choosing compliance under the Conservative Approach are not eligible for a variance or exception to meeting water quality objectives since the approach focuses on reducing or eliminating further degradation to high quality waters.

Under the Conservative Salinity Permitting Approach, permit conditions would be based on the following requirements.

Groundwater and Non-NPDES Surface Water Discharges

The Central Valley Water Board shall apply the following principles to permits being issued to regulate discharges of salinity to groundwater or discharges of salinity to surface waters that are not subject to NPDES permits (Chapter 5.5 of the Porter–Cologne Water Quality Control Act which contains state statutory requirements for issuing NPDES permits consistent with the federal Clean Water Act).

1. *Permit Provisions* – Surface and Groundwater Permit limitations shall be set as follows:

    (a) Limitations shall be set based on the applicable water quality objective that protects the most sensitive beneficial use and considering degradation of a high quality water. The Central Valley Water Board may use its discretion to continue to authorize a previously approved mixing zone for salinity subject to the provisions in paragraph (4).

2. *Application of Applicable Water Quality Objectives* – When the most salinity sensitive beneficial use is AGR or MUN, the Central Valley Water Board will apply the associated narrative and range in numeric objectives as indicated below. When the applicable water quality objective for setting Permit Limitations is a site–specific numeric water quality objective, the Board shall apply that numeric objective. The values recommended below apply only for the conservative approach during Phase I.

    (a) AGR Beneficial Use Protection – When it applies the narrative water quality objective, the Central Valley Water Board shall use a conservative, numeric value for electrical conductivity (EC) to protect the AGR beneficial use. During Phase I of the Salt Control Program, the numeric value of 700 µS/cm EC (as a monthly average) shall be considered to be a conservative value that is protective of the AGR beneficial use. This value is for use only as indicated here for the Conservative Permitting Approach and shall not be considered a water quality objective. For discharges where a site–specific numeric value has been developed and/or previously applied to the discharge for the protection of the AGR beneficial use, the Board shall continue to apply that value, as appropriate.

    (b) MUN Beneficial Use – When it applies a Secondary Maximum Contaminant Level (SMCL) for protection of a MUN beneficial use, the Central Valley Water Board shall use the recommended SMCL of 900 µS/cm EC (as an annual average).

<u>Other Options Considered on Measuring Compliance</u>:

a) Proposed alternative utilizes current regulatory framework for classes of dischargers to surface or groundwater which may vary from measuring compliance in the effluent, receiving water or both.

b) Measure compliance in the effluent in order to provide a conservative estimate and avoid time–consuming and costly studies to model impacts on receiving water

c) For measuring compliance in discharges to groundwater

a. Utilize "Shallow" zone as defined in the Nitrate Control Program for consistency (links to domestic well depth)

b. Redefine "Shallow" zone to represent shallowest 10% of saturated zone rather than link to domestic wells

c. Develop a default calculation (e.g. 20–ft. screening length with five feet

above the saturated zone) with option to justify alternative

3. *Consideration of Degradation to High Quality Waters* – Before authorizing degradation to high quality waters, and consistent with the state and federal antidegradation policies as applicable, the Central Valley Water Board must consider, among other things, if allowing the degradation is to the maximum benefit to the people of the state. Under the Phase I Conservative Permitting Approach, the Central Valley Water Board must specifically find that allowing this permittee to degrade a high quality water better serves the people of the state rather than their participation in the P&O study for Phase I of the Salt Control Program.
4. *Allocation of Assimilative Capacity* – For both surface and groundwater discharges, the Central Valley Water Board will limit new or expanded allocations of assimilative capacity. If a permittee has previously received an allocation of salinity related assimilative capacity, and the allocation was granted with the support of an antidegradation study or analysis, then the Central Valley Water Board may consider continuing the previously approved allocation of assimilative capacity.
5. *Salinity Exception* – Permittees operating under the Phase I Conservative Salinity Permitting Approach do not meet eligibility requirements for a salinity exception.
6. *Issuance of Time Schedules* – The Central Valley Water Board will limit use of time schedules for achieving compliance with salinity permit limitations and will use its discretion to limit the time allowed in the event that a time schedule is deemed necessary under the particular circumstances associated with that discharge.

NPDES Surface Water Discharges

The following principles will be applied to permits being issued to regulate discharges of salinity to surface waters that are subject to NPDES permit provisions as required by the federal Clean Water Act.

1. *Permit Provisions* – Permit limitations shall be set as follows:
    - Limitations shall be set based on the applicable water quality objective that protects the most sensitive beneficial use and based on the application of the Antidegradation Policy. The Central Valley Water Board may use its discretion to continue to authorize a previously–approved mixing zone for salinity subject to the provisions in paragraph (4).
2. *Application of Applicable Water Quality Objectives* – When the most salt sensitive beneficial use is AGR or MUN, the Central Valley Water Board will apply the associated narrative and range in numeric objectives as indicated below. When the applicable water quality objective for setting Permit Limitations is a site–specific numeric water quality objective, the Board shall apply that numeric objective. The values recommended below apply only for the conservative approach during Phase I.
    a. AGR Beneficial Use Protection – When it applies the narrative water quality objective, the Central Valley Water Board shall use a conservative, numeric value for electrical conductivity (EC) to protect the AGR beneficial use. During Phase I of the Salt Control Program, the numeric value of 700 µS/cm EC (as a monthly average) shall be considered to be a conservative value that is protective of the AGR beneficial use. This value is for use only as indicated here for the Conservative Permitting Approach and shall not be considered a water

quality objective. For discharges where a site–specific numeric value has been developed and/or previously applied to the discharge for the protection of the AGR beneficial use, the Board shall continue to apply that value, as appropriate.

b. MUN Beneficial Use – When it applies a Secondary Maximum Contaminant Level (SMCL) for protection of a MUN beneficial use, the Central Valley Water Board shall use the recommended SMCL of 900 µS/cm EC (as an annual average).

Options on Measuring Compliance:

a) Proposed alternative utilizes current regulatory framework for classes of dischargers to surface water which may vary from measuring compliance in the effluent, receiving water or both.

b) Measure compliance in the effluent in order to provide a conservative estimate and avoid time consuming and costly studies to model impacts on receiving water

3. *Consideration of Degradation to High Quality Waters* – Before authorizing degradation to high quality waters, and consistent with the state and federal antidegradation policies as applicable, the Central Valley Water Board must consider, among other things, if allowing the degradation is to the maximum benefit to the people of the state. Under the Phase I Conservative Permitting Approach, the Board must specifically find that allowing this permittee to degrade a high quality water better serves the people of the state rather than their participation in the P&O study for Phase I of the Salt Control Program.
4. *Allocation of Assimilative Capacity (i.e., mixing zone/dilution credit)* – The Central Valley Water Board will limit new or expanded allocations of assimilative capacity in surface water (i.e., mixing zone/dilution credit) and will consider whether a permittee can demonstrate that the reduction of water quality will be spatially localized or temporally limited with respect to the waterbody. The Board may consider maintaining any previously approved allocations of assimilative capacity, if the previously approved allocation was granted with the support of an antidegradation study or analysis.
5. *Salinity Variance* – Permittees operating under the Phase I Conservative Salinity Permitting Approach do not meet eligibility requirements for a salinity variance.
6. *Compliance Schedule* – Where a reasonable potential finding has been made and the permittee is unable to comply with the applicable salinity effluent limit, the Central Valley Water Board will use its discretion to limit the use of compliance schedules authorized by the State Water Board Compliance Schedule Policy for achieving compliance with salinity–based effluent limits, and will use its discretion to limit the time allowed in the event that a compliance schedule is deemed necessary under the particular circumstances associated with the discharge.

Phase I Alternative Salinity Permitting Approach

In lieu of being subject to the Conservative Permitting Approach, permittees may elect to be permitted for discharges of salinity by participating in the Phase I Alternative Salinity Permitting Approach. Permittees electing to participate in the Phase I Alternative Salinity Permitting Approach are given the opportunity to participate collectively in the P&O Study with other permittees, the Central Valley Water Board, and other stakeholders, including those importing and benefitting from water supplies from the Central Valley, to work toward full implementation of the Salt Control Program. Key milestones for the P&O Study are identified in Table 4–4 and outlined in Figure 4–4. To manage degradation while studies are in progress, permittees must

continue to meet performance based standards with any increase in salt load limited under the discretion of the Board. Permittees under the Alternative Approach are eligible for conditional variances or exceptions from salinity water quality objectives if needed, with confirmed participation in the P&O Study satisfying conditional variance or exception requirements.

If the P&O Study does not meet the milestones established in Table 4–4 or where the Central Valley Water Board finds reasonable progress is not being made towards achieving the milestones, the Board will notify the permittees that selected the Alternative Salinity Permitting Approach of its findings through public notice that includes a required schedule for completion of the P&O Study milestones. Failure to comply with the requirements in the notice will result in all permittees that elected to be permitted under the Phase I Alternative Salinity Permitting Approach to be subject to the requirements of the Conservative Salinity Permitting Approach.

Salinity–related permit conditions will be based on the requirements established below. Permitted salinity discharges shall be implemented in a manner consistent with State Water Board Resolution 68-16, the Statement of Policy with Respect to Maintaining High Quality of Waters in California (State Antidegradation Policy) and the federal antidegradation policy (40 CFR §131.12), as applicable. Discharges to waste management units subject to the containment requirements of Division 2 of Title 27 of the California Code of Regulations are not eligible to be permitted under the Alternative Salinity Permitting Approach.

Groundwater and Non-NPDES Surface Water Discharges

The following principles will be applied to permits being issued for regulating discharges of salinity to groundwater or discharges of salinity to surface waters that are not subject to NPDES permits (Chapter 5.5 of the Porter–Cologne Water Quality Control Act which contains state statutory requirements for issuing NPDES permits consistent with the federal Clean Water Act).

1. *Participation in P&O Study* – Permittees electing the Alternative Salinity Permitting Approach shall be required to participate in efforts related to conducting the P&O Study, including providing the minimum required level of financial support. The level of participation may vary based on salinity in the discharge, local conditions or other factors. The needed level of participation would be established by the lead entity (i.e., Central Valley Salinity Coalition [CVSC]) that is overseeing the P&O Study. The lead entity shall document and confirm full participation by the permittee(s) until the P&O Study is completed or until such time that the Central Valley Water Board otherwise revises the applicable waste discharge requirements and/or conditional waiver or determines permittee is in compliance with the requirements of the Phase 1 Conservative Salinity Permitting Approach. The timeframe for completion of the P&O Study is expected to be ten years from the effective date of this Salt Control Program but may be extended by the Board's Executive Officer for a period of up to five years.

2. *Implementation of Reasonable, Feasible and Practicable Efforts to Control Salinity* – The Central Valley Water Board will require dischargers to continue to implement reasonable, feasible and practicable efforts to control levels of salinity in discharges. Such efforts may include, but are not limited to, implementation of management practices that are designed to reduce salinity in discharges; implementation of pollution prevention plans, watershed plans, and/or salt reduction plans that help to reduce salt loads in discharges to groundwater or surface water; and, monitoring for salinity in surface water or groundwater as part of existing local, watershed–based or regional monitoring programs, in coordination with monitoring under the Salt and Nitrate Control Program.

3. *Maintain Current Discharge Concentrations for Salinity or Mass Loading Levels* – To the extent reasonable, feasible and practicable (and while accounting for conservation and drought, salinity levels in the water supply source, and some appropriate increment of growth), the Central Valley Water Board may use its discretion to adopt performance–based limits or action levels to the extent the Board finds it appropriate and necessary for salinity for permittees electing the Alternative Salinity Permitting Approach.

4. *Setting Permit Requirements* – In regulating discharges of salinity in waste discharge requirements and conditional waivers, the Board shall require dischargers to fully participate in the P&O study (as documented by the lead entity overseeing the study), implement reasonable, feasible and practicable efforts to control salinity, and meet any performance–based limits or action levels deemed appropriate and necessary by the Central Valley Water Board. Compliance with these requirements shall constitute compliance with the water quality control plan and shall be deemed adequately protective of beneficial uses and the water quality objectives reasonably required for that purpose consistent with this Salt control program.

NPDES Surface Water Discharges

The Central Valley Water Board shall apply the following principles to permits being issued for authorizing discharges of salinity to surface waters subject to NPDES permits under the federal Clean Water Act.

1. *Participation in P&O Study* – Permittees electing the Alternative Salinity Permitting Approach shall be required to fully participate in efforts related to conducting the P&O Study including providing at least the minimum required level of financial support as determined by the lead entity. The level of participation may vary based on salinity in the discharge, local conditions or other factors. The needed level of participation would be established by the lead entity (i.e., CVSC) that is overseeing the P&O Study. The lead entity shall document and confirm adequate participation by the permittee(s) until the P&O Study is completed or until such time that the Central Valley Water Board otherwise revises the applicable NPDES permit consistent with this Control Program. The timeframe for completion of the P&O Study is expected to be ten years from the effective date of this Salt Control Program but may be extended by the Board's Executive Officer for a period of up to five years.
2. *Requirements for Ensuring Reasonable Protection of Beneficial Uses* – Full participation in the P&O study as documented and confirmed by the lead entity overseeing the P&O Study shall be found by the Central Valley Water Board to provide for in lieu or alternative compliance to receiving water limits or effluent limits based on salinity. To determine reasonable potential, the Board maintains its discretion to conduct such analysis by using the approach set forth in U.S. EPA's Technical Support Document, by using the approach set forth in the State Implementation Plan, or by using another approach that is consistent with applicable federal regulations. To the extent that the discharge in question is found to have reasonable potential for causing or contributing to a violation of an applicable salinity water quality objective pursuant to applicable federal regulations, the Board may consider granting use of assimilative capacity by allowing for a mixing zone and dilution credits. Adequate participation in and progress of the P&O Study satisfies requirements for a conditional variance to salinity limits where needed.

Table 4 - 4. Key Phase I Prioritization and Optimization Study Milestones

Implementation Schedule	Milestone/ Deliverable	Minimum Requirements
6 months from Notice to Comply	Phase I Workplan	*Workplan to include*: • Detailed P&O Study task descriptions • Cost estimate for each task • Task completion schedule • Stakeholder participation elements
Within 12 months from Notice to Comply	Phase I Funding & Governance Plan	*Complete Phase I implementation planning:* • Establish the entity and procedures for governance of the P&O Study • Develop funding plan to complete the P&O Study
Per Workplan	Special Studies	*Special Studies to include*: • Groundwater Quality Trace Constituent Study • Recycled Water Imports Study • Stormwater Recharge Master Plan Study • Emerging Technology Updates (every 5 years)
12 months from Workplan approval and annually there after	Annual Progress Report	*Annual Report to summarize*: • Progress on Workplan execution • Status of Phase I funding and expenditures • Stakeholder participation
5 years from Notice to Comply	Interim Project Report	*By Central Valley Hydrologic Region, identify*: • Recommended preferred physical projects with recommended next steps for development • Recommended non–physical projects and a schedule for implementation
9 years from Notice to Comply	Long-term Governance Plan for Phases II and III	*Governance Plan that establishes*: • Describes planned implementation approach for Phases II & III • Governance structure including: - Stakeholder roles and responsibilities - Committees responsible for development of policies, technical documents, BMPs and funding
	Long-term Funding Plan for Phases II and III	*Funding Plan that establishes*: • Financial approach for long-term funding including sources and funding types (grants, bonds, loans, etc.) • Approach for the equitable management and funding of long-term, large–scale salinity management projects
	Basin Plan Amendment Recommendations	*As needed, recommended amendments to Basin Plans to:* • Facilitate implementation of Phase II of the Salt Control Program • Consider revisions of salinity variance and salinity exception policies • As appropriate, modify the Conservative or Alternative Salinity Permitting Approaches;
10 years from Notice to Comply	Final Phase I Project Report	• *For preferred physical projects*: - Conceptual designs - Assessment of environmental permitting requirements • Status of implementation of non–physical projects per Interim Project Report with recommendations for modifications, as needed

3. *Implementation of Reasonable, Feasible, and Practicable Efforts to Control Salinity* – The Central Valley Water Board will continue to require implementation of reasonable, feasible and practicable efforts to control levels of salinity in discharges. Such efforts may include, but are not limited to, implementation of management practices that are designed to reduce salinity in discharges; implementation of pollution prevention plans, watershed plans, and/or salt reduction plans that help to reduce salt loads in discharges to surface waters; and, continued monitoring for salinity in surface water as part of existing local, watershed–based or regional monitoring programs, in coordination with monitoring under the Salt and Nitrate Control Program.
4. *Maintain Current Discharge Concentrations for Salinity or Mass Loading Levels* – To the extent reasonable, feasible and practicable (and while accounting for conservation, salinity levels in the water supply source, and some appropriate increment of growth), the Central Valley Water Board may use its discretion to prescribe performance–based limits or triggers to the extent the Board finds such additional actions appropriate and necessary for salinity for permittees electing the Alternative Salinity Permitting Approach.

Permitted Discharge to a Water Body Where a Beneficial Use Has Been De-designated

The P&O Study will establish a program for the long-term management of salts in the Central Valley, including identifying locations that may serve as salt management areas. For example, a groundwater basin that has had one or more beneficial uses de-designated due to salinity may be a considered a potential location for establishment of a salt management area. Accordingly, under the Phase I Salt Control Program:

- Permittee(s) that elect either the Conservative or Alternative Permitting Approachs and then request the de-designation of one or more beneficial uses from a surface water body or all or part of a groundwater basin due to high levels of salinity shall participate in the P&O Study even after the beneficial use de-designation is approved by providing at least the minimum level of required financial support throughout the Phase I program. The P&O Study shall evaluate all areas de-designated based on salinity for suitability as salt management areas.
- Permittee(s) that discharge to a surface water body or a groundwater basin where one or more beneficial uses were de-designated due to salinity prior to the beginning of Phase I of the Salt Control Program shall participate in the P&O Study by providing at least the minimum level of required financial support.

Salinity management is a Central Valley-wide concern and responsibility, and salt management areas are recognized as a key component of any solution in order to move salt out of sensitive areas and consolidate material for efficient de-salinization and potential future transport out of the basin. Areas where beneficial uses have been dedesignated need to be incorporated into the P&O Study to facilitate development of a long-term solution.

Compliance Pathway Selection

A process and schedule for initiation of Phase I of the Salt Control Program and for selection of a compliance pathway during Phase I has been established. For permittees that select the Alternative Salinity Permitting Approach, nothing here prevents, or should be interpreted to prevent, permittees from implementing elements of the Phase I P&O Study prior to receiving a Notice to Comply.

Existing Discharges of Salt

The Central Valley Water Board shall issue a Notice to Comply with the Salt Control Program to existing permittees that discharge salt in the Central Valley Region within one year of the effective date of the Basin Plan Amendments. Upon receipt of the Notice to Comply, permittees receiving the notice will be subject to the Conditional Prohibition of Salinity Discharges (see relevant section in proposed Basin Plan Amendment Language) unless their existing permit has already been updated with the requirements of the Salt Control Program. The Conditional Prohibition of Salinity Discharges establishes enforceable requirements for implementation of Phase I of the Salt Control Program.

No later than six months after receiving the Notice to Comply, existing permittees shall notify the Central Valley Water Board of its decision of whether to be permitted under the Conservative Salinity Permitting Approach or the Alternative Salinity Permitting Approach. Based on the selection of the permitting approach, the permittee shall comply with the following requirements:

- *Conservative Salinity Permitting Approach* – A permittee must submit an assessment of how the discharge will comply with the conservative permitting requirements set forth in the Conservative Salinity Permitting Approach. The permittee shall submit this assessment to the Central Valley Water Board with the notification to the Central Valley Water Board of its permit compliance pathway decision. If the Central Valley Water Board Executive Officer does not concur with the findings of the assessment, the Central Valley Water Board may use its authority to request additional technical and/or monitoring information with a deadline for submittal. When conducting the assessment, the permittee may use historical water quality if it adequately represents the character of the current discharge and/or receiving water and is approved by the Central Valley Water Board Executive Officer.
- *Alternative Salinity Permitting Approach* – A permittee that selects this approach shall participate in the Phase I P&O Study by providing the minimum required level of financial or in–kind support throughout Phase I as determined by the lead entity overseeing the P&O Study. The permittee shall provide documentation of its compliance with the required level of support with the notification to the Central Valley Water Board of its permitting decision. If the permittee has an approved salinity–related Time Schedule Order, Compliance Schedule or variance that expires prior to the completion of the Phase I P&O Study, the Central Valley Water Board, at its discretion, may extend the Time Schedule Order or Compliance Schedule or renew or grant a variance, as appropriate and allowed by other applicable policies.

New or Substantively Modified Discharges

A new permittee, or existing permittee seeking a permit modification due to a substantial and/or material change which increases salt concentration or load from a facility, shall indicate how the permittee intends to comply with the Salt Control Program at the time of application and provide the required information to support the decision, as described above.

Permitted Discharge to a Water Body Subject to Dedesignation of a Beneficial Use

The P&O Study will establish a program for the long-term management of salts in the Central Valley, including identifying locations that may serve as salt management areas in order to move salt away from salt sensitive areas. In order to allow for accumulation of salt in a specific area, beneficial uses must first be dedesignated or discharges would still be required to meet water quality objectives to protect the established uses of the water body in question. Since long-term management of salt is a valley–wide concern that requires a coordinated approach, any review and dedesignation of beneficial uses based on elevated salinity levels must be

conducted under the umbrella of the Alternative Compliance Approach and incorporated into the long-term plan developed under the P&O Study. Accordingly, under the Phase I Salt Control Program:

- Permittee(s) that selects either the Conservative or Alternative Permitting Approach and then requests the de–designation of one or more beneficial uses from a surface water body or all or part of a groundwater basin based on salinity shall participate in the P&O Study even after the beneficial use de–designation is approved by providing at least the minimum level of required financial support throughout the Phase I program. The P&O Study shall evaluate all areas de–designated based on salinity for suitability as salt management areas
- Permittee(s) that discharges to a surface water body or a groundwater basin where one or more beneficial uses were de–designated due to salinity prior to the beginning of Phase I of the Salt Control Program shall participate in the P&O Study by providing at least the minimum level of required financial support.

Failure to Comply

Any permittee that does not submit a response to the Notice to Comply within the required six–month period may be subject to an enforcement action. Permittees who do not respond in the required six-month period are subject to enforcement for failure to respond to the Notice to Comply, but may still select the Alternative Salinity Permitting Approach. Permittees selecting the Alternative Salinity Permitting Approach after the originally allocated six-month period will need to obtain approval from the lead entity conducting the P&O Study to join late, subject to the lead entity's requirements, in addition to providing the minimum required level of financial support.

A permittee that elects to participate in the Alternative Salinity Permitting Approach must continue to provide at least the minimum required level of financial support to the lead entity for the P&O Study throughout the duration of Phase I of the Salt Control Program, unless the Central Valley Water Board has revised the permittee's permit in a manner that authorizes them to be subject to the Conservative Permitting Approach. In such cases, the permittee must remain in compliance with the Alternative Salinity Permitting Approach until such time that their permit is amended to allow compliance under the Conservative Permitting Approach. Where a permittee fails to provide the minimum required level of financial support to the P&O Study, the Central Valley Water Board may require the permittee to comply with the requirements of the Conservative Salinity Permitting Approach.

The lead entity shall be responsible for determining the minimum required level of financial support. In some circumstances, and where appropriate, the lead entity may consider *in lieu* contributions to meet the minimum level of financial support. However, such determinations are at the discretion of the lead entity.

Salt Control Program – Phase I to Phase II Re–Evaluation

Upon completion of Phase I and prior to initiation of Phase II of the Salt Control Program, the Central Valley Water Board will re-evaluate the Conservative and Alternative Salinity Permitting Approaches applicable under Phase I of the Salt Control Program. The Central Valley Water Board shall consider convening a stakeholder group to assist in the re-evaluation. In this re-evaluation, the Central Valley Water Board shall consider the findings of the P&O Study, results from surveillance and monitoring programs, proposals for use of other permitting options or

approaches, and progress made towards meeting the overarching goals of the Salt Control Program. Based on the findings of this re–evaluation, the Central Valley Water Board may modify or re–adopt the Phase I permitting approaches and policies (e.g., variance and exceptions), thereby making them applicable to Phase II. Such amendments must be completed prior to the initiation of Phase II of the Salt Control Program.

Prior to the initiation of Phase II of the Salt Control Program, the Central Valley Water Board will notify all existing permittees in the Central Valley Region of the salinity–related permitting approaches applicable to Phase II. This notification must occur even if the Phase I permitting approaches are re–adopted. The purpose of the notification is to provide the opportunity for permittees to change the compliance pathway selected for Phase I. A permittee that elects to change its compliance pathway shall submit documentation to support the change within 180 days of the Central Valley Water Board notification.

A similar notification process will be utilized prior to the initiation of Phase III of the Salt Control Program.

Figure 4 - 4. General Schedule of Key Phase I Prioritization and Optimization Study Activities and Milestones

Category	Year of Implementation (From Notice to Comply)									
	1	2	3	4	5	6	7	8	9	10
Stakeholder Coordination	Stakeholder Coordination Meetings (as needed frequency)									
	SGMA GSA Coordination Meetings (as needed frequency)									
Phase I Workplan	Phase I Work–plan									
Governance	Phase I Governance Plan	Long-term Governance Plan for Phases II & III								
Funding	Phase I Funding Plan	Long-term Funding Plan for Phases II & III								
Preferred Physical/Non–Physical Salt Management Projects		Development of Recommended Preferred Physical and Non–Physical Projects			Interim Project Report					
						Conceptual Design and Assessment of Environmental Permitting Requirements for Preferred Physical Projects				Final Project Report
Special Studies				Groundwater Quality Trace Constituent Study						
						Recycled Water Imports Study				
								Stormwater Recharge Master Plan Study		
					Emerging Tech Update No. 1				Emerging Tech Update No. 3	
Basin Planning									Phase II Recommendations	
Annual Reports		Progress Reports at Key Milestones (Years 1; 5 and 10 with documentation (electronic or otherwise) of participation)								

Revisions Specific to the Tulare Lake Basin Plan Maximum Average Annual Increase Ground Water Quality Objectives for Salinity and Permit Limits for Boron

The Water Quality Objectives Chapter (Chapter 3) and Implementation Chapter (Chapter 4) of the Tulare Lake Basin Plan specifically recognize the need for managed degradation to allow for salt accumulation from human activity. The Tulare Lake Basin Plan further clarifies that for all discharge categories (Discharges to Navigable Waters; Discharges to Land; Industrial Wastewater; Agricultural Drainage; and Oil Field Wastewater) the degradation will be limited to source water plus 500 µS/cm EC, not to exceed 1,000 umhos/cm, whichever is more stringent. In addition, chloride content of the discharge is limited to 175 mg/L and boron to 1 mg/L. Further, a maximum average annual increase in salinity measured as electrical conductivity was identified as groundwater quality objectives for eight separate Hydrographic Units:

Hydrographic Unit	Max Average Annual Increase (µS/cm)
Westside (North and South)	1
Kings River	4
Tulare Lake and Kaweah	3
Tule River and Poso	6
Kern River	5

The limitations identified have proven restrictive due to salinity concentrations in source water as well as increased conservation and recycling. The groundwater average annual increase objectives have proven difficult to calculate due to limited ambient groundwater data. The current proposal recommends removing the above identified specific EC and chloride limitations and re–evaluate appropriate limitations as part of the P&O Study. The proposal also recommends replacing the 1 mg/L boron limit with a reference to appropriate water quality objectives for boron, which will allow the evaluation of environmental characteristics, including natural background concentration, and water quality conditions that could reasonably be achieved when interpreting narrative water quality objectives.

4.2.1.2 Evaluation of Salt Control Program Alternatives

The two alternatives identified, No Action and Incorporation of a Salt Control Program, were evaluated against the criteria identified through the stakeholder effort and discussed in Section 4.1.4. The evaluation is summarized in Table 4–5.

Table 4 - 5. Evaluation of Salt Control Program Alternatives

Criteria	Alternatives	
	No Action	Salt Control Program
Provide Alternate Drinking Water Supplies	n/a	n/a
Legally Authorize Ag Discharges	M	H
Prevent Further Degradation	H	M/H
Restore Degraded Groundwater	L	M/H
Apply to Diverse Conditions	M	H
Leverage and Maximize Resources	L	H

Notes:
L = Low or Limited
M = Medium ability to address or addressed in some cases or over time
H = High likelihood of being addressed

Provide Alternate Water Supplies: Neither alternative is focused on providing alternative drinking water supplies. Current enforcement authority authorizes the Central Valley Water Board to order replacement water if a permitted discharge is causing or contributing to an exceedance that would impact persons relying on groundwater as their source of drinking water. (Wat. Code, § 13304.)

Legally Authorize Agricultural Discharges: Current regulatory framework allows agricultural discharges as long as appropriate antidegradation findings can be made. In many areas of the Central Valley, groundwater already exceeds conservative interpretations of narrative and numeric objectives of 700/900 EC, which would prohibit receiving water impacts above those numeric values. By the time irrigation water passes through the crop root zone, it may have been concentrated 1.6-fold, so even high quality water protective of sensitive crops (i.e. 700 EC) may have reached a concentration 1,120 EC below the root zone (Ayers & Westcot, 1985). The proposed Salt Control Program takes a phased approach at addressing salt management with the first phase allowing an alternative that allows continued discharge while participating in development of the long-term solution.

Prevent Further Degradation: Current regulatory framework is focused on source control and requires appropriate antidegradation findings to allow discharges of salt. In addition, if a receiving water body already exceeds applicable water quality objectives, further degradation is prohibited and discharges must be at concentrations at or below the applicable objective. The proposed alternative retains existing regulatory authority and provides a conservative pathway to prevent degradation. However, the proposed alternative also provides additional authority to allow controlled degradation while a longer–term salinity management strategy is developed that leads not only to preventing degradation, but also restoration where reasonable, feasible and practicable. Phase I of the proposed alternative includes identification of salt management areas in order to move salt away from sensitive areas. It is anticipated that degradation will occur in the management areas, but productive areas will be maintained and/or restored.

Restore Degraded Groundwater: The current regulatory framework is focused on source control and does not have a framework for restoring groundwater basins on the scale needed for the Central Valley if conservative assumptions are used on the applicable water quality objectives and on protecting every portion of every aquifer to the same level. Authority is currently limited to clean-up activities required pursuant to an enforcement order. The proposed alternative is phased to provide long-term, managed restoration where reasonable, feasible and practicable by incentivizing and encouraging alternative compliance for all permittees that discharge salt.

Apply to Diverse Conditions: Although the current regulatory framework has some flexibility to adjust to local conditions, it does not contain provisions that adjust between basins to recognize potential different appropriate water quality objectives and management goals. The proposed alternative uses the first of three phases to further evaluate existing conditions, impacts of statewide policies and management structures, and available implementation alternatives to develop a strategy that can apply locally as well as valley–wide.

Leverage and Maximize Resources: The current regulatory framework operates permit-by-permit. The proposed alternative provides an option for permittees to collaborate on developing a Central Valley–wide salinity management strategy while maintaining current salinity discharges.

The options identified for elements within the proposed Salt Control Program that caused the most discussion was a potential change to where compliance would be measured under the Conservative Approach. Three options were proposed:

1. Essentially a no action option which would continue location of compliance measurements consistent with current regulatory framework which utilizes a combination of effluent, receiving water or both dependent on the category of discharge;
2. Measuring compliance in the effluent as a conservative means to avoid lengthy and costly justification on potential impacts to receiving waters; and
3. For groundwater discharges, measuring compliance in the "Shallow" groundwater, which lead to discussions on whether the definition of "shallow" should be consistent with the Nitrate Control Program where there is a direct link to depth to domestic wells or dependent on other factors including the potential to develop a default compliance zone based on well construction guidelines.

Preferred option after public discussion was to continue compliance as currently conducted and defer any adjustments until further review under the P&O Study.

4.2.1.3 Recommendation

Incorporate the proposed Salt Control Program

The proposed Salt Control Program will not remove any of the existing authorities of the Central Valley Water Board, but will allow additional authority so that permittees may leverage their resources to develop a long-term salinity management strategy that will recognize diversity within the valley, limit degradation to and protect salt sensitive water bodies, and allow agricultural discharges to continue. The proposed alternative does allow managed degradation over a long time period, but the end result will provide for a stronger economic foundation for the valley by allowing agriculture and other human activities to continue and expand. Removal of the current EC, chloride and boron limits as well as the removal of current consumptive use limits and groundwater degradation rates in the Tulare Lake Basin Plan are appropriate to allow the development of a valley-wide management strategy. The limits may be reviewed as part of the P&O Study and incorporated as part of future implementation.

Staff also recommend that several of the options to the proposed alternative be further evaluated as part of the P&O Study, as follows:

- Determination of appropriate compliance point for discharges to groundwater (e.g. effluent; upper zone; defined shallow zone; etc.)

- Determine whether consumption use guidelines are an appropriate compliance measure for future phases of salt management.

4.2.2 Program to Control and Permit Nitrate Discharges to Groundwater

When evaluating current ambient concentrations of nitrate in groundwater throughout the Central Valley, stakeholders identified a number of specific factors that needed to be considered within any control program:

- Broad area of groundwater basins already exceeded nitrate concentrations considered protective of drinking water supplies with the majority of exceedances occurring in the Tulare Lake and San Joaquin River Basins;

- Higher nitrate concentrations were typically found in the upper zone of the groundwater

basins, which is the shallower zone utilized by domestic wells;

- Limited funding existed to identify impacted domestic users or to provide alternative water supplies; and,
- Agricultural operations were one recognized source of nitrate pollution, but the industry was needed to maintain the economic engine within the Central Valley including supporting communities impacted by the elevated nitrate concentrations.

4.2.2.1 Alternatives

The alternatives developed and considered for the control and permitting of nitrate discharges to groundwater in the Sacramento–San Joaquin River Basins and in the Tulare Lake Basin (Nitrate Control Program) are intended to apply to all groundwater basins that are designated with the municipal and domestic supply (MUN) beneficial use.[32] Three major alternatives were considered: 1) No Action Alternative; 2) Incorporate a Nitrate Control Program with New Authorities; and 3) Incorporate a Nitrate Control Program that Clarifies Use of Current Central Valley Water Board Authorities

4.2.2.1.1 No Action Alternative

The no action alternative is to continue regulation of nitrate discharges under the current regulatory framework discussed in Section 2.2 and Appendix C and requires no additional Basin Plan Amendments. The framework focuses on source control, compliance with applicable water quality objectives at all points in the groundwater aquifer, and implementation of the State Antidegradation Policy. Current regulatory authority is focused permit-by-permit and requires discharges to meet applicable water quality objectives (for protection of MUN the objective is 10 mg/L nitrate as nitrogen) if the receiving water already exceeds those objectives and provides a limited time period for permittees to come into compliance. Discharges to high quality water bodies (water bodies that have nitrate concentrations below 10 mg/L nitrate as nitrogen) that will increase ambient nitrate concentrations but remain below the water quality objective, must satisfy antidegradation requirements. Compliance is measured in the shallowest portion of the saturated zone of the aquifer. Current enforcement authority allows the Central Valley Water Board to require the provision of replacement water if the discharge is causing or contributing to pollution and to clean up the impacted water body to concentrations at or below the applicable water quality objective. (Wat. Code, § 13304.)

4.2.2.1.2 Alternative to Incorporate a Nitrate Control Program with New Authorities

Under the Nitrate Control Program alternatives, there were specific elements recommended in the CV-SALTS SNMP (2016) and options to those elements identified through further stakeholder meetings and Board workshops. A list of Nitrate Control Program elements and options identified are provided in Table D–1 in Appendix D. Where agreement on approach was not reached, options are identified below by element.

4.2.2.1.2.1 Overview

Several groundwater basins and sub-basins in the Central Valley currently have extensive areas that exceed the water quality objective for nitrate, which is set at the primary maximum contaminant level of 10 mg/L–N for drinking water. In addition, supporting studies identified that the cost for treating groundwater that exceeds 10 mg/L–N to be in the range of $36 to $81

[32] The implementation provisions in this Nitrate Control Program apply to discharges of nitrate to groundwater. To extent that the Central Valley Water Board uses other forms of nitrogen speciation (e.g., total Nitrogen and nitrite+nitrate) to address nitrate discharges, this Control Program would also apply in those circumstances.

billion, and in some scenarios would take more than 70 years for groundwater to meet the standard. This alternative proposes an approach that is consistent with the following prioritized management goals:

Goal 1 – Ensure a Safe Drinking Water Supply (short-term and long-term);
Goal 2 – Achieve Balanced Salt and Nitrate Loadings; and,
Goal 3 – Implement Managed Aquifer Restoration where reasonable, feasible and practicable.

The timeframe for meeting these three goals is largely unknown and will vary from basin to basin. Further, it may not be reasonable, feasible or practicable to achieve balanced loadings or fully restore groundwater in some basins/sub-basins. For other basins, it may take multiple decades to achieve the goals of the SNMP. In some limited cases, where restoration of the groundwater basin for MUN uses may not be reasonable, feasible or practicable it may be necessary for the Central Valley Water Board to consider dedesignating MUN beneficial use from that groundwater basin.

The Nitrate Control Program is prioritized to first address health risks associated with drinking water that exceeds the nitrate primary maximum contaminant level (i.e., nitrate drinking water standard). Priority Groundwater Basins/Sub-basins[33] have been identified based on ambient nitrate conditions, and timelines have been established for implementation of the Nitrate Control Program in these prioritized basins and sub-basins. Implementation of the Nitrate Control Program in non-prioritized basins and sub-basins will occur as directed by the Central Valley Water Board's Executive Officer. In areas of the Central Valley where there are no identified groundwater basins or sub-basins, the Nitrate Control Program will apply when the Central Valley Water Board's Executive Officer determines it is necessary and appropriate to address nitrate discharges to localized groundwater and notifies the permittee accordingly.

Permitted dischargers within the prioritized basins and sub-basins that have received notice must generally assess nitrate levels in groundwater used for MUN that may be impacted by nitrate discharge(s). The assessment, using readily available data and information, must determine if the groundwater in question is a safe, reliable source of drinking water with respect to nitrates. If the groundwater is impacted, and if the discharger is causing to an exceedance of nitrate in the groundwater in public water supply or domestic wells beyond the primary maximum contaminant level, then the permitted discharger shall submit an Early Action Plan (EAP) that includes specific actions and a schedule of implementation to address the immediate needs of those drinking groundwater from public water supply or domestic wells that exceed the primary maximum contaminant level for nitrate.

For longer–term implementation of the Nitrate Control Program, the Central Valley Water Board's permitting actions specific to nitrate discharges to groundwater will fall within one of the two following approaches:

- Individual Approach (Path A) is the approach utilized when an individual discharger (or third party group subject to a General Order wishing to proceed under Path A) decides to comply with the nitrate requirements as an individual/third party, or in circumstances when a management zone is not an available option.

[33] The prioritized Groundwater Basins/Sub-basins identified in the public draft, including identification per DWR's Bulletin 118, are from Luhdorff and Scalmanini Consulting Engineers and Larry Walker Associates (2016a), and the Central Valley Water Board may adjust these priorities during the public review process.

- Management Zone Approach (Path B) is the approach utilized when multiple dischargers/permittees elect to participate in a management zone as the preferred method for complying with the Nitrate Control Program.

Path A is considered the default permitting approach, while Path B is an optional approach. Where appropriate, the Central Valley Water Board will encourage permitted dischargers to work cooperatively with each other and other stakeholders to implement the Nitrate Control Program through a Management Zone.

The Nitrate Control Program provides the Central Valley Water Board with flexibility and authority to permit discharges of nitrate to groundwater using Alternative Compliance mechanisms rather than traditional permitting determinations. The Central Valley Water Board's options for Alternative Compliance include: (1) determining availability of assimilative capacity on a volume–weighted average basis for a management zone; (2) granting a conditional exception for meeting nitrate water quality objectives in discharges and/or in groundwater; and, (3) offsets. To authorize Alternative Compliance through any of these options, the Central Valley Water Board must approve an Alternative Compliance Project as part of the authorization. A fundamental element of any Alternative Compliance Project is that it must ensure that groundwater users impacted by discharges of nitrates have access to drinking water that meets state and federal drinking water standards, and must provide specific milestones and timelines for meeting all three management goals of the program. In circumstances where it is not reasonable, feasible or practicable to meet management goal 2 and/or goal 3, permittees must still indicate how discharges of nitrate will be controlled to the extent that is reasonable, practicable and feasible.

The Nitrate Control Program protects high quality groundwater by establishing nitrate triggers. Nitrate triggers are not water quality objectives themselves. The Central Valley Water Board may authorize a discharge, or collective discharges in a Management Zone, to exceed a nitrate trigger level, but to do so the Central Valley Water Board must approve an Alternative Compliance Project, except in limited and unique circumstances.

To ensure a transparent process, there are several points between a Notice to Comply and modification of permit provisions where interested persons may review and comment on the process:

- Preliminary Management Zone (posted on Board's website, comments with consideration)
- Early Action Plan (posted on Board's website)
- Notice of Intent – Path A (comment period and hearing if permit revision required)
- Final Management Zone Proposal (posted on Board's website)
- Management Zone Implementation Plan (will be incorporated into permit(s), thus will be posted on Board's website, comment period, and hearing)

4.2.2.1.2.2 Management Zone Concept

A fundamental element of this proposed Nitrate Control Program alternative is to amend the Basin Plans to include criteria for establishment and regulation of Management Zones for the purposes of groundwater quality management and control of nitrate. Groundwater Management Zone elements are summarized below.

a) Management zones would be a discrete regulatory compliance unit for the purposes of complying with WDRs for nitrate. Permittees have the discretion to join a management zone or continue to be permitted as an individual (or group under general WDRs).

   Other Option Considered: Management zones would not be available for evaluating compliance with WDRs; only as a means for collaborative groundwater basin monitoring, modeling, and other related assessment activities. (Discussed in third alternative)

b) A minimum requirement of a management zone implementation plan is to be consistent with the management goals of the Nitrate Control Program including: (1) addressing short-term and long-term drinking water needs affected by nitrate, (2) plan for achieving balanced nitrate loadings within the management zone (to the extent feasible and reasonable), and (3) plan for establishing a managed aquifer restoration program to restore nitrate levels to concentrations at or below the water quality objectives to the extent it is feasible and reasonable to do so.

   Other Option Considered: Include a goal to achieve balance and restore aquifer within 50 years.

c) Management zones would only be applied for the regulation and control of nitrate.

d) A management zone can be larger than one groundwater basin/sub-basin for administrative purposes, including providing drinking water within the area covered by the entire management zone. However, when developing implementation plans within a management zone, these plans should be developed only for areas that are hydrologically connected. In addition, assimilative capacity may only be allocated within hydrologically connected areas.

Specific requirements for development and responsibilities of management zones are described in more detail under the Management Zone Approach (Path B) discussion.

4.2.2.1.2.3 Prioritized Approach

Considering the extent and size of the Central Valley Water Board's jurisdictional boundaries, it is necessary to categorize and prioritize the region's groundwater basins/sub-basins based on currently known ambient water quality conditions (where information is available), location (e.g., valley floor versus foothill and mountainous areas), and areas that are not part of an identified basin/sub-basin.

Priority Basins and Sub-basins

Basins/sub-basins have been prioritized, with Priority 1 and 2 identified as having the most serious ambient water quality concerns for nitrate in the upper zone (shallow aquifer representing domestic well use) based on evaluations in the CV-SALTS SNMP (2016). Priority 1

and 2 Groundwater Basins/Sub-basins are identified in Table 4–6 and are depicted in Figure 4–5. All priority basins are located on the floor of the Central Valley.

Non Prioritized Basins/Sub-basins

Groundwater Basins/Sub-basins that are not currently prioritized are identified in Appendix E. These basins/sub-basins or areas with the basins/sub-basins may be designated as a high priority on a case–by–case basis when determined necessary by the Central Valley Water Board.

Areas within Central Valley Water Board Jurisdictional Boundary That Are Not Part of a Basin/Sub-basin

Due to geologic conditions, some areas within the Central Valley Water Board's jurisdictional area are not part of an identified groundwater basin/subbasin. These areas tend to be outside of the valley floor, and nitrate concerns in drinking water are generally not an issue of concern.

Central Valley Water Board Review of Priorities

No later than January 1, 2024, the Central Valley Water Board shall review the priorities listed in Table 4–6, and may adjust these priorities after considering water quality–based factors, and other relevant information. Factors the Central Valley Water Board may consider in its review include, but are not limited to, the following:

(1) Degree to which areas (or subareas) with known nitrate drinking water supply contamination will be addressed under the current prioritization;

(2) Additional data/information provided by discharger(s) and/or other stakeholders within a basin/sub-basin (or subarea) that demonstrates that the nitrate concerns have or have not been addressed or will be addressed via another program or activity;

(3) Degree to which the area identified by water quality factors actually has impacted drinking water users (i.e., drinking water is predominately a surface water supply or drinking water supplies are primarily groundwater);

(4) Changes in groundwater basin/sub-basin boundaries by the Department of Water Resources, which may affect the spatial order as presented in Table 4 - 6; and

(5) Maximization of efficient use of resources, which may affect the number of basins/sub-basins (or subareas) that may be included on the prioritized schedule of implementation.

Figure 4 - 5. Prioritized DWR Bulletin 118 Groundwater Basins/Subbasins

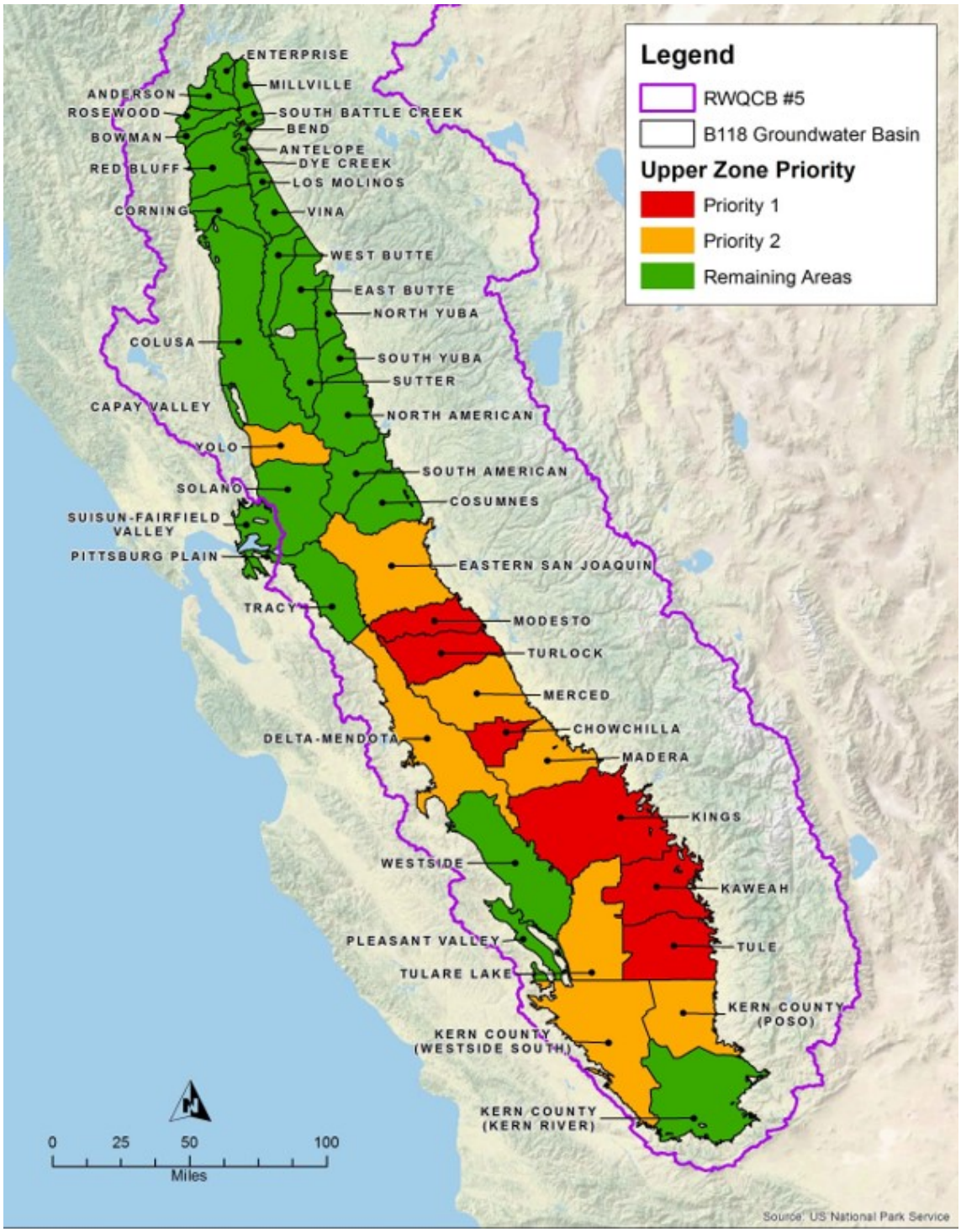


Table 4 - 6. Prioritized DWR Bulletin 118 Groundwater Basins/Subbasins

PRIORITY 1		PRIORITY 2	
5–22.11	Kaweah	5–21.67	Yolo
5–22.03	Turlock	5–22.04	Merced
5–22.05	Chowchilla	5–22.14	Kern County (Westside South)
5–22.13	Tule	5–22.12	Tulare Lake
5–22.02	Modesto	5–22.14	Kern County (Poso)
5–22.08	Kings	5.22–07	Delta Mendota
		5–22.01	Eastern San Joaquin
		5–22.06	Madera

4.2.2.1.2.4 Nitrate Control Program Implementation

Existing Permitted Dischargers[34]

The Nitrate Control Program establishes timelines for implementation based on the priority designation of the groundwater basin/sub-basin, or lack of location within a groundwater basin/sub-basin. Implementation of the Nitrate Control Program for existing permitted dischargers occurs when notification is received from the Central Valley Water Board through the issuance of Notices to Comply. The Board will issue Notices to Comply according to the schedule in Table 4–7. The Executive Officer of the Board retains discretion to adjust the timelines in Table 4–7 based on available resources.

New or Expanding Dischargers

After the effective date of the Nitrate Control Program, new dischargers located in groundwater basin/sub-basin (regardless of priority) or those with a material change to their operation that increases the level of nitrate discharged to groundwater must comply with the Nitrate Control Program and provide data and information as applicable. This provision does not apply to dischargers located in areas that are not part of a designated basin/sub-basin unless the Executive Officer of the Central Valley Water Board determines based on the specific facts of the discharge that it should be subject to the Nitrate Control Program and the Executive Officer of the Board notifies the discharger accordingly.

[34] For the purposes of the Nitrate Control Program, the term "existing permitted dischargers" means dischargers subject to individual Waste Discharge Requirements, dischargers regulated as individual facilities under General Waste Discharge Requirements (e.g., facilities regulated under the Waste Discharge Requirements General Order for Existing Milk Cow Dairies), facilities or discharges subject to Conditional Waivers, or dischargers subject to General Waste Discharge Requirements that are regulated through a Third Party (e.g., dischargers regulated under Irrigated Lands Regulatory Program's Third–Party General Orders). For those dischargers that are part of a third party group, notifications required by the Nitrate Control Program may be issued to and received from the Third Party group on behalf of their members, who in turn will be responsible for notifying its members.

Table 4 - 7. Timeline for Issuance of Notice to Comply with Nitrate Control Program

Basin Priority	Time for Issuance of Notice to Comply
Priority 1 Basins	As soon as is reasonably feasible after the effective date of the Nitrate Control Program, but no later than 1 year from xxxx (effective date).
Priority 2 Basins	Within 2 to 4 years after effective date of the Nitrate Control Program.
Basins/sub-basins not Prioritized	Based on available resources, and as determined necessary by the Executive Officer of the Central Valley Water Board.
Areas that are Not Part of a Basin	As determined necessary by the Executive Officer of the Central Valley Water Board.

Community Request

Nothing in the Nitrate Control Program is intended to prevent or prohibit a community from specifically requesting that the Central Valley Water Board subject a basin, sub-basin, or portion thereof to the Nitrate Control Program in advance of the timelines identified here. Upon such a request, the Central Valley Water Board will consider the same factors evaluated during initial prioritization utilizing any additional information provided and will consider whether the request appropriately enhances ongoing efforts to address nitrate contamination on a region-wide scale.

Permittees Requesting Deferral for a Sub-basin or Portion of a Sub-basin

Permittees may request that, for a sub-basin or a portion of a sub-basin, the Central Valley Water Board defer the issuance of Notices to Comply so that the notices for that sub-basin or portion of a sub-basin are issued along with the notices issued for a lower priority basin. Such a request must be accompanied by documentation related to the factors considered during the original prioritization. The request may be provided at any time up to six months prior to the scheduled issuance of a Notice to Comply as outlined in the section titled *Implementation of Permitting Approach*es.

Permitting Approaches

Long-term implementation of the Nitrate Control Program will occur through updates of existing waste discharge requirements or conditional waivers, or through the issuance of new waste discharge requirements or conditional waivers for new sources of nitrate. Permit actions must fall under one of the two following approaches (Figure 4–6):

(1) Individual Permitting Approach (Path A): Individual requirements (or per a General Order); or,

(2) Management Zone Approach (Path B): Participation in a Management Zone.

Path A – Individual Permitting Approach

Path A applies to all permitted dischargers unless the discharger affirmatively elects to participate in the Management Zone Approach under Path B. For Path A, nitrate discharge impacts to groundwater are assessed in shallow groundwater underlying the area of discharge,

otherwise referred to as the "Shallow Zone." What constitutes the Shallow Zone in any given area may vary but the purpose is to represent the area of the aquifer available for use by the shallowest domestic wells. To determine ambient nitrate concentrations in the Shallow Zone for purposes of the Nitrate Control Program only, several options are available:

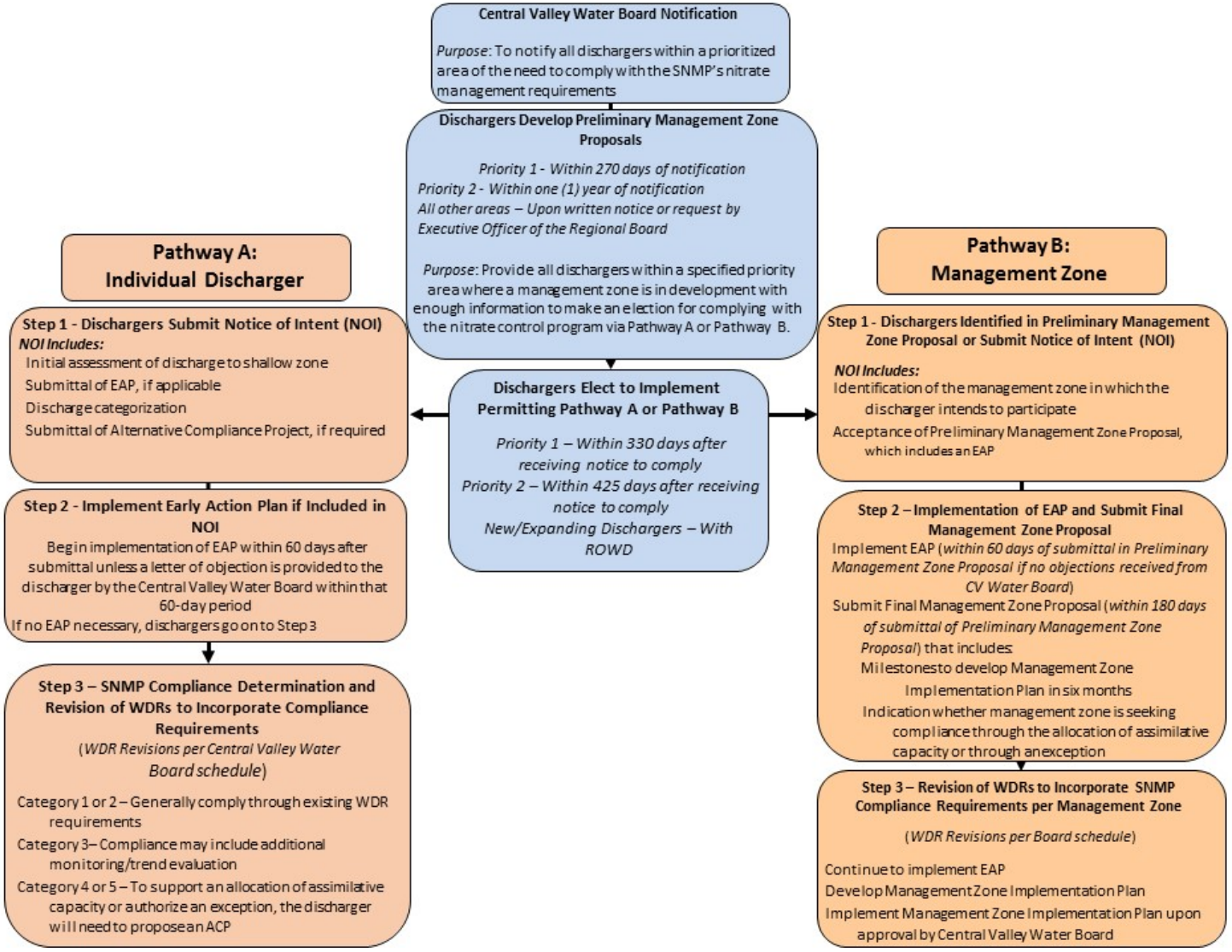
(1) Use readily available data and information to calculate ambient nitrate concentrations for the shallowest ten percent (10%) of the domestic water supply wells in the Upper Zone[35] of a groundwater basin/sub-basin as defined and established in *Region 5: Updated Groundwater Quality Analysis and High Resolution Mapping for Central Valley Salt and Nitrate Management Plan* (June 2016);

(2) Conduct a site (or area) specific evaluation based on various types of available data and information, including but not limited to, depth and age of domestic wells in the area of contribution, groundwater table, well completion report data, and other available and relevant information; or,

(3) An equivalent alternative approved by the Central Valley Water Board's Executive Officer.

[35] Upper Zone is defined to mean, "the portion of groundwater basin, sub-basin or management zone from which most domestic wells draw water. It generally extends from the top of the saturated zone to the depth to which domestic wells are generally constructed (screened). The lower boundary of the upper zone varies based on well construction information for a given basin or sub-basin. The Corcoran Clay layer may define the lower boundary of the upper zone or the lower zone, pending the available well construction and groundwater use information."

Figure 4 - 6. Nitrate Permitting Strategy



Based on the impact of the discharge to the Shallow Zone and the quality of the discharge over a 20-year planning horizon, nitrate discharges will be characterized and placed into one of five categories to help determine regulatory provisions (Table 4-8).

> Other Option Considered: Utilize three categories instead of five (discussed in Alternative 3).

Central Valley Water Board determinations regarding availability and allocation of assimilative capacity will be based on ambient water conditions in the Shallow Zone. The Shallow Zone provides a conservative estimate of overall ambient concentration in the aquifer since it represents a small portion of the aquifer near the top of the saturated zone that typically contains the highest nitrate concentrations. As such, the Shallow Zone represents the shallowest portion of the aquifer utilized by domestic well users and also provides information on potential movement of nitrate into deeper portions of the aquifer

To protect high quality groundwater throughout the Central Valley, a nitrate trigger level of 75% of the water quality objective for nitrate is recommended. Concentrations above the trigger would require more aggressive regulation of discharges to ensure that concentrations do not exceed the water quality objective and impact drinking water supplies. The trigger level is not a water quality objective. Permitted discharges that cause or may cause nitrate in the Shallow Zone to exceed a nitrate trigger may be subject to development and implementation of an Alternative Compliance Project.

In addition to a single concentration to trigger additional control efforts, Categories 3 and 4 include trigger language regarding trending of water quality upwards toward or exceeding the water quality trigger over the 20-year planning horizon.

- For category 3 – Discharges will be considered as part of this category if the discharge occurs in a basin where the permittee(s) anticipate using more than a *de minimis* amount of available assimilative capacity but the receiving water will not exceed a trigger of 75 percent of the water quality objective for nitrate over a 20-year planning horizon. To allow use of assimilative capacity in this circumstance, the Central Valley Water Board may find it necessary to include additional monitoring and trend evaluations as part of the WDRs in order to make appropriate findings consistent with the State Antidegradation Policy.

- For category 4 – Discharges will be considered as part of this category if they utilize available assimilative capacity in the receiving water and use of that assimilative capacity can be reasonably anticipated to cause the receiving water to exceed the trigger of 75 percent of the water quality objective for nitrate over a 20-year planning horizon but remain below the water quality objective. To allow assimilative capacity here, the permittee would need to submit an Alternative Compliance Project proposal to the Central Valley Water Board to be included as an additional condition in the WDRs in order to make appropriate findings consistent with the State Antidegradation Policy.

The proposed categories provide the basis for determining whether a permittee must seek an alternative compliance pathway. The categories depend on both the concentration of the discharge and the discharge's impact on water quality. An individual discharger that falls within categories 3, 4, or 5, would need to conduct an initial assessment to determine if the discharge

(or collective discharges if under a General Order) is causing any nearby public water supply or domestic wells to exceed drinking water standards for nitrate.

If there is an initial finding that the nitrate trend would approach or exceed the trigger over a 20-year planning horizon, the discharger would be allowed to collect additional data and/or conduct additional analyses prior to requiring an Alternative Compliance Project proposal be submitted.

In general, allocation of assimilative capacity above a trigger level or the need for an exception to meeting water quality objectives is considered a means of alternative compliance and requires the support of an Alternative Compliance Project. The alternative compliance pathway would likely include participation in projects to deliver drinking water to communities with nitrate–impaired wells and to participate in projects to improve ambient groundwater quality in the long term.

When allocating assimilative capacity to an individual discharger and the individual discharger is within a management zone (Path B), the Central Valley Water Board will need to consider impact to available assimilative capacity in the management zone.

Path B –Management Zone Approach

Permittees with nitrate discharges may elect to comply with the Nitrate Control Program by participating in a Management Zone. The goal of the Management Zone approach is to maximize resources to address the varying degrees of nitrate concentrations found in groundwater basins/sub-basins, and provide a more integrated approach to developing local solutions for localized areas of contaminated groundwater. Management Zones are a type of "Alternative Compliance Project" since they do not fall within the conventional permit-by-permit regulatory framework and are subject to Alternative Compliance Project requirements. Table 4-9 summarizes the characteristics, intent and purposes of a Management Zone.

Individual nitrate discharges from permittees participating in a Management Zone are not categorized like discharges in Path A. Rather, impacts to groundwater are assessed collectively in the upper zone, which is defined to mean, "the portion of groundwater basin, sub-basin or management zone from which most domestic wells draw water. It generally extends from the top of the saturated zone to the depth to which domestic wells are generally constructed (screened). The lower boundary of the upper zone varies based on well construction information for a given basin or sub-basin. The Corcoran Clay layer may define the lower boundary of the upper zone or the lower zone, pending the available well construction and groundwater use information."

For a Management Zone, determinations of available assimilative capacity are based on a volume–weighted average of nitrate concentrations in the Upper Zone.

Table 4 - 8. Nitrate Discharge Categories

Category	Discharge Quality and Impact to Groundwater
Category 1 No Degradation	Discharge quality, as it reaches the Shallow Zone[36], is better than the applicable water quality objective and is better than the average nitrate concentration in the Shallow Zone.
Category 2 *De Minimis* Impacts	The average nitrate concentration in the Shallow Zone is better than the applicable water quality objective, and, over a 20-year planning horizon: • The effect of the discharge on the average nitrate concentration in the Shallow Zone is expected to use less than 10% of the available assimilative capacity in the Shallow Zone; and • The discharge, in combination with other nitrate inputs to the Shallow Zone, is not expected to cause average nitrate concentrations in the Shallow Zone to exceed a nitrate trigger of 75% of the applicable water quality objective.
Category 3 Degradation Below Trigger	The average nitrate concentration in the Shallow Zone is better than the applicable water quality objective. Estimated that discharge is more than *de minimis*, but will not cause the average nitrate concentration in the Shallow Zone to exceed a trigger of 75% of the applicable water quality objective over a 20-year planning horizon.
Category 4 Degradation Above Trigger	The average nitrate concentration in the Shallow Zone is better than the water quality objective. Though the discharge is reasonably expected to cause the average nitrate concentration in the Shallow Zone to exceed a trigger of 75% of the applicable water quality objective over a 20-year planning horizon, the average nitrate concentration in the Shallow Zone is expected to remain at or below the applicable water quality objective over the same 20-year planning horizon.
Category 5 Discharge Above Objective	Either: • The average nitrate concentration in the Shallow Zone is better than the applicable water quality objective, but the discharge may cause the average nitrate concentration in the Shallow Zone to exceed the water quality objective over a 20-year planning horizon; or, • The average nitrate concentration in the Shallow Zone exceeds the applicable water quality objective and the discharge quality, as it reaches the Shallow Zone, also exceeds the applicable water quality objective.

[36] For the purposes of this Table, the "Shallow Zone" is the portion of the aquifer whose areal extent is defined by the boundaries of the discharge area and whose vertical extent is defined by the depth of the shallowest 10% of the domestic water supply wells near the discharge or an equivalent alternative.

Table 4 - 9. Characteristics, Intent and Purpose of a Management Zone

Characteristics ▪ A defined area which incorporates a portion of a groundwater basin(s)/sub-basin(s) ▪ Encompasses all groundwater within the zone of contribution for those permittees that discharge nitrate to said groundwater that have selected to comply with the Nitrate Control Program through participation in the defined Management Zone. ▪ Voluntarily proposed by those regulated permittees located within the proposed management zone boundary that have decided to work collectively and collaboratively to comply with the nitrate control program.
Intent and Purposes ▪ Defined area that serves as a discrete regulatory compliance unit for complying with the Nitrate Control Program. ▪ Basis for the establishment of local management plans to manage nitrate within the management zone's boundary. ▪ Participants work collectively to implement SNMP management goals: (1) safe drinking water, (2) achieving balance, and (3) restoring groundwater basins/sub-basins (where reasonable, feasible and practicable) across the Management Zone. ▪ Where groundwater within the Management Zone boundary is being used as a drinking water supply, and where those drinking water supplies are impacted by nitrates and exceed or are likely to exceed nitrate drinking water standards in the foreseeable future, Management Zone participants will ensure the provision of safe drinking water to all residents in the area adversely affected by dischargers of nitrates from those that are participating in the Management Zone. ▪ Ensure the provision of safe drinking water for the Management Zone through stakeholder coordination and cooperation. ▪ Work towards better resource management through appropriate allocation of resources. ▪ Central Valley Water Board imposes reasonable provisions collectively for the Management Zone, and its permittee participants, that recognize the need to prioritize nitrate management activities over time for compliance with the Nitrate Control Program

Implementation of Permitting Approaches

Due Dates for Deliverables

To implement the Permitting Approaches set forth in this control program, permittees need to provide the Central Valley Water Board with information regarding their discharge of nitrate. Deadlines for submitting this information varies based on the priority of the basin/sub-basin, and the permitting approach selected. Table 4-10 and Table 4-11 identify the various deliverables based on which permitting approach a discharger seeks to follow, and associated due dates for these deliverables.

Notification and deliverable dates have been staggered to recognize the number of permittees that must be notified and tracked through each Priority Phase of the proposed program. Approximately 232 permittees will be notified under Priority 1, approximately 322 permittees under Priority 2, with 863 permittees remaining for future notification. Of the remaining 863 permittees, 515 discharge outside of identified groundwater basins. The number of permittees noted above include ILRP General Orders for Agricultural Coalitions as well as the Dairy General Order. Each of these orders covers many individual operations and substantial acreages. Notifications and updates will also be required for Local Agency Management Programs (LAMPS) that cover Onsite Wastewater Treatment Systems (septic systems).

Table 4 - 10. Pathway A, Summary Schedule for Implementation

Deliverable	Application	Due Dates[a]	
Initial Assessment/Notice of Intent	All existing and new permittees electing Pathway A.	Existing Permittees –Priority 1 Basins/Sub-basins	330 days after receiving Notice to Comply
		Existing Permittees –Priority 2 Basins/Sub-basins & Non–Prioritized Basins	425 days after receiving Notice to Comply
		New or Expanding Dischargers	With Report of Waste Discharge
Early Action Plan	Required if permittee is causing any public water supply or domestic well to exceed nitrate water quality objective.	To be submitted with Notice of Intent and initiated within 60 days if no objection received by the Central Valley Water Board	
Alternative Compliance Project if needed	Required for Category 4 and Category 5 Permittees	To be submitted with Notice of Intent	

Notes: [a] The Executive Officer of the Central Valley Water Board retains the discretion to extend the due dates identified here for submittal of identified deliverables if proper justification is provided to the Executive Officer at least 30 days prior to required date for submittal.

Table 4 - 11. Pathway B, Summary Schedule for Implementation

Deliverable	Application	Due Dates[a]	
Notice of Intent	All existing and new permittees electing Pathway B.	Existing Permittees –Priority 1 Basins/Sub-basins	330 days after receiving Notice to Comply
		Existing Permittees –Priority 2 Basins/Sub-basins & Non–Prioritized Basins	425 days after receiving Notice to Comply
		New or Expanding Permittee	With Report of Waste Discharge
Preliminary Management Zone Proposal	Permittees electing Path B that are actively participating in development of Preliminary Management Zone Proposal.	Existing Permittees –Priority 1 Basins/Sub-basins	270 days after receiving Notice to Comply
		Existing Permittees –Priority 2 Basins/Sub-basins & Non–Prioritized Basins	1 year after receiving Notice to Comply
		New or Expanding Permittees	With Report of Waste Discharge
Early Action Plan	Required element of Preliminary Management Zone Proposal for public water supply and domestic wells within the Management Zone area that exceed nitrate water quality objective.	To be submitted with Preliminary Management Zone Proposal and initiated within 60 days if no objection received by Central Valley Water Board	
Alternative Compliance Project if needed	Equivalent to Management Zone Implementation Plan noted below		
Final Management Zone Proposal		180 days after receiving comments from Central Valley Water Board on Preliminary Management Zone Proposal	
Management Zone Implementation Plan		Six (6) months after the Final Management Zone Proposal is accepted by the Executive Officer of the Central Valley Water Board.	

Notes: [a] The Executive Officer of the Central Valley Water Board retains the discretion to extend the due dates identified here for submittal of identified deliverables if proper justification is provided to the Executive Officer at least 30 days prior to required date for submittal.

Deliverables

Initial Assessment/Notice of Intent (Path A)

Permittees, or those seeking a permit to discharge that includes the discharge of nitrate, must prepare an Initial Assessment and Notice of Intent, unless the discharger is actively engaged in developing a Management Zone proposal and is identified as an initial participant in a Preliminary Management Zone Proposal submitted pursuant to Path B.

Existing Permitted Dischargers

Upon receipt of a Notice to Comply, existing permittees shall conduct an initial assessment of their discharge as it relates to nitrate. The initial assessment shall be submitted as part of a Notice of Intent and must include the following:

(x.) Estimated impact of discharge of nitrate on the Shallow Zone over a 20-year planning horizon;
- May be estimated based on a simple mass balance calculation assuming 20 years of loading as nitrate reaches the water table.
- Initial assessment of water quality conditions based on readily available existing data and information.
- May use default information in or referenced by, the Central Valley SNMP or provide supplemental information that includes water quality conditions in the shallow and upper zones;[37]

(xi.) Survey of the discharge, and determination if the discharge is causing any public water supply or domestic well to be contaminated by nitrate;

(xii.) If causing contamination of a public water supply or domestic well, an Early Action Plan; Identification/summary of current treatment and control efforts, or management practices;[38]

(xiii.) Identification of any overlying or adjacent Management Zone;

(xiv.) Identification of Category of the Discharge, and information to support the categorization;[39]

(xv.) Information necessary to support request for allocation of assimilative capacity, if applicable;

[37] Dischargers may rely on previous groundwater assessments conducted by the discharger, assessments conducted by others that are applicable and relevant, or previous antidegradation analysis that have been submitted to the Central Valley Water Board.

[38] If the discharger seeking compliance through this option is a third party submitting the NOI on behalf of the individual members of the third party, the third party will need to take reasonable efforts to summarize the management practices being used by its members with respect to protecting groundwater quality from the impacts of nitrates from member farming operations.

[39] If the discharger seeking compliance through this option is a third party submitting the NOI on behalf of the individual members of the third party, the third party will need to take reasonable efforts to categorize the various geographic areas as covered by the third party general order.

(xvi.) For category 4 dischargers, identification of an Alternative Compliance Project or justification as to why the Central Valley Water Board should not require implementation of an Alternative Compliance Project.

(xvii.) For category 5 dischargers, information as required to support an Application for an Exception pursuant to the Exceptions Policy, which would include identification of an Alternative Compliance Project.

Previous groundwater assessments conducted by the discharger (or third party group on behalf of collective dischargers), and/or antidegradation analyses that have been submitted and approved by the Central Valley Water Board's Executive Officer may satisfy all or part of initial assessment requirement.

Recycled Water Permittees

Permittees for the distribution and use of recycled water recycled water that meets the requirements of Title 22 of the California Code of Regulations may substitute the information requested above with the same information that is otherwise required for a Recycled Water Application under State Water Board Order No. 2014–0090–DWQ, General Waste Discharge Requirements for Recycled Water Use.

New Dischargers, or Existing Permitted Dischargers Proposing Material Changes to their Regulated Discharge

New dischargers that propose to discharge new or additional levels of nitrate[13], or existing dischargers seeking a permit modification due to a material change to a facility that requires submittal of a Report of Waste Discharge and that includes an increase in nitrate discharges (either in volume or concentration), shall include the initial assessment information at the time of submittal of the Report of Waste Discharge. If a Management Zone exists for the area where the new or expanded discharge shall occur, the discharger shall indicate how the discharger intends to comply with the Nitrate Control Program, i.e., Path A or Path B. If a Management Zone does not exist at the time of application, the Central Valley Water Board may use its discretion to issue a time schedule to the discharger for complying with the Nitrate Control Program through a later formed Management Zone.

Option In lieu of Individual Initial Assessment/Notice of Intent

In lieu of conducting an initial assessment and submitting a Notice of Intent, existing permitted dischargers may work collaboratively and cooperatively to prepare a Preliminary Management Zone Proposal that meets the requirements specified under Path B.

Preliminary Management Zone Proposal (Path B)

Existing permitted dischargers may work cooperatively to prepare a single Preliminary Management Zone Proposal for an identified geographic area. A Preliminary Management Zone Proposal must include all of the following:

(i.) Proposed preliminary boundaries of the Management Zone area;

[13]In cases where there is an ownership transfer of a facility and where the level of nitrate being discharged does not change, an initial assessment may not be necessary.

(ii.) Identification of Initial Participants/Permittees;

(iii.) Identification of other permittees and stakeholders in the management zone area that the initiating group is in contact with regarding participation in the management zone;

(iv.) Initial assessment of groundwater conditions based on readily available existing data and information.
- May use default information in or referenced by, the CV-SALTS SNMP (2016) or provide supplemental information that includes water quality conditions in the upper zone;

(v.) Identification/summary of current treatment and control efforts, or management practices;[14]

(vi.) Initial identification of public water supplies or domestic wells within the Management Zone area that exceed nitrate water quality objectives;

(vii.) An Early Action Plan to address drinking water needs for those that rely on public water supply or domestic wells that exceed nitrate water quality objectives;

(viii.) Documentation of process utilized to identify affected residents and the outreach utilized to ensure that they are given the opportunity to participate in development of an Early Action Plan;

(ix.) Identification of areas within or adjacent to the management zone that overlap with other management areas/activities;

(x.) Any constituents of concern that the individual discharger/group of dischargers intend to address besides nitrate (not required but is an option available);

(xi.) Proposed timeline for:
- Identifying additional participants;
- Further defining boundary areas;
- Developing proposed governance and funding structure for administration of the Management Zone;
- Additional evaluation of groundwater conditions across the management zone boundary area, if necessary; and,
- Preparing and submitting a Final Management Zone Proposal and a Management Zone Implementation Plan.

Preliminary Management Zone Proposals must be submitted to the Central Valley Water Board according to the due dates identified in Table 4-11.

Permittees that are identified as an Initial Participant in a Management Zone shall be presumed to be electing Path B for complying with the Nitrate Control Program, unless they otherwise notify the Central Valley Water Board of their intent to withdrawal from Path B. If a permittee

[14] If the discharger seeking compliance through this option is a third party submitting the NOI on behalf of the individual members of the third party, the third party will need to take reasonable efforts to summarize the management practices being used by its members with respect to protecting groundwater quality from the impacts of nitrates from member farming operations.

withdraws from Path B, the permittee must submit an initial assessment and Notice of Intent within 30 days from withdrawing from Path B.

Early Action Plan (Path A and Path B as applicable)

Early Action Plans are required if public water supply or domestic wells in the permittees area of contribution exceed nitrate water quality objectives. Implementation of an Early Action Plan that is addressing elevated nitrate concentrations for public water supply and/or domestic wells by providing an alternative water supply does not create a presumption of liability for the cause of such concentrations.

An Early Action Plan must include the following:

(i.) A process to identify affected residents and the outreach utilized to ensure that impacted groundwater users impacted by nitrate are informed of and given the opportunity to participate in the development of proposed solutions;

(ii.) A process for coordinating with others that are not dischargers to address drinking water issues, which must include consideration of coordinating with affected communities, domestic well users and their representatives, the State Water Board's Division of Drinking Water, Local Planning Departments, Local County Health Officials, Sustainable Groundwater Management Agencies and others as appropriate;

(iii.) Specific actions and a schedule of implementation that is as short as practicable to address the immediate drinking water needs of those initially identified within the management zone, or area of contribution for a Path A discharger, that are drinking groundwater that exceeds nitrate standards and that do not otherwise have interim replacement water that meets drinking water standards; and

(iv.) A funding mechanism for implementing the Early Action Plan, which may include seeking funding from Management Zone participants, and/or local, state and federal funds that are available for such purposes;

An Early Action Plan may be part of an Alternative Compliance Project.

Final Management Zone Proposal (Path B)

Management Zone participants must prepare and submit a Final Management Zone Proposal. The Final Management Zone Proposal must include all information from the Preliminary Management Zone Proposal, updated as necessary, as well as the following:

(i.) Timeline for development of the Management Zone Implementation Plan;

(ii.) Updated list of participants;

(iii.) Governance structure that, at a minimum, establishes the following: (a) roles and responsibilities of all participants; (b) identification of funding or cost–share agreements to implement short term nitrate management projects/activities, which may include local, state and federal funds that are available for such purposes; and (c) a mechanism to resolve disputes among participating dischargers;

(iv.) Additional evaluation of groundwater conditions across management zone area, if necessary;

(v.) Identification of proposed approach for regulatory compliance (i.e., use of assimilative capacity and/or seeking approval of an exception for meeting nitrate water quality objectives);

(vi.) Explanation of how the management zone intends to interact and/or coordinate with other similar efforts such as those underway pursuant to the SGMA; and,

(vii.) Documentation of actions taken to implement the Early Action Plan.

Final Management Zone Proposals shall be submitted to the Central Valley Water Board for review and Board comment according to the due dates identified in Table 4-11.

Management Zone Implementation Plan (Path B)

A Management Zone Implementation Plan is the equivalent of an Alternative Compliance Project. Management Zone Implementation Plans shall:

(i.) Identify how emergency, interim and permanent drinking water needs for those affected by nitrates in the Management Zone area are being addressed, and how a drinking water supply that meets drinking water standards will be available to all drinking water users within the Management Zone boundary, and the timeline and milestones necessary for addressing such drinking water needs;

(ii.) Show how the Management Zone plans to achieve balanced nitrate loadings within the management zone (to the extent reasonable, feasible and practicable);

(iii.) Include a plan for establishing a managed aquifer restoration program to restore nitrate levels to concentrations at or below the water quality objectives to the extent it is reasonable, feasible and practicable to do so;

(iv.) Document collaboration with the community and/or users benefitting from any proposed short/long-term activities to provide safe drinking water;

(v.) Identify funding or cost–share agreements, or a process for developing such funding or cost–share agreements, to implement intermediate and long-term nitrate management projects/activities, which may include identification of local, state and federal funds that are available for such purposes;

(vi.) Identify nitrate management activities within a Management Zone which may be prioritized based on factors identified in the Nitrate Control Program and the results of the characterization of nitrate conditions. Prioritization provides the basis for allocating resources with resources directed to the highest water quality priorities first;

(vii.) Include a water quality characterization and identification of nitrate management measures that contains:

- Characterization of nitrate conditions within the proposed management zone, which will be used as the basis for demonstrating how nitrate will be managed

within the management zone over short-term and long-term periods to meet the management goals established in the Nitrate Control Program.

- Short (≤ 20 years) and long-term (> 20 years) projects and/or planning activities that will be implemented within the Management Zone, and in particular within prioritized areas (if such areas are identified in the Implementation Plan) to make progress towards attaining each of the management goals identified by the Nitrate Control Program. Over time as water quality is managed in prioritized areas, updates to the plan may shift the priorities in the Management Zone.
- Milestones related to achieving balanced nitrate loadings and managed aquifer restoration.
- A short-term and long-term schedule for implementation of nitrate management activities with interim milestones.
- Identification of triggers for the implementation of alternative procedures or measures to be implemented if the interim milestones are not met.
- A water quality surveillance and monitoring program that is adequate to ensure that the plan when implemented is achieving the expected progress towards attainment of management goals. All or parts of the surveillance and monitoring program may be coordinated or be part of a valley–wide and/or regional groundwater monitoring, if appropriate.

(viii.) Identify the responsibilities of each regulated discharger, or groups of regulated dischargers participating in the management zone, to manage nitrate within the Zone.

(ix.) Include information necessary for obtaining an Exception as set forth in the Exceptions Policy, or information necessary for the Central Valley Water Board to grant use of assimilative capacity for Management Zones.

Management Zone Request for Allocation of Assimilative Capacity

A request for allocation of assimilative capacity for a Management Zone may not be for an area larger than an identified basin or sub-basin from Table 4-6, and must include the following:

(vii.) An analysis, sufficient for the Board to make findings consistent with the State Antidegradation Policy, which includes an evaluation of impacts to downgradient areas.

(viii.) Demonstration that there is sufficient assimilative capacity to ensure that discharges of nitrate from participants to the Management Zone, including discharges to recharge projects, will not cause the volume–weighted average water quality in the upper zone underlying the management zone to exceed the applicable Basin Plan objective(s);

(ix.) Demonstration that the proposed discharges covered by the management zone will not unreasonably affect present and anticipated beneficial uses in or downgradient to the Management Zone;

(x.) Demonstration that the allocation of assimilative capacity, and the resulting net effect on receiving water quality, is consistent with maximum benefit to the people of the State; and

(xi.) Demonstration that Best Practicable Treatment or Control will be implemented to ensure that pollution or nuisance will not occur and that any degradation authorized by the Central Valley Water Board will be consistent with the maximum benefit to the people of the state.

(xii.) Demonstration that allocation of assimilative capacity to dischargers participating in the Management Zone will not result in groundwater, as a volume–weighted average in the upper zone, to exceed a trigger level of 75% of the nitrate water quality objective over a 20-year timeframe. The Central Valley Water Board retains the discretion to allocate assimilative capacity above this trigger level as long as the Central Valley Water Board can find that use of assimilative capacity above the trigger level will not result in pollution or nuisance over the longer term.

Management Zone Request for Exception to Meeting a Nitrate Water Quality Objective

A Management Zone may request an Exception to meeting a Nitrate Water Quality Objective. The request for application of the Exception may apply to all permitted dischargers participating in the Management Zone. The Central Valley Water Board must find that all required components of the Management Zone Implementation Plan is complete to consider an Exception.

Modification to Management Zone Implementation Plan

A Management Zone Implementation Plan shall be reviewed periodically, and may be modified periodically to incorporate changes based on new data or information. Any such modifications should generally be changes that will benefit water quality in the management zone. Any modifications to the Management Zone Implementation Plan that impact or change timelines, milestones or deliverables identified in the Implementation Plan must be approved by the Central Valley Water Board.

Central Valley Water Board Actions

Individual Permitting Approach – Path A

The Central Valley Water Board will use the information contained in a submitted Initial Assessment/Notice of Intent or Report of Waste Discharge to determine if the discharge in question complies with the Nitrate Control Program. If the Board finds that the discharge as currently permitted is in compliance with the Nitrate Control Program, then revisions to existing waste discharge requirements or conditional waivers may not be necessary.

If the discharge as permitted, or proposed to be discharged, does not comply with the Nitrate Control Program, or if the Central Valley Water Board needs additional information to make such a determination, the Board may request additional information using its existing authorities.

Based on the categorization of the discharge, the Central Valley Water Board may require the permittee to conduct additional monitoring and/or implement an Alternative Compliance Project as part of permit conditions.

Upon receipt of a completed Initial Assessment/Notice of Intent or Report of Waste Discharge, the Central Valley Water Board shall take all reasonable efforts to revise applicable waste discharge requirements or conditional waivers within one year, as resources allow.

Implementation of an Early Action Plan shall begin as soon as is reasonably feasible, but no later than 60 days after submittal, unless the Central Valley Water Board deems the Early Action Plan to be incomplete. A revised Early Action Plan must be resubmitted and implemented within the time period directed by the Board's Executive Officer.

Management Zone Permitting Approach – Path B

Preliminary Management Zone Proposal

Upon receipt of a Preliminary Management Zone Proposal, the Central Valley Water Board shall prominently post the proposal on its website, circulate the Proposal publicly through its Lyris electronic mailing and provide individual post card notices (as resources allow) of the Proposal's availability to dischargers within the Management Zone boundary area that are not already identified as Initial Participants. The Board will work with the group of initiating dischargers to help communicate the availability of the Proposal to other dischargers and stakeholders within the Management Zone area. The Preliminary Management Zone Proposal shall be available for comment for at least 30 days after being posted on the Board's website. Any comments provided shall be considered in the development of the Final Management Zone Proposal.

Early Action Plan

The Central Valley Water Board shall post the Early Action Plans on its website after receipt. Implementation of the Early Action Plan shall begin as soon as is reasonably feasible, but no later than 60 days after submittal, unless the Board deems the Early Action Plan to be incomplete. A revised Early Action Plan must be resubmitted and implemented within the time period directed by the Board's Executive Officer.

Final Management Zone Proposal

Upon receipt of a Final Management Zone Proposal, the Central Valley Water Board shall prominently post the proposal on its website, circulate the Final Proposal publicly through its Lyris electronic mailing list, and make the Final Proposal available for public review and comment for at least 30 days. The Board's Executive Officer shall determine if the Final Management Zone Proposal meets the minimum requirements set forth under Path B and must determine if the Final Management Zone Proposal is deemed complete. A complete Final Management Zone Proposal functions as an equivalent to a Report of Waste Discharge for all existing permitted dischargers that are participating in the Management Zone.

Management Zone Implementation Plan

Within a reasonable time period, but no later than six months after finding the proposed Management Zone Implementation Plan is complete or finding that requests for modifications to an approved Management Zone Implementation Plan that would alter timelines, milestones or deliverables are complete, the Central Valley Water Board shall provide public notice, request comment and schedule and hold a public hearing on the Management Zone Implementation

Plan and the request for Alternative Compliance (i.e., volume weighted assimilative capacity or exception) embedded within the plan.

When the Central Valley Water Board finds it necessary to revise existing waste discharge requirements or conditional waivers, or issue new waste discharge requirements or conditional waivers, to implement the Management Zone Implementation Plan, the notice, request for comment and public hearing requirement may be conducted in conjunction with the Board's process for revising or adopting waste discharge requirements or conditional waivers.

The Central Valley Water Board may approve all or part of a request for use of assimilative capacity to a Management Zone using a volume–weighted average in the upper zone, if the Board finds all of the following:

(i.) The request is consistent with the State Antidegradation Policy;

(ii.) The request is supported with a antidegradation analysis;

(iii.) The request includes a Management Zone Implementation Plan that meets the requirements identified herein;

(iv.) Allocation of assimilative capacity to dischargers participating in the Management Zone will not adversely impact available assimilative capacity in areas outside of the Management Zone; and,

(v.) Allocation of assimilative capacity to dischargers participating in the Management Zone will not result in groundwater, as a volume–weighted average in the upper zone, to exceed a trigger level of 75% of the nitrate water quality objective for MUN over a 20-year timeframe. The Central Valley Water Board retains the discretion to allocate assimilative capacity above this trigger level as long as the Central Valley Water Board can find that use of assimilative capacity above the trigger level will not result in pollution or nuisance over the long term.

The Central Valley Water Board may grant an exception to meeting nitrate water quality objectives to existing permitted dischargers participating in the Management Zone, if the Board finds all of the following:

(iii) The request is consistent with the Exceptions Policy; and,

(iv) The request includes a Management Zone Implementation Plan that meets the requirements identified herein.

If a Management Zone Implementation Plan is found to not be complete, and if a Management Zone does not revise the Management Zone Implementation Plan in a timely manner that makes it complete for consideration by the Central Valley Water Board, then dischargers within that Management Zone must comply with the Nitrate Control Program via Path A as directed by the Board's Executive Officer.

Requirements for Alternative Compliance Projects

The Central Valley Water Board will require a discharger(s) to develop and implement an Alternative Compliance Project to support an allocation of assimilative capacity on a volume–weighted basis, above a trigger level, or to authorize an exception.

- For dischargers electing to comply under Path A, the Alternative Compliance Project must be submitted with the Initial Assessment/Notice of Intent.

- For dischargers electing to comply under Path B, the Alternative Compliance Project is the Management Zone Implementation Plan.

At a minimum, an Alternative Compliance Project must include the following:

(4) Identification of public water supply and domestic wells that contain nitrate concentrations above the water quality objective and that are within the discharge zone of contribution;

(5) A schedule, with identified milestones, for addressing those nitrate–related drinking water issues; and,

(6) Identification of steps to be taken to meet the management goals of the Salt and Nitrate Management Program, which may be phased in over time[40]

The Central Valley Water Board has developed *Guidelines for Developing Alternative Compliance Projects*, which dischargers should consider in development of an Alternative Compliance Project.

[40] The Central Valley Water Board recognizes that full compliance with management goals 2 and 3 (i.e., reaching balance and managed restoration) may not be reasonable, feasible or practicable in all circumstances. In such cases, the discharger is responsible for providing the Central Valley Water Board with all necessary information to show why full compliance with management goals 2 and 3 are not reasonable, feasible or practicable. Dischargers shall still implement actions towards meeting the management goals that are reasonable, feasible and practicable.

Guidelines for Proposing an Acceptable Alternative Compliance Project

When an individual or group of dischargers is unable to demonstrate that their discharge is not causing or contributing to nitrate degradation above the triggers identified in the Nitrate Control Program, they have an opportunity to request either allocation of available assimilative capacity or an exception. In most cases, the request for the granting of assimilative capacity above a trigger or an exception in these circumstances will trigger the need for submittal of a proposed Alternative Compliance Project. The Alternative Compliance Project Guidelines define the components that must be included in an alternative compliance project in order to be considered and approved by the Central Valley Water Board. The guidelines specify a number of requirements for a proposed Alternative Compliance Project, including: 1) be consistent with the management goals of the Nitrate Control Program; 2) prioritize assurance that drinking water that meets drinking water standards is available to all drinking water users within the zone of influence where there are significant nitrate water quality concerns in groundwater; 3) identify short-term and long-term projects or planning activities that will be implemented to make progress toward the Nitrate Control Program water quality management goals; and 4) include a short-term and long-term schedule for implementation of nitrate management activities.

Options:

a) Incorporate the Guidelines into the Basin Plans
b) Retain the Guidelines within the Staff Report

A request for Alternative Compliance (i.e. granting of assimilative capacity or an exception) must be accompanied by sufficient documentation to verify that the proposed approach is reasonable, feasible, and practicable and meets the goals of the Nitrate Control Program. To authorize Alternative Compliance, the Central Valley Water Board looks to see if the request is supported with an Alternative Compliance Project (ACP). An ACP may be proposed by an individual discharger (which includes a third party group subject to a general order) or dischargers working collaboratively as part of a management zone. Under Path B of the Nitrate Control Program, the preparation of a Management Zone Implementation Plan is considered the equivalent of an ACP. While the Board has the discretion to deny such a request, any proposed Alternative Compliance Project(s) should contain the following components in order to be considered.

(a) As needed: updates to Initial Assessments and Preliminary Management Zone Proposals that include:

- Anticipated area of contribution of the individual discharger (or third party group subject to a general order), or group of dischargers under a management zone, over a 20-year planning horizon;
- Stakeholders that may be affected within the area of contribution over a 20-year planning horizon;
- Identification of stakeholders within the area of contribution who are not included within the ACP boundaries and why;
- Identification of areas within the area of contribution that overlap with other management areas/activities and the process to ensure coordination;

- Identifications of geologic and hydrologic features that limit or promote groundwater movement.

- Further assessment of water quality conditions based on additional data and information.

- Process to identify affected residents and the outreach utilized to ensure that stakeholders are informed of and given the opportunity to participate in the development of any ACP proposal;

- Any constituents of concern the individual discharger/group of dischargers intends to address besides nitrate (not required but is an optional available); and

- Identification of current best efforts/Best Practicable Treatment and Control (BPTC) and need for assimilative capacity or an approved exception from meeting the nitrate water quality standard.

(b) Components of a Proposed Alternative Compliance Project(s)

- Be consistent with the management goals of the Nitrate Control Program, including addressing short– term and long-term drinking water needs affected by nitrates (Management Goal 1), plan for achieving balanced nitrate loadings within the proposed boundaries of the project, where reasonable and feasible (Management Goal 2), and a plan for establishing a managed aquifer restoration program to restore nitrate levels to concentrations at or below the water quality objectives to the extent reasonable, practicable and feasible (Management Goal 3).

- Include a process to ensure that drinking water that meets drinking water standards is available to all drinking water users utilizing groundwater within the area of contribution. This component may be met through the development and implementation of an Early Action Plan, as may be required by the SNMP Nitrate Permitting Strategy, payment into a mitigation fund, and/or other mechanisms geared toward providing emergency, interim and permanent solutions.

- Describe the outreach that has occurred and that will continue to occur to ensure that stakeholders or affected communities within the zone of influence are informed of, and given opportunity to participate in, the development of any ACP proposal as well as ongoing activities designed to resolve their drinking water concerns.

- For a management zone, contain a governance framework that, at a minimum, establishes the following: (a) roles and responsibilities of all participants; (b) involvement of an entity with authority to manage water use within the zone of influence including any identified SGMA[41] management agency, if applicable or as necessary; (c) involvement of representative(s) of stakeholders and/or communities within the zone of influence that utilize the groundwater as a drinking water supply; (d) funding or cost–share agreements to implement the ACP, and short-term and long-term nitrate management projects/activities; and (e) a mechanism to resolve

[41] California Department of Water Resources Groundwater Sustainability Agencies webpage: (https://www.water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Groundwater-Sustainable-Agencies)

disputes among participating dischargers.

- Identify how nitrate conditions will be characterized for use as the basis for demonstrating how nitrate will be managed over short-term and long-term periods to meet the nitrate management goals established in the Central Valley Region SNMP.

- Identify short (≤ 20 years) and long-term (> 20 years) projects and/or planning activities that will be implemented as part of the ACP to make progress towards attaining each of the water quality– related management goals established by the Central Valley SNMP within the zone of influence. Projects/planning activities must first prioritize provision of safe drinking water but individual activities may be further prioritized to better allocate resources. Over time, as water quality improves in prioritized areas, updates to the ACP may shift the priorities.

- Identify mechanism(s) to support achievement of the overall Central Valley SNMP's long-term strategy to achieve balanced nitrate loadings and managed aquifer restoration, where reasonable and feasible. Mechanisms may include, but not be limited to:
  - Implementation of management practices that will reduce current nitrate loading to groundwater;
  - Use of offsets to help mitigate potential localized impacts, while improving overall basin or sub-basin–wide water quality (see Offsets Policy);
  - Managed groundwater recharge;
  - Pump and utilize and/or treat and distribute; and
  - Payment into a mitigation fund established to meet development and implementation of long term drinking water solutions, balance and restoration.

- Include a –schedule for short-term and long-term implementation of nitrate management activities with interim milestones and performance measures to assess progress every 5 years during the first 20-year planning horizon and every 10 years thereafter.

- Identification of alternative procedures or measures to be implemented if the interim milestones or performance measures are not met.
  - A water quality surveillance and monitoring program that is adequate to ensure that the ACP when implemented is achieving the expected progress towards attainment of water quality– related management goals (coordination with the SNMP's surveillance and monitoring program may be considered as part of efforts to comply with this element).
  - The ACP may be modified periodically to incorporate changes that will benefit water quality. Any modifications to an ACP that impact or change timelines, milestones or deliverables identified must be approved by the Central Valley Water Board through a public process.
  - The ACP shall identify the responsibilities of each regulated discharger, or groups of regulated dischargers if participating in a management zone, to manage nitrate within the zone. The Central Valley Water Board shall incorporate the responsibilities of each discharger, or groups of dischargers if within a management zone, into their respective

Individual or General WDRs.

- Prior to modifying any WDRs to incorporate the use of assimilative capacity on a management zone basis or adopting an exception to meeting a water quality standard for a discharger or dischargers participating in the management zone, Board staff will review the Management Zone Proposal and ACP to determine whether the Proposal and ACP meet all applicable criteria. Should the Board's review determine that the Management Zone Proposal and ACP meet all applicable criteria, the Executive Officer will issue a letter deeming the Proposal and ACP complete and will calendar the matter for the Board's consideration. The Board may then establish the management zone and its ACP after providing public notice and opportunity to comment consistent with laws and regulations applicable to the adoption or modification of WDRs. The triggers for determining the need for an ACP are identified in the Nitrate Permitting Strategy and based in part on the nitrate concentration in the effluent, the concentration in the receiving water, and the rate of degradation.
- Progress on the milestones and performance measures of the ACP must be provided to the Central Valley Water Board at a minimum of every five years during the first 20-year planning horizon and every 10-years thereafter.

4.2.2.1.3 Alternative 3: Nitrate Control Program that Clarifies Use of Current Central Valley Water Board Authorities

During stakeholder discussions, an alternative approach to the Nitrate Control Program that incorporates new authorities for the Central Valley Water Board was identified. This alternative primarily utilizes current authorities but provides some additional flexibility and clarifies findings that should be made prior to use of that flexibility. A brief summary of the differences between this Alternative 3 and Alternative 2 is presented in Table 4–13 as part of the evaluation of all Nitrate Control Program alternatives. Additional discussion is provided below.

Priority Basins: This alternative is consistent with Alternative 2 in the use of Priority 1 and Priority 2 basins as an approach to implementing a Nitrate Control Program.

Use of Categories and Triggers: The basin plan should not expressly recognize "de minimis" discharges of nitrate as a separate category due to the difficulty of predicting cumulative impacts and the potential of unintended consequences impacting water quality and beneficial uses. Rather, only three categories of discharges should be identified:

1. No degradation (based off of best water quality since 1968)

2. Degradation up to 7.5 mg/L nitrate as nitrogen (which would require additional monitoring and discharger must show they are implementing best efforts/BPTC); and

3. Pollution as defined as discharges that cause shallow groundwater quality to exceed 75% of the MCL (7.5 mg/L nitrate as nitrogen), where such an exceedance would require an exception and must also demonstrate implementation of best efforts/BPTC).

Use of Management Zones: Compliance with the Nitrate Control Program should be determined on a permit-by-permit basis. Management Zones would not be an available permitting option for compliance in order to determine available assimilative capacity or to develop permit limits.

Potential contamination as well as potential available assimilative capacity should be measured in the Shallow Zone by individual dischargers. Use of the shallow groundwater would be consistent with GeoTracker Gama when looking at monitoring wells and therefore would be consistent with existing information and tools.

All dischargers would be required to characterize their loading and impact of their loading on nitrate water quality in the immediate area of the discharge. This characterization would need to be conducted as part of a permit renewal application, or be ordered via section 13267 of the Water Code. In priority areas and upon notice by the Central Valley Water Board, individual dischargers should provide this information the Central Valley Water Board within 90 days. The Executive Officer shall have the discretion to extend the 90 days on a case–by–case basis due to special circumstances, but in no event should the extension be for more than an additional 90 days.

If a discharger cannot comply in the shallow groundwater, they must pursue exceptions and mitigation alternatives.

As part of the permit, dischargers shall also be required to assess their loading impact on the sub-basin area (as defined by DWR Bulletin 118). Dischargers will have the option to characterize loading and impact on the sub-basin through individual efforts or as part of a cooperative–type program. Management Zones may be appropriate to provided coordinated groundwater sampling within a sub-basin in order to determine trends in water quality.

Permittees selecting the individual pathway for assessing their loading impact would have one-year from permit adoption to conduct the sub-basin assessment, and permittees selecting to conduct the sub-basin assessment on a management zone/sub-basin basis in conjunction/cooperation with others would have one-year to develop the cooperative effort, and then one-year to conduct the assessment.

Compliance Pathway: Use of Assimilative Capacity or Use of An Exception: Based on the results of the individual characterization of loading as described above, permittees would then need to determine their compliance pathway (i.e., use of assimilative capacity in shallow groundwater or through granting of an exception).

Assimilative Capacity: could only be granted if the discharge (or collective discharges if the permit covered more than one permittee) would not cause or contribute shallow groundwater in a reasonably defined area to exceed 7.5 mg/L of N. Reasonably defined area means a local area and not on a sub-basin basis. As a condition of any allocation of assimilative capacity the permittee would need to participate in local, regional and/or statewide efforts that ensure safe drinking water where nitrate contamination is of issue for the area in question.

Exception: If assimilative capacity was not available under the terms specified above, the permittee would need to apply for an exception, and granting of an exception would be subject to the conditions in the Exceptions Policy options. In particular, any permittee(s) receiving an exception would need to be part of local, regional and/or statewide efforts that ensure safe drinking water where nitrate contamination is an issue for the area in question.

Exceptions may not interfere with efforts to achieve nitrate balance and restoration and may not contribute to localized areas of contamination. At a minimum, exceptions should not be granted where compliance is practicable, not be granted indefinitely, must be as short as practicable, and may be granted only for a maximum of 10-year increments of time. Regular check-ins are

required in order to provide opportunities to reassess whether the exception is still necessary. For example, new technology or practices may have been developed after the granting of the exception.

Exceptions may be granted renewals up to three times every 10 years so long as certain performance metrics are met at each renewal. The metrics must include, at a minimum: demonstration that short-term drinking water solutions were successfully implemented; demonstration that mitigation of groundwater contamination is in place; and a schedule to ensure long-term safe drinking water supplies and groundwater restoration.

However, it would only be permissible under very limited circumstances for the Central Valley Water Board to permit a discharger not to strictly comply with water quality objectives. In almost all cases a discharger should both be required to comply with water quality objectives and, to the extent they do not, mitigate the harm or complete an offset project related to noncompliance (see offset discussion below). A discharger may be eligible for an exception under specific circumstances related to the individual discharger and discharge at issue, if the discharger can demonstrate several things to ensure protection of groundwater, including but not limited to the following:

a) Water quality in the applicable groundwater location will be improved by limited noncompliance in conjunction with completion of a project;

b) The discharger cannot economically both comply with water quality objectives and complete the project;

c) The proposed project and the discharge are located closely together and hydrogeologically connected such that no localized impacts will occur;

d) Any permissive noncompliance must be time-limited for the shortest practicable time;

e) After the expiration of a time schedule, permissive noncompliance must stop;

f) A plan must be in place to achieve compliance per the time schedule;

g) Potentially impacted domestic wells must be monitored to prevent impacts to drinking water; and

h) Any permitted discharge must be consistent with Porter–Cologne and the State Antidegradation Policy.

The terms “reasonable” and “feasible” need to be subject to certain criteria in order to provide the Central Valley Water Board sufficient guidance when considering such projects. One factor that should be included is the economic cost to nearby communities, in particular disadvantaged communities (DACs). Hypothetically, while in certain circumstances it may appear that requiring a discharger to complete a specific project or greatly change their practices may not seem “reasonable”, once the cost to the discharger is compared to the impact on drinking water supplies, the calculation will likely change. A second factor is consideration of whether failure to act now will result in much higher costs. A third and related factor is consideration of how a “reasonable and feasible” determination impacts restoration goals, including interim milestones.

Offsets: An Offset Project may only be used to offset a specific discharge so that the net discharge (taking into account both the discharge and the offset project) complies with the water quality objectives in the applicable shallow groundwater. Offsets must occur within an area of the basin that is hydrogeologically connected to the water impacted by a discharge, such that water quality in the locality of the discharge is not affected. The hydrogeological connection must be close enough to ensure that sufficient groundwater mixing will occur and that there will not be disproportionate impacts. Absent this hydrological connection and geographic proximity, there is potential for one area of the basin to benefit at the detriment of another portion due to the fact that flow of groundwater does not typically promote mixing and any mixing that does occur can be over very long time periods. Nitrate plumes may form and impact local users. Offsets should only be used in localized areas to move toward balance and restoration.

Phasing of Implementation Activities to Meet Prioritized Management Goals: "Projects" are required in order to allow use of assimilative capacity or an exception. Under Alternative 2, "Alternative Compliance Projects" have three distinct phases (short/long term provision of safe drinking water supplies; bringing basin into balance; restoration where reasonable, feasible and practicable). Under this Alternative 3, the three distinct phases are recognized, but are recommended to occur concurrently and overlap. Some level of phasing in of activities may be appropriate in the very short term. However, every permit, including exceptions, should require steps toward restoration. One of the primary goals of the Basin Plans is restoration, thus, it should remain at the forefront of Basin Plan Objectives, goals, metrics, and timelines. Phase I would involve provision of safe drinking water to impacted users and should also require, at a minimum, concrete steps toward balance and a pilot program or demonstration project for restoration of groundwater.

Each step must have some level of overlap: providing safe drinking water, achieving nitrate balance, and restoration of the basin. Each step also aids the others. Reaching balance quickly will reduce the cost of restoration. Similarly, restoration will lessen the financial burden on providing safe drinking water by removing the necessity for filters treatment, and/or increased monitoring costs.

Restorations within 50 years must be prioritized to relieve communities of harm experienced by nitrate contamination. Any extension in timeline (50, 100 or 200 years) must include solid justification for any chosen alternative, including the cost–benefit to both communities and dischargers. Restoration efforts must be tied to SGMA activities which require GSAs to reach sustainability by 2040/2042 depending on their overdraft status.

4.2.2.2 Evaluation of Nitrate Control Program Alternatives

The three alternatives identified, No Action, Nitrate Control Program with New Authorities and Nitrate Control Program Clarifying Existing Authorities, were evaluated against the criteria identified through the stakeholder effort and discussed in Section 4.1. The evaluation is summarized in Table 4–12.

In addition, to help clarify the differences between Alternative 2 which provides new regulatory authority with Alternative 3 which primarily clarifies existing authority, key differences between proposed elements of each are summarized in Table 4–13.

Table 4 - 12. Evaluation of Nitrate Control Program Alternatives

Criteria	Alternatives		
	No Action	New Authorities	Clarify Existing Authorities
Provide Alternate Drinking Water Supplies	L/M	M/H	L/M
Legally Authorize Ag Discharges	M	H	L/M
Prevent Further Degradation	M	M	M
Restore Degraded Groundwater	L	M/H	L/M
Apply to Diverse Conditions	M	H	M
Leverage and Maximize Resources	L	H	L

Notes:
L = Low or Limited
M = Medium ability to address or addressed in some cases or over time
H = High likelihood of being addressed

Table 4 - 13. Comparison Nitrate Control Program Alternatives 2 and 3

Alternative 2––New Authorities	Alternative 3—Clarify Existing Authorities
Water Quality Objective remains at 10 mg/L to determine assimilative capacity. Trigger of 7.5 mg/L utilized to increase management efforts and determine "available" assimilative capacity.	Any discharge causing an "exceedance" above 7.5 mg/L is causing pollution and needs an exception. (Functionally changing water quality objective to 7.5 mg/L)
Two paths for compliance: single permitted discharger OR sub-basin Management Zones	Compliance to be determined on a permit-by-permit basis. Management zone compliance is not an option.
Single dischargers fall into one of five categories depending quality of shallow GW and discharge: no impact; *de minimis* impact; degradation below trigger; degradation above trigger; discharges to impacted groundwater.	Three categories: 1) no degradation (baseline 1968); 2) degradation up to 7.5 mg/L; 3) Pollution if above 7.5 mg/L needing an exception. No recognized *de minimis* impact
Management Zones can be proposed to manage nitrate on a sub-basin basis scale. Authorization of available assimilative capacity as measured in the Upper Zone is a means of compliance.	Management Zones not an option except for use in monitoring water quality trends. All compliance measured in shallow GW. Where dischargers cannot comply in shallow GW, must pursue exceptions and mitigation alternatives.
Allocation of assimilative capacity or approval of exception requires implementation of BPTC/Best Efforts as well as discharger proposed Alternate Compliance Projects (ACP). ACP must contain three phased elements: short/long term provision of safe drinking water supplies; bringing basin into balance; restoration where reasonable and feasible. Exceptions may be granted up to 50 yrs. with reviews every 10 yrs. Extension possible with measurable, continuing water quality improvements.	Limited to no phasing of efforts. Propose early actions for ensuring safe drinking water supplies and concurrent mitigation to restore all ground water basins. Allows initial short term focus on drinking water supplies if justified economic hardship to do more. Exceptions should not be granted if it is practicable for discharger to comply. Allowed up to three 10–yr. renewals if performance metrics met.
Offsets can include directly providing safe drinking water to those impacted, moving toward balance within a sub-basin, and moving toward restoration in a sub-basin.	Offsets do not equal mitigation and should only be used in localized areas to move toward balance and restoration

Alternative 2––New Authorities	Alternative 3—Clarify Existing Authorities
Proposed Implementation Plan must include measurable milestones; but is silent on end date for restoration	Propose all GW basins restored within 50-years

Provide Alternate Water Supplies: Current enforcement authority allows the Central Valley Water Board to require a discharger to provide or pay for uninterrupted replacement water to affected public water suppliers or private well owners if a permitted discharge violates permit terms or otherwise causes pollution. (Wat. Code, § 13304.) All alternatives rely on this authority. The No Action and Alternative 3 also rely on the authority provided by Water Code section 13267 orders for individual permittees to assess the impact of their discharge and then revisions of individual permits to require mitigation for impacted drinking water users. Alternative 2 retains current authority and processes but provides alternative compliance under a parallel pathway whereby permittees may elect to address replacement water through a permit action rather than an enforcement action due to other incentives associated with the alternative pathway. Alternative 2 allows dischargers to collaborate both on evaluation of potential impacted groundwater users and work with those users within a hydrologically connected sub-basin to find short-term and long-term solutions to nitrate impacts to drinking water.

Depending on the individual permittee, time will be required to update individual permits and resources may or may not be immediately available to the permittee to identify zone of discharge contribution and provide safe short-term replacement drinking water. Long-term solutions may require use of a mitigation fund. Replacement drinking water supplies will be provided under both the No Action Alternative and under Alternative 3. However, coverage may be limited depending on the permittees' ability to address impacted users considering other demands imposed on permittees by the program.

Alternative 2 allows for permittees within a Management Zone to pool resources to identify impacted groundwater users and provide short-term and long-term safe drinking water supplies. Pooling resources within a specified boundary should reduce time to initiate short term safe drinking water supply since there will not be individual studies by permittees to determine their zone of contribution prior to determining impacted users. All impacted users within the Management Zone boundaries must be provided safe drinking water supplies – both short-term and long-term. Pooling resources will also provide an advantage to either directly provide or negotiate for long-term safe drinking water supply projects. Use of a mitigation fund is not precluded under this option.

In general, while all Alternatives can move toward the provision of safe drinking water supplies, Alternative 2 has the potential to provide the greatest coverage within the shortest time period. Alternative 2 will likely result in the more immediate provision of replacement drinking water because permittees using alternative compliance under Alternative 2 will have greater flexibility to deploy resources to provide drinking water due to potentially longer compliance schedules (i.e., these permittees would not be laboring under a goal to restore aquifers in 50 years) and because they would have a greater ability to pool resources under the Management Zone option.

Legally Authorize Agricultural Discharges: The current regulatory framework allows agricultural discharges as long as appropriate antidegradation findings can be made and as long as the agricultural discharger can meet applicable water quality objectives in "first-encountered groundwater." However, in many areas of the Central Valley, groundwater already exceeds the

MCL to protect drinking water (10 mg/L nitrate as nitrogen). In these areas, discharges to the groundwater above 10 mg/L nitrate as nitrogen would be prohibited under existing State Water Board precedent. As irrigation water passes through the crop root zone, some uptake of nitrate is expected. Current regulatory activities under the Irrigated Lands Regulatory Program requires nutrient management plans to provide source control and maintain the nitrate level moving below the root zone to below 10 mg/L nitrate as nitrogen. Effectiveness of the nutrient management plans will vary by locations, crop type and management practices. It is anticipated that the nutrient management plans will be adaptive to new findings and will take time to maximize source control in all areas of the Central Valley.

Prevent Further Degradation: As discussed above, current regulatory framework is focused on source control and requires appropriate antidegradation findings to allow discharges of nitrate. Use of nutrient management plans in agriculture will minimize degradation from fertilizers. For other discharge categories such as wastewater treatment plants, industry, dairies, and/or food processors, additional treatment and/or disposal of waste water in lined ponds may be the only practicable means for source control. Activities are occurring now to reduce loading of nitrate. However, studies conducted by the University of California and others identified an existing, legacy source of nitrate in the vadose zone. As water moved down through the vadose zone it is adding legacy nitrate load to the groundwater aquifer. Due to the extensive time required for current activities on source control to be reflected in the groundwater aquifer, success of any of the three alternatives will vary by location, discharge source and historical land use practices. In addition, if a receiving water body already exceeds applicable water quality objectives, further degradation is prohibited and discharges must be at concentrations at or below the applicable objective. All proposed alternatives retain existing regulatory authority. Alternative 2 provides a clear framework that prioritizes activities to provide safe drinking water supplies while maintaining Best Efforts/BPTC. The approach would provide additional authority to allow controlled degradation during the short-term to allow a more rapid response to immediate user concerns while a longer-term nitrate management strategy is developed. The No Action Alternative and Alternative 3 do not have a clear prioritization framework. Alternative 3 requires portions of all phases (safe drinking water supplies, balance loading, and restoration) to overlap. Such an approach could lead to more rapid source control, if the individual permittees had the ability to sustain the financial burden of simultaneously addressing all phases of the control program from the initiation of the program through its conclusion.

Restore Degraded Groundwater: The current regulatory framework is focused on source control and does not have a framework for restoring groundwater basins on the scale needed for the Central Valley. Authority is currently limited to cleanup orders on an order-by-order basis. Alternative 3 continues the permit-by-permit approach but expands compliance to contributions to a mitigation fund for larger scale projects. Depending on the bounds of the mitigation funds (e.g. whether funding provided by a permittee within a select sub-basin must be earmarked for projects within that sub-basin, the result may or may not improve conditions for groundwater users directly affected by the permittees discharge. Alternative 2 retains cleanup authority and includes an option for the use of a mitigation fund, but also requires, under the Management Zone pathway, a specific plan with milestones to provide long-term, managed restoration where reasonable, feasible and practicable. The No Action alternative continues current practices of cleanup on a permit-by-permit basis, which has proven utterly ineffective for addressing the magnitude of the current nitrate impacts to Central Valley's groundwater. Alternative 3 provides more clarity on the specific restoration requirements and minimum timelines in order for a permittee to be granted assimilative capacity or an exception and allows the use of a mitigation fund to coordinate resources, but, based on work done under the Aggressive Restoration Study

(Luhdorff & Scalmanini and Larry Walker Associates, 2016b), such timelines cannot be universally met. Alternative 2 does not set specific timeline for final restoration to a concentration below the MCL, but does require specific milestones and review periods and pre–determined alternatives if milestones are not being met. Alternative 2 sets restoration as a lower priority than ensuring safe drinking water supplies and continuing source control efforts to balance nitrate loading, so restoration will take longer than assumed in Alternative 3. However, the Management Zone approach and requirements to closely coordinate with all stakeholders within the Management Zone to develop acceptable local solutions may have a greater likelihood to succeed in the long-term than projects instigated by a third party mitigation bank.

Apply to Diverse Conditions: The No Action Alternative and Alternative 3 utilize the current regulatory framework's flexibility to adjust to local conditions. The current framework does not prioritize implementation activities nor allow for the anticipated timelines needed to reach restoration on a large scale. Alternative 2 allows permittees to continue to be regulated as individual permit holders, but sets up prioritization for implementation activities and allows for the development of local solutions as long as those solutions have been developed in an open process and with input from all stakeholders potentially impacted by the final decision. Alternative 2 allows the stakeholders within the sub-basin under consideration to prioritize their own implementation activities dependent on the needs and diversity within their area.

Leverage and Maximize Resources: The No Action alternative and Alternative 3 operate permit-by-permit. Alternative 3 recommends use of a Mitigation Bank to focus resources, but both options anticipate overlapping concurrent activities related to ensuring safe drinking water supply, balancing nitrate loading and restoration of groundwater basins. Since the regulation is permit-by-permit, there is little ability for further prioritization of activities within sub-basins except at the mitigation bank level for restoration activities. Alternative 2 provides an option for permittees to collaborate through a Management Zone to systematically focus resources first on human health concerns, while continuing source control activities to minimize and/or eliminate further degradation and moving toward restoration in areas the Management Zone determines is reasonable, feasible and practicable. Any decision not to restore a specific sub-basin to meeting water quality objectives to protect MUN would require adoption of a Basin Plan Amendment to remove the MUN use through a rigorous public hearing process.

Additional Evaluation of Alternatives 2 and 3: Table 4–13 compares some of the distinct differences between Alternatives 2 and 3. Some of the differences between alternatives have been discussed above: whether or not to utilize Management Zones for compliance; limited phasing of management goals; and timeline to restore all groundwater basins within 50-years. A few other distinct differences are noted below.

- Determining an "exceedance": Alternative 3 recommends that the proposed trigger value of 7.5 mg/L nitrate as nitrogen be utilized to determine a level of pollution and need for an exception, based on the rationale that establishing a compliance metric below the standard establishes a margin of safety. Utilizing the trigger in this manner functionally changes the water quality objective from 10 mg/L to 7.5 mg/L nitrate as nitrogen. No scientific studies have been conducted to support such a change. It is appropriate to continue to utilize the 7.5 mg/L value as a trigger to require additional scrutiny on the discharge and any projects proposed to support allocation of assimilative capacity. The Board should retain discretion to determine whether or not to allocate the remaining assimilative capacity.

- Three vs. Five Categories of Discharges: Alternative 3 proposes three categories of discharges: no degradation using a baseline water quality of 1968 and then utilizing 7.5 mg/L nitrate as nitrogen as the boundary between available assimilative capacity and requirement of an exception. Alternative 3 does not support the use of a de minimis category and requires development of a project to support safe drinking water supplies for any use of assimilative capacity over a 1968 baseline nitrate concentration. Based on the variable nitrate groundwater quality throughout the Central Valley, including areas where nitrate concentrations were exceeding 10 mg/L in 1968, the three category approach may not meet the desired intent in all situation. In addition, there are many areas in the northern Central Valley where groundwater nitrate concentrations are well below the 7.5 mg/L triggers and continuing discharges since 1968 have not shown evidence that the trigger will be approached in the foreseeable future (Larry Walker Associates, 2013). In these situations, it is appropriate to set criteria that recognizes negligible impacts from a nitrate discharge so that primary regulatory focus can be on discharges that are or have the potential to impact drinking water supplies. The current criteria are for discharges that utilize less than 10% of the available assimilative capacity in the Shallow groundwater that would be within the discharge's zone of contribution and that over a 20-year horizon, the nitrate trigger would not be exceeded in that shallow zone. Discussion on the use of 7.5 mg/L nitrate as nitrogen to determine pollution is discussed in the paragraph above related to use of exceedances.

- Maximum Term for Exceptions: Alternative 2 primarily restricts the term of an exception to 50-years with reviews every 10-years. The 50-year term may be extended if measurable and continuing water quality improvements are being demonstrated through the implementation activities. Alternative 3 provides for 10-year terms that can be renewed three times if performance metrics are met. Given the amount of time documented through the Nitrate Implementation Measures Study (CDM Smith, 2016a) and the Aggressive Restoration Study (Luhdorff & Scalmanini and Larry Walker Associates, 2016b), a 30-year term was not adequate to restore nitrate concentrations to 10 mg/L in a 200–square mile area in the southern Central Valley. Although groundwater quality was improving, portions of the aquifer still exceeded 10 mg/L nitrate as nitrogen after 100 years. Alternative 2 provides a more realistic timeline and allows for continued long-term restoration activities if measurable improvements can continue to be documented.

- Offsets: The options for Offsets will be discussed in Section 4.2.9 as part of the Offsets Policy component of the overall Salt and Nitrate Control Program. It should be noted here that use of offsets as an alternative compliance project for nitrate is not anticipated on a broad scale.

4.2.2.3 Recommendation

Incorporate Alternative 2: Nitrate Control Program with Additional Authorities, adjusted to include additional guidance on development of Alternative Compliance Projects and considerations related to "reasonable, feasible and practicable" as well as clarify the review period.

When balanced against the expanse of groundwater basins with nitrate concentrations already exceeding concentrations to protect drinking water supplies, the limitations in available public resources to identify domestic well users impacted by nitrate and to provide immediate safe water supplies to those users, and the documented time needed to restore nitrate contaminated

groundwater basins, Alternative 2 provides the most flexibility to meet the three goals of the program while clearly prioritizing human health concerns in the short term. All three alternatives meet evaluation criteria to some level, however Alternative 2 has the best potential to leverage and maximize resources for the benefit of stakeholders within sub-basins (Management Zones) and direct resources immediately toward alleviating human health concerns while continuing source control efforts and moving forward with long-term managed restoration.

Alternative 2 identified the need to have minimum criteria that apply both to evaluation of projects proposed to support allocation of assimilative capacity and granting of exceptions (Alternative Compliance Projects under Alternative 2). It is recommended that the Guidelines for Alternative Compliance Projects be expanded to include the following criteria from Alternative 3 which were not specifically identified in the original guidelines:

- Coordination with stakeholders and tracking of drinking water quality in areas that will be part of the zone of contribution over a 20-year planning horizon; and
- Regular reviews to evaluate development of short and long-term safe drinking water projects as well as progress toward restoration (proposal recommends every 5-years for the first 20-years and every 10-years thereafter).

It is also recommended that the guidelines for alternative compliance projects remain in the Staff Report rather than be incorporated into the Basin Plans in order to allow adaptive adjustment as the control program moves forward.

The proposed Nitrate Control Program will not remove any of the existing authorities of the Central Valley Water Board, but will allow additional authority so that permittees may leverage their resources to develop a long-term nitrate management strategy that will prioritize provision of safe drinking water supplies while accounting for diversity within the valley, limiting degradation, and allowing agricultural discharges to continue. Staff recommends that the progress of the Nitrate Control Program be reviewed consistent with the schedule for the Salt Control Program—after each 10 to 15 year phase.

4.2.3 Mechanism to Ensure Early Participation and Implementation

The Salt and Nitrate Control Program will primarily be implemented through Waste Discharge Requirements and waivers. There currently exist over 1,400 permitted discharges within the Central Valley. While it is appropriate for permit and waiver conditions to contain provisions for the Salt and Nitrate Control Program, there are several potential approaches to amending permit requirements. Some options have the potential to delay the primary goal of identifying groundwater users impacted by elevated nitrate concentrations and providing safe drinking water supplies in priority basins.

In addition, the proposed approach to the Salt Control Program requires that all permitted discharges of salt determine their compliance pathway within six months of receiving a Notice to Comply with provisions of the Salt Control Program in order to provide the financial base for the needed salinity Prioritization and Optimization Study (P&O Study). The P&O Study is anticipated to cost $10 million and take ten years, so any delays would also delay projects to move from managed degradation to balanced loading and protection of salt sensitive areas.

4.2.3.1 Alternatives

The following five alternatives were identified.

1) General Amendment to Existing WDRs: Board would amend all existing permits in one

single permitting action. (Action would be a General WDR Amendment with an attachment that would describe all of the WDRs that the amendment would apply to.) General Amendment would replace existing salt and nitrate requirements with new provisions. New salinity provisions would require dischargers to either comply with strict salinity limits or start participating in the P&O Study. New nitrate provisions would require dischargers to either comply with strict nitrate limits or implement early actions.

2) Global Time Schedule Order: Board would issue a Time Schedule Order (TSO) that would cover every permittee. TSO would provide a time schedule that would set interim compliance requirements in lieu of compliance with existing permit limits. Interim compliance requirements would require participation in early phases of P&O study and/or implementation of early actions to address nitrate

3) Conditional Prohibition: The Basin Plan Amendments would establish conditional prohibitions for salt and nitrate discharges. Upon receipt of a "Notice to Comply", the prohibitions would prohibit any discharges of salt or nitrates unless the discharge was consistent with the implementation provisions in the proposed Basin Plan Amendments. The salinity implementation provisions would require dischargers to either comply with strict salinity limits or start participating in the P&O Study. The nitrate implementation provisions would require dischargers to either comply with strict nitrate limit or implement early actions.

4) Hybrid Approach: Revise ILRP General Orders (and perhaps others) and establish conditional prohibition for all other permittees: ILRP

5) "Elective" General Order that could Replace Nitrate/Salinity Terms in Existing WDRs: The Board would adopt a General Order that would replace WDR provisions relating to salt and nitrate for any discharger that chose to enroll in the General Order. After adopting the General Order, the Board would mail out 13260 notices to all dischargers – the notices would tell the dischargers that they would either need to sign up for the General Order or submit a ROWD to the Board to have their WDRs amended to incorporate strict salt and nitrate limits.

4.2.3.2 Evaluation

During the review of each alternative, it became clear that the more each permit had to be individually evaluated and the greater the number of permits that needed to be modified, the more extended the delay prior to initiating any of the time-sensitive activities identified in the Salt and Nitrate Control Program. Alternatives 1 and 2, in particular, would require the Board to review and potentially modify each individual Board-issued permit. Alternative 1 would require a review of each type of salt and nitrate provision included in the existing permits and potentially require revisions of antidegradation provisions, in-permit time schedules, and other findings related to salt and nitrate limitations.

Under Alternative 2, a provision within each WDR would need to be identified as being violated in order for the Board to have authority to issue a Time Schedule Order (TSO). A Global TSO would need to identify which provision the TSO is addressing for each permit included. For permits currently meeting more flexible salt and nitrate requirements, the permit itself would need to be revised. A discharger under a TSO might be required to disclose that they are subject to "enforcement" on financial disclosures, which may limit their ability to qualify for loans.

Use of an "Elective" General Order under Alternative 5 has potential to be less time intensive than Alternatives 1 and 2 if permittees are fully responsive after receiving a notification and opt to sign up under the General Order. Delays could occur if response is inconsistent and extensive tracking of status of individual permittee is needed. If multiple permittees do not opt to comply under the General Order, a larger number of individual orders would need to be individually evaluated and updated.

A Conditional Prohibition on salt and nitrate discharges under Alternative 3 provides the most immediate and directly-enforceable approach to ensure early participation and implementation as permits are being methodically updated to include provisions of the Salt and Nitrate Control Program. Once the Salt and Nitrate Program is in effect, as well as its accompanying Conditional Prohibition of Discharge, any discharges of salt or nitrate would be prohibited unless the discharge was consistent with the implementation provisions in the proposed Basin Plan Amendments. Tracking participation may be difficult, but individual permits would not need to be modified before early implementation measures could be required by the Board (e.g. participation in the P&O Study or meeting conservative limits for salt and/or developing Early Action Plans to provide safe drinking water supplies to groundwater user impacted by elevated nitrate levels).

Alternative 4 is a hybrid approach whereby Irrigated Land Regulatory Program (ILRP) General Orders are amended to include Salt and Nitrate Control Program provisions (and perhaps other General Orders as well) to have enforceable permit limits over large numbers of dischargers. The Conditional Prohibition would continue to apply to any permittee discharging salt or nitrate until such time that their permit is updated to include Salt and Nitrate Control Program provisions. This option would allow the Board to gain the benefits of the conditional prohibition, while also considering the unique nature of the coalition-based ILRP General Orders.

4.2.3.3 Recommendation

Alternative 4 is recommended. The hybrid approach that combines a conditional prohibition with amending General Orders provides a logical framework to ensure early participation and implementation of key Salt and Nitrate Control Program activities. Although only Irrigated Land Regulatory Program (ILRP) General Orders are specifically called out for revision within 18 months of the effective date of the Basin Plan Amendments, by limiting the application of the Conditional Prohibition to such time that existing waste discharge requirements or conditional waivers are updated to reflect program requirements, nothing in the Conditional Prohibition prevents additional General Orders (i.e. the Dairy Order) from being updated prior to issuance of a Notice to Comply except staffing limitations.

Staff recommends that a Conditional Prohibition for salt discharges and a separate Conditional Prohibition of Nitrate discharges to groundwater be incorporated into the Basin Plans and contain the following elements.

Conditional Prohibition on Salt Discharges

- The Conditional Prohibition on Salt Discharges shall apply during Phase I of the Salt Control Program.

- The Conditional Prohibition will apply to all permittees discharging salt pursuant to Board–issued waste discharge requirements and conditional waivers, except those covered under the dischargers regulated under the Board's Irrigated Lands Regulatory Program (ILRP).
    - The Central Valley Central Valley Water Board will consider amendments to

ILRP General Orders to incorporate provisions of the Salt Control Program within 18 months of the effective date of the Basin Plan Amendment.

- For permittees subject to the Conditional Prohibition, the prohibition shall apply from the time that a permittee receives a Notice to Comply until such time that the permittees' existing waste discharge requirements or conditional waivers are updated to reflect requirements of Phase I of the Salt Control Program

- Upon receiving a Notice to Comply, discharges of salts at concentrations that exceed salinity numeric values identified in the Phase 1 Conservative Permitting Approach are prohibited unless the permittee is implementing the Phase I requirements

- The Conditional Prohibition on Salt Discharges shall sunset at the end of Phase I of the Salt Control Program.

Conditional Prohibition of Nitrate Discharges to Groundwater

- The Conditional Prohibition will apply to all permittees discharging nitrates pursuant to Board–issued waste discharge requirements and conditional waivers, except those covered under the dischargers regulated under the Board's Irrigated Lands Regulatory Program (ILRP).
    - The Central Valley Central Valley Water Board will consider amendments to ILRP General Orders to incorporate provisions of the Nitrate Control Program within 18 months of the effective date of the Basin Plan Amendment.

- For permittees subject to the Conditional Prohibition, the prohibition shall apply from the time that a permittee receives a Notice to Comply until such time that the permittees' existing waste discharge requirements or conditional waivers are updated to reflect requirements of the Nitrate Control Program.

- Upon receiving a Notice to Comply, discharges of nitrate are prohibited unless a discharger is implementing the requirements of the Nitrate Control Program.

4.2.4 Surveillance and Monitoring Program Requirements for the Salt and Nitrate Control Program

The Central Valley Water Board is required to include a monitoring and surveillance program when establishing an implementation program in the Basin Plans: "*The implementation program shall include, but not be limited to: …3. A description of surveillance to be undertaken to determine compliance with the objectives (Wat. Code, § 13242)*."[42] In addition, the Recycled Water Policy contains the following monitoring requirements for any developed Salt and Nutrient Management Plan:

- *Section 6.b(3)(a) – A basin/sub-basin wide monitoring plan that includes an appropriate network of monitoring locations – adequate to provide a reasonable, cost–effective means of determining whether the concentrations of salt, nutrients, and other constituents of concern are consistent with applicable water quality objectives. Salts, nutrients, and other constituents of concern shall be monitored as follows:*

[42] SRSJR Basin Plan, p. IV–1.00; the TLB Basin Plan includes similar language on p. IV–1.

- *(i) The monitoring plan must be designed to determine water quality in the basin, and must focus on basin water quality near water supply wells and areas proximate to large water recycling projects, particularly groundwater recharge projects. Also, monitoring locations shall, where appropriate, target groundwater and surface waters where groundwater has connectivity with adjacent surface waters.*
- *(ii) The preferred approach to monitoring plan development is to collect samples from existing wells if feasible as long as the existing wells are located appropriately to determine water quality throughout the most critical areas of the basin.*
- *(iii) The monitoring plan shall identify those stakeholders responsible for conducting, compiling, and reporting the monitoring data. The data shall be reported to the Central Valley Water Board at least every three years.*

The proposed Salt and Nitrate Control Program covers the entire Central Valley and has been phased for Salt Control and prioritized for Nitrate Control. The Salt and Nitrate Control Program is recognized as a long-term management effort that has both region-wide as well as localized components. As such, the surveillance and monitoring program will need to capture both region-wide trends in surface and groundwater quality as well as impacts of specific management activities.

4.2.4.1 Alternatives

Two alternatives were identified as follows:

1. No Action Alternative
2. Build off of Existing Monitoring Programs Utilizing Guidance Developed through the CV-SALTS Initiative

4.2.4.1.1 No Action

The No Action Alternative utilizes monitoring requirements currently established within the Basin Plans to provide information to satisfy the requirements identified above. The current requirements are program specific and range from individual permit requirements to track and regulate impacts from discrete discharges, to broader requirements under General Orders that allow the use of representative monitoring programs to provide program specific information on a region-wide basis. Two programs that fall under a representative monitoring framework include the Dairy Program and Irrigated Lands Regulatory Program. Required analysis varies depending on the program needs. For salt and nitrate, monitoring may be continuous (effluent and receiving water sensors for electrical conductivity for surface water discharges), non–existent if no reasonable potential to impact water quality was determined based on conditions when the permit was developed, or scheduled daily, weekly, seasonally, annually or other depending on the needs of the program. Data collected under each program may be compiled and stored in separate data base systems or in some cases paper copies are stored in house with pdf versions of analytical reports attached to electronic files within a broad data base system tracking compliance. Major data bases utilized by the various programs include:

- California Integrated Water Quality System (CIWQS): Utilized by the State and Regional Water Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities. CIWQS also allows online submittal of information by Permittees within certain programs and makes data available to the public through reports.

- GeoTracker GAMA (Groundwater Ambient Monitoring and Assessment Program):

Integrates and displays water quality data from various groundwater sources on an interactive Google–based map. Analytical tools and reporting features help users assess groundwater quality and identify potential groundwater issues in California. This data set is comprised of the Domestic Well and Priority Basin Project. The Domestic Well Project sampled domestic wells for commonly detected chemicals to evaluate the quality of groundwater. The Priority Basin Project provides a comprehensive assessment of statewide groundwater quality that helps identify and understand the risks to California's groundwater resources. Each data set is identified by "DW" for domestic well and "PB" for priority basin.

- California Environmental Data Exchange Network (CEDEN): Central location to find and share information about California's water bodies, including streams, lakes, rivers, and the coastal ocean. Many groups in California monitor water quality, aquatic habitat, and wildlife health. CEDEN aggregates this data and makes it accessible to environmental managers and the public.

The Basin Plans recognize the need to move toward more coordinated evaluation of both internal monitoring information as well as that collected by outside agencies. In the recently adopted Basin Plan Amendment to develop a consistent and transparent process to evaluate appropriate designation and level of protection for MUN in agriculturally dominated water bodies (Resolution R5–2017–0088) the following language was adopted as part of the monitoring and surveillance for the implementation component:

> *"As resources permit, Central Valley Water Board staff will work with other agencies and regional monitoring programs to monitor chemical constituents, pesticides, and radionuclides contained in the Title 22 of the California Code of Regulations, as well as relevant constituents associated with the narrative and site specific water quality objectives associated with MUN use, approximately every 3 to 5 years in major water bodies identified with existing or potential MUN use. These water bodies include, but are not limited to the Sacramento River, Feather River, San Joaquin River and Delta. The data gathered will support Watershed Sanitary Surveys (Cal. Code Regs, tit. 22, § 64665 et seq.) as well as the California Integrated Report (Clean Water Act Section 303(d)/305(b)).*"

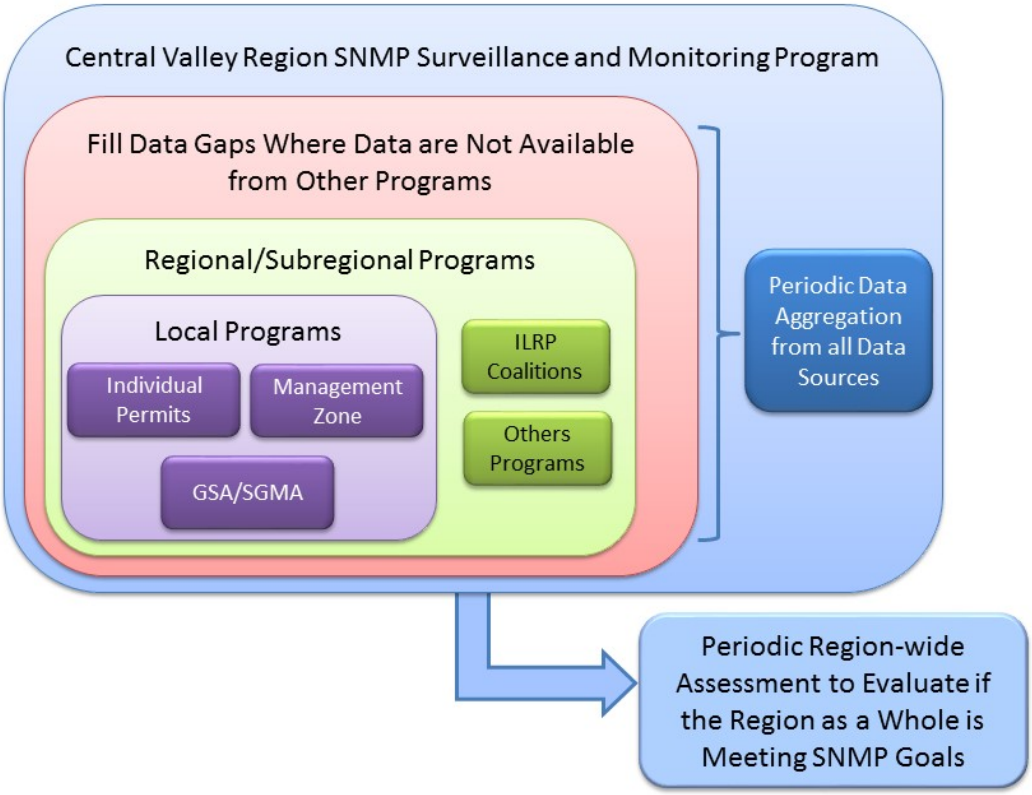
The amendment is continuing through the required approval process with the State Water Board, Office of Administrative Law and as appropriate, USEPA, and is not yet in effect.

4.2.4.1.2 Alternative to Build Off of Existing Monitoring Programs Utilizing Guidance Developed in through the CV-SALTS Initiative

The CV-SALTS initiative prepared a surveillance and monitoring program (SAMP) report (CDM Smith, 2016c) to be used as guidance in the development of a final surveillance and monitoring program to support a Salt and Nitrate Control Program. The SAMP focused on developing a template for groundwater assessments that could be readily modified to various special areas such as a groundwater basin, sub-basin, or management zone. Stakeholder discussions on various elements of a SAMP that includes surface water components have continued. Alternatives to various elements of a surveillance and monitoring program were discussed by stakeholders and are provided in Table D-4 in Appendix D. Options to specific elements identified are included in the discussion below.

The foundation of this alternative approach is to rely on existing local, regional and subregional monitoring programs to the maximum extent practicable. Figure 4–7 display how such a program can be developed.

Figure 4 - 7. Illustration of SNMP Surveillance and Monitoring that Relies on Existing Monitoring Program Data



This alternative proposes that a surveillance and monitoring program to evaluate the effectiveness of Salt and Nitrate Control Program implementation should be consistent with the two following key objectives: (a) utilize a statistically–representative approach for evaluating ambient water quality and water quality trends across the Central Valley; and (b) establish a cost–effective program that relies on existing monitoring programs and data collection efforts to the maximum extent possible. Following is a more detailed discussion of each objective:

- Develop a monitoring program that will allow for statistically–representative ambient water quality determinations and trend analyses.
    - Establish a program that provides the requisite data to inform management and regulatory decisions and implementation strategies. The program is intended to provide the requisite data to be able to determine the effectiveness of Salt and Nitrate Control Program measures being implemented on a groundwater basin/sub-basin scale or other scales as appropriate and be sufficient to determine the need for program modifications.

- Establish a program that is robust and dense enough, both spatially and temporally, to make the ambient water quality determinations in a complex geographic, hydrologic, and hydrogeological environment.
- Collect ancillary data required to estimate volume–weighted ambient groundwater quality, including groundwater elevations.
- Incorporate monitoring stations associated with planned recycled water projects, including indirect potable reuse projects, to the extent that this information is available.
- Establish a dynamic monitoring network that can be (a) expanded to meet future data needs or (b) reduced based on findings from periodic data analyses that show less monitoring coverage is warranted.

- Develop a cost–effective monitoring program.
  - Utilize existing and proposed monitoring programs and existing and proposed local monitoring wells to the maximum extent practicable in order to be cost–effective and consistent. Incorporate other monitoring programs, including but not limited to, the *Irrigated Lands Regulatory Program (ILRP) trend monitoring, the Groundwater Ambient Monitoring and Assessment (GAMA) shallow domestic well monitoring program, routine Title 22 sampling program, and Waste Discharge Requirements (WDR) sampling programs*.
  - Adjust detail and intensity of monitoring based on need within regions of the Central Valley. Fewer wells and surface water monitoring sites may be acceptable for areas where the spatial distribution of TDS and nitrate is relatively small.
  - Assess water quality only as frequently as necessary to meet the objective of the program. Regional groundwater quality changes typically occur over a number of years; therefore, evaluation of ambient TDS and nitrate is recommended every 5 years, using a moving 10-year average of well concentration data. Surface water evaluations should be consistent and support activities under development of the Integrated Report which evaluates ambient surface water conditions and identifies impairments to beneficial uses as required under Sections 303d and 305b of the Clean Water Act.

The Central Valley Water Board will require salt and nitrate dischargers to provide information to the Board to satisfy the monitoring objectives. The information may come from the dischargers' monitoring efforts; monitoring programs conducted by state or federal agencies or collaborative watershed efforts; or from special studies evaluating effectiveness of management practices. Information gathered is anticipated to be consolidated and evaluated by the entity leading the monitoring effort with summary reports that answers the following management questions:

- What are the ambient conditions and trends of salinity in surface waters throughout the Central Valley?
- What are the ambient conditions and trends of salinity and nitrate in the following groundwater zones for groundwater basins within the Central Valley Regions: shallow; upper; lower; and production?

  Other Option Considered: Do not require evaluation of the lower zone.

- To what extent has the Nitrate Control Program facilitated the provision of safe drinking water supplies to both municipal and domestic users?

  Other Option Considered: Remove this management question from the monitoring and surveillance section and track as part of permit conditions under the Nitrate Control Program.

Monitoring and Surveillance Program Requirements

Within two years of the effective date of the Salt and Nitrate Control Program, the entity leading the effort will submit to the Central Valley Water Board for approval, a Work Plan and Quality Assurance Project Plan that is compliant with all requirements set forth in this section. Work under the plan will be initiated within 30 days of Central Valley Water Board approval. Permittees that discharge salt or nitrate in the Central Valley Region shall participate in the preparation of the Program Assessment Report by contributing funding for the preparation of the report and ensuring required information is available to the lead entity. Permittees that discharge salt or nitrate must either gather needed information required by the Work Plan for their area of contribution and provide the information to the lead entity in a format acceptable to the lead entity or permittees must demonstrate their support for the lead entity to gather needed information by submitting documentation of such support from the lead entity. The requirements for participation shall be established by the lead entity and will consider factors such as participation in other existing groundwater quality monitoring programs that will contribute data to the Salt and Nitrate Monitoring Program, resources required to develop and implement the Monitoring Program, including preparation of the Periodic Assessment Reports, and other factors.

It is anticipated that the groundwater portion of the monitoring program will build off of the most recent version of the CV-SALTS database (Luhdorff & Scalmanini and Larry Walker Associates, 2014) and will utilize guidance developed as part of the CV-SALTS initiative (e.g. Chapter 5 of the Central Valley SNMP (CV-SALTS 2016).

Surface Water Requirements

To assess ambient conditions and trends of salinity and other secondary MCLs in surface waters throughout the Central Valley, the monitoring program for surface waters will rely to the maximum extent possible on data collected by existing Central Valley monitoring and assessment programs already established in the region. Data collected by existing programs may be supplemented by the collection of additional data by the Salt and Nitrate Control Program. The Work Plan will describe how the entity leading the Salt and Nitrate Surveillance and Monitoring Program will evaluate the following in major water bodies including but not limited to the Sacramento River, Feather River, San Joaquin River and Delta as well as their major tributaries:

- Ambient conditions, including monthly and annual average concentrations for salinity and other secondary MCLs; and

- Trends for salinity and other secondary MCLs.

The Work Plan will describe how these water quality evaluations will be completed using existing monitoring and assessment program data and, where needed, supplemental data collected by the Salt and Nitrate Control Program.

Other Options Considered:

- Only include evaluations for salinity constituents (EC, TDS, chloride, sulfate and sodium).
- Only include evaluations for secondary MCLs where a change has occurred in compliance measurements through Basin Plan Amendments related to the Salt and Nitrate Control Program.
- Allow the Work Plan to specify the appropriate frequency for sample analysis to determine ambient concentration and trends.

An assessment of ambient water quality and trends shall be completed for surface waters at least once every five years.

Groundwater Requirements

The Salt and Nitrate Groundwater Monitoring Program (Groundwater Monitoring Program) shall be sufficiently robust to evaluate ambient water quality and trends in groundwater basins in the floor of the Central Valley Region, including all sub-basins within the following groundwater basins defined by Department of Water Resources Bulletin 118: Redding Area (#5–6); Sacramento Valley (#5–21); and San Joaquin Valley (#5–22). Remaining groundwater basins will be incorporated after the first phase. Water quality data shall be reported from groundwater wells included in the monitoring program at least once each calendar year.
The Groundwater Monitoring Program shall utilize Chapter 5 of the CV-SALTS SNMP (2016) and the SAMP (CDM Smith, 2016c) as guidance and shall include, at a minimum, the following components:

- A Work Plan that includes:
  - Groundwater Monitoring Program goals;
  - Entities responsible for the collection and reporting of data from groundwater wells incorporated into the Groundwater Monitoring Program;
  - Identification of the groundwater monitoring wells to be included in the program and how the selected wells will provide a representative assessment of ambient water quality and trends by basin/sub-basin;
  - Governance and funding mechanisms and agreements necessary to ensure the Groundwater Monitoring Program obtains the required data;
  - Procedures for review and revision of the Groundwater Monitoring Program;
  - A Quality Assurance Project Plan (QAPP) that includes:
    - Characteristics of each well incorporated into the program, e.g., well types, logs and construction data, where available;
    - Sample collection requirements, e.g., water quality parameters, sampling frequency and collection methods;
    - Data reporting and management requirements

- Approach to assess ambient water quality conditions and water quality trends for TDS/EC and Nitrate as Nitrogen in the Upper, Lower and Production Zones for each required groundwater basin/sub-basin; and

- Approach to evaluate the progress of the Salt and Nitrate Control Program based on trends in water quality.

To the extent practicable, the Groundwater Monitoring Program will utilize data collected by existing Central Valley Water Board water quality monitoring programs to be cost–effective and establish consistency in how groundwater quality data are collected, managed, assessed and reported. In this regard, the Irrigated Lands Regulatory Program Groundwater Quality Trend Monitoring Program implemented by the Central Valley Groundwater Monitoring Collaborative is anticipated to provide the foundation for the development of the Groundwater Monitoring Program.

Data developed under the Irrigated Lands Regulatory Program will be supplemented as needed, to ensure that the periodic Program Assessment Report is completed on schedule. Sources of supplemental data include but are not limited to Groundwater Ambient Monitoring and Assessment (GAMA) shallow domestic well monitoring program; Oil and Gas Regional Groundwater Monitoring Program; routine Title 22 sampling program; monitoring programs associated with implementation of Groundwater Sustainability Plans; monitoring programs established to comply with WDRs/Conditional Waivers; monitoring programs established as part of the approval of a management zone under the nitrate control program, or through the direct collection of groundwater quality data.

An assessment of ambient water quality conditions and trends shall be completed at least once every five years consistent with the requirements of the approved Work Plan. The first Program assessment report shall be submitted to the Central Valley Water Board no later than five years after the approval of the Work Plan and every five years thereafter, unless a revised reporting schedule is approved by the Central Valley Water Board Executive Officer.

4.2.4.2 Evaluation of Alternatives

To be consistent with the requirements of the Recycled Water Policy as well as with the requirement that any implementation program shall include a description of surveillance to determine compliance with objectives in addition to the ability to evaluate whether the Salt and Nitrate Control Program is progressing toward meeting its goals. The resulting surveillance and monitoring program will need to capture both region-wide trends in surface and groundwater quality as well as impacts of specific management activities. To be consistent with the Recycled Water Policy preferred approach, the resulting program should also collect samples from existing wells if feasible in order to provide a reasonable and cost-effective design.

The No Action alternative utilizes the sampling design already incorporated in the Basin Plans. Monitoring for salt and nitrate is inconsistent between programs in order to meet individual program goals, and there is no centralized database in which to compile data collected. A framework is not in place that would allow comparable data collection on both region-wide and localized scales. Evaluation would continue permit-by-permit and additional resources would be required to compile information from different data sources in order identify existing information, potential data gaps and revise requirements as needed with a possibility of a region-wide Water Code section 13267 to require needed information.

The proposed alternative sets up an adaptable, centralized framework that provides time for the development of a detailed Work Plan and quality assurance project planned based on guidance developed under the CV-SALTS initiative. The alternative is consistent with the Recycled Water Policy monitoring requirements in that the alternative requires development of a basin/sub-basin wide monitoring plan that includes an appropriate network of monitoring locations that would be adequate to provide a reasonable, cost–effective means of tracking concentrations of salts and nitrate. The alternative incorporates the flexibility to adjust monitoring design to highlight areas near water supply wells and groundwater recharge projects. In addition, the foundation of the alternative is to utilize existing monitoring locations and date whenever feasible and to fill in with additional sites and information if needed for statistical–representativeness with a focus on the most critical areas of the Central Valley. One point of inconsistency with the Recycled Water Policy is that the proposed alternative requires a report every five years, rather than every three years.

Options identified to elements within the proposed alternative included: removing the management question related to evaluating facilitation of safe drinking water supplies; limiting secondary MCL constituents assessed; and allowing flexibility during Work Plan development to determine appropriate sampling frequency by location.

Removing the management question related to facilitation of safe drinking water supplies: A major goal of the Nitrate Control Program is to develop a framework that prioritizes provision of safe drinking water supplies for users of groundwater with elevated nitrate concentrations. Part of the evaluation of the success of this effort is to identify where there may be areas of concern, whether those areas are expanding, impacted drinking water users, and the number of users who have received safe drinking water supplies. The option to remove this management question recognizes that tracking of the Nitrate Control Program activities will be occurring within the Priority Basins as part of program requirements. While monitoring and surveillance of groundwater conditions and trends will be useful to permittees developing compliance projects, the specific tracking of users receiving safe drinking water as a result of the program may be better provided by the permittees initiating the efforts. Compilation of the information provided by permittees will fall to Water Board staff.

Limiting Secondary MCL Constituents Assessed: One of the components of the overall Salt and Nitrate Control Program includes clarification of the use of secondary MCL when determining protection of MUN. Amendments are recommended related to the use of ranges for salinity constituents in Table 64449–B as well as the use of annual averaging for all secondary MCLs and the potential to evaluate compliance based on using a filtered sample that is then analyzed with the applicable and approved analytical methodology. For metals, this would be total recoverable metals. The current alternative proposes evaluating all secondary MCLs using existing Central Valley monitoring and assessment programs. Options proposed include limiting evaluation to salinity related constituents and limiting evaluation to secondary MCLs that may be impacted by the proposed amendments.

Allowing flexibility during Work Plan development to determine appropriate sampling and evaluation frequency by location: Due to the diversity of the Central Valley, flexibility should be allowed during work plan development to utilize a monthly/annual average as a default unless information is available to justify an alternative evaluation period. Restricting evaluation criteria to monthly and annual averages may be inappropriate in areas where historical information shows little change over extended period (e.g. some groundwater basins).

4.2.4.3 Recommendation

The alternative to Build Off of Existing Monitoring Programs Utilizing Guidance Developed through the CV-SALTS Initiative is recommended with some adjustment based on the options identified as follows:

- The management question related to documenting the extent that the Nitrate Control Program has facilitated the provision of safe drinking water supplies to both municipal and domestic users should be removed from this portion of the overall Salt and Nitrate Control Program. Such information is more appropriately compiled by the permittees participating in the Priority Basins of the Nitrate Control Program.
- The evaluation of secondary MCLs should be limited to the constituents that may be impacted by the proposed amendments.
- Flexibility should be provided to identify appropriate sampling, evaluation and reporting timeframes within the work plan.

The following are the anticipated steps, which are recommended for implementation during development of the Basin Plan amendments to implement the SNMP in order to ensure that a monitoring program is ready for implementation within the proposed timelines.

- Identify existing and Planned Monitoring Program including coordination with newly developed Groundwater Sustainability Agencies under the SGMA Program
- Draft final selection of monitoring wells for inclusion in the ambient trend analysis program and initiate outreach for access.
- Draft initial Sampling and Analysis Plan and Quality Assurance Project Plan for timely identification of potential issues with consistency and data management.

4.2.5 Definitions and Terminology Specific to the Salt and Nitrate Control Program

Stakeholders identified the need for consistent terminology when discussing various components and elements of the Salt and Nitrate Control Program. Several of the terms utilized in the Salt and Nitrate Control Program have a specific connotation related to program requirements but are also found in other sections of the Basin Plans with limited if any definition.

4.2.5.1 Alternatives

4.2.5.1.1 No Action Alternative

No change to current Basin Plan use of terminology.

4.2.5.1.2 Incorporate Definitions and Terminology Specific to the Salt and Nitrate Control Program

A list of definitions utilized throughout the components of the Salt and Nitrate Control Program is presented in the proposed amendment language. Options to select definitions discussed with stakeholders has been summarized in Table D–5 in Appendix D. An example of the terminology that was developed is provided in Figures 4–8 and 4–9 to provide consistency when discussing various zones within a Central Valley aquifer system as related to regulatory requirements under the proposed Salt and Nitrate Control Program.

4.2.5.2 Evaluation

Since several terms are utilized to explain different evaluation and compliance requirements under the Salt and Nitrate Control Program it is appropriate to have a consistent definition for the terms. Since these terms may also occur in other portions of the Basin Plans, it is equally appropriate to ensure that the terminology is identified to be applied specifically to the Salt and Nitrate Control Program requirements and not to other regulatory efforts.

4.2.5.3 Recommendation

Incorporate Definitions and Terminology Specific to the Salt and Nitrate Control Program as part of the overall Basin Plan Amendment.

4.2.6 Proposed Modifications to the Basin Plan's Variance Policy

A permit applicant or permittee subject to an NPDES permit may apply to the Central Valley Water Board for a variance from a surface water quality standard for specific constituent(s), as long as the constituent is not a priority toxic pollutant identified in 40 C.F.R § 131.38(b)(1) and the permittee provides an application that is in accordance with the requirements specified in the Policy. A variance must be approved by the USEPA before it is in effect. The Central Valley Water Board may adopt variance programs that provide streamlined approval procedures for multiple dischargers that share the same challenges in achieving their water quality based effluent limitations(s) for the same pollutant(s). The Basin Plans currently contain the *Variance Program for Salinity Water Quality Standards* which is a multiple discharger variance program. Variances may be for a single discharger or group of dischargers meeting similar requirements. The alternatives discussed below are in regard to the *Variance Program for Salinity Water Quality Standards* and whether the existing program should be modified to align it with the Salt and Nitrate Control Program.

4.2.6.1 Alternatives

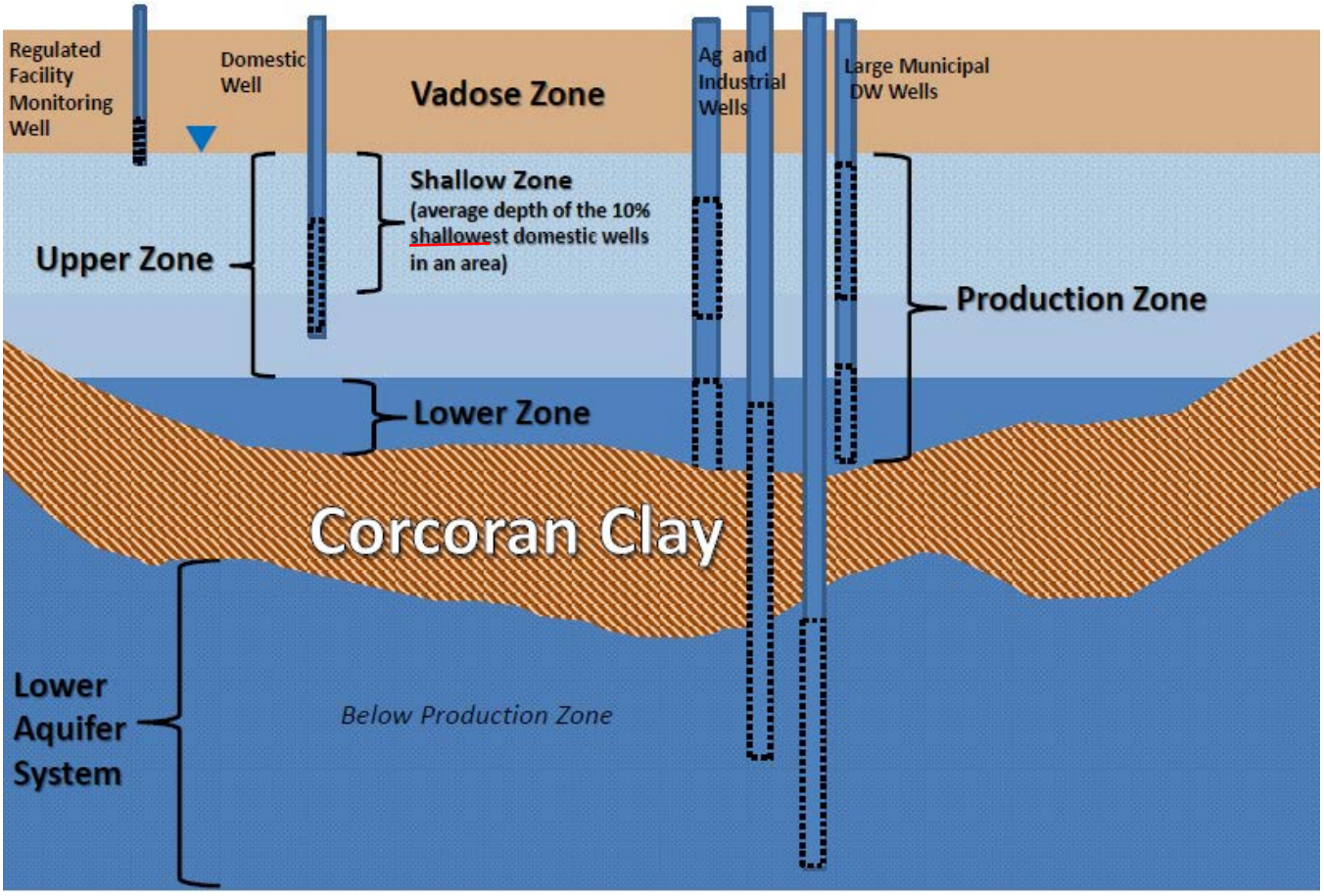
Two alternatives were identified: 1) No Action Alternative; and 2) Modify the Current Salinity Variance Program.

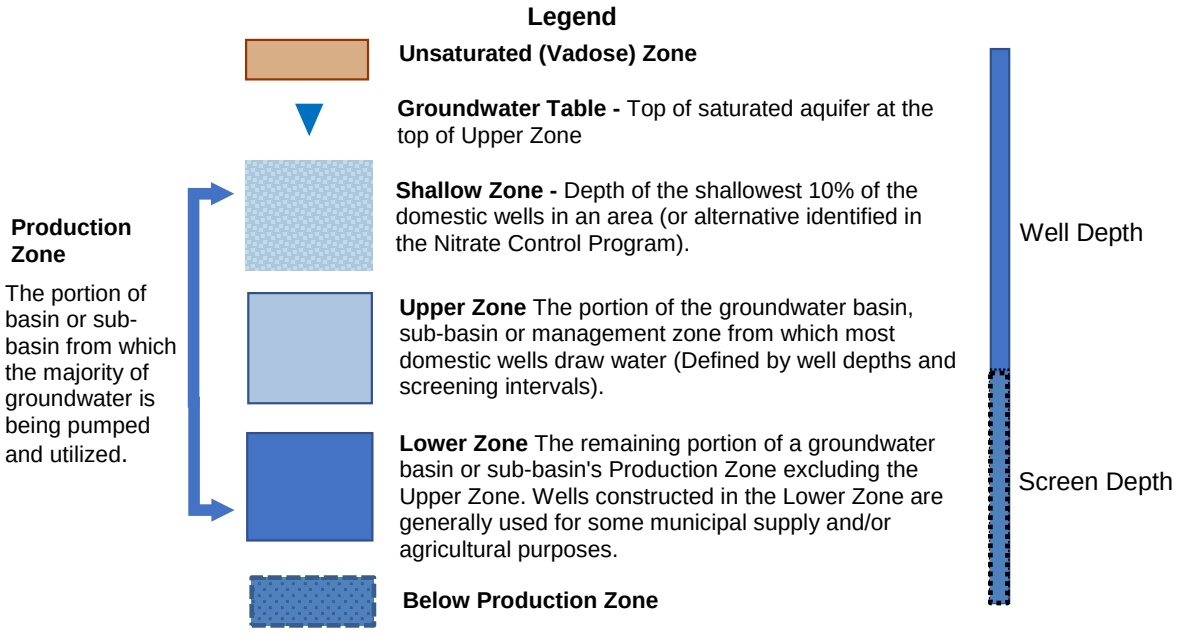
4.2.6.1.1 No Action Alternative

On June 6, 2014, the Central Valley Water Board adopted amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (SRSJR Basin Plan) and Water Quality Control Plan for the Tulare Lake Basin (TLB Basin Plan) (collectively hereafter referred to as "Basin Plans") that included a Variance Program for Salinity (Salinity Variance Program)[43]. On March 17, 2015, the State Water Board adopted Resolution No. 2015–0010 approving Basin Plan amendments to include the Salinity Variance Program. Because the Salinity Variance Program applies to surface waters, and is considered a water quality standards action under the Clean Water Act (CWA), the Salinity Variance Program was subject to approval by the United States Environmental Protection Agency (USEPA). The Salinity Variance was approved by U.S. EPA on July 8, 2016. With its approval, USEPA specifically limited application of the Salinity Variance Program to effluent limitations being adopted to protect the agricultural beneficial use (AGR). Further, the Salinity Variance Program applies only to municipal publicly owned treatment works (POTWs) that have a situation similar to or comparable to the case study cities included in the Central Valley Water Board's supporting documents.

[43] Central Valley Water Board Resolution No. R5–2014–0074.

Figure 4 - 8. Schematic of Aquifer System Within Corcoran Clay Extent[1]





[1] For the purposes of this program, calculations for Upper, Lower and Production Zones do not extend below the Corcoran Clay

When it adopted the Salinity Variance Program, the Central Valley Water Board recognized that management of salinity in surface and ground waters is a major challenge for dischargers. The Central Valley Water Board further determined that during the development and initial implementation of Salt and Nitrate Management Plans prepared as part of the CV-SALTS initiative, it was appropriate to allow municipal and domestic wastewater dischargers to apply for a variance from salinity water quality standards if they have, or will have, water quality based effluent limitations for salinity that they are unable to meet and they were actively participating in the CV-SALTS initiative.[44] The Salinity Variance Program applies to salinity water quality standards that are defined to include water quality standards for only the following constituents: electrical conductivity, total dissolved solids, chloride, sulfate and sodium. The current Salinity Variance Program prohibits the Central Valley Water Board from approving any salinity variance after June 30, 2019. The sunset date was included because the Central Valley Water Board intended that any extension, or permanent, long-term Salinity Variance Program should be developed through the CV-SALTS process and that stakeholders needed to make appropriate recommendations for such a policy in the Salt and Nitrate Management Plan (SNMP).

Under the current program, the authority to approve a variance for a specific salinity water quality standard does not automatically grant a variance in any given instance. Variances must be authorized through a Central Valley Water Board action that is subject to notice, comment and a public hearing on the salinity variance application.

In general, the current Salinity Variance Program allows POTW dischargers that have a situation that is similar to or comparable with the case study cities[45] to apply to the Central Valley Water Board for a variance to discharge requirements from the implementation of water quality objectives for salinity. The variance applies to the issuance of water quality-based effluent limitations (WQBELs) based on a salinity water quality standard.

Under the Salinity Variance Program, a discharger's application must include in part the following:[46]

- Identification of the salinity constituents for which the variance is sought;
- Identification of the receiving surface water, and any available information with respect to receiving water quality and downstream beneficial uses for the specific constituent;
- Identification of the WQBEL that is being considered for adoption, or has been adopted in the NPDES permit;
- A description of salinity reduction/elimination measures that have been undertaken as of the application date, if any;

[44] Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins and the Water Quality Control Plan for the Tulare Lake Basin To add Policies for Variances from Surface Water Quality Standards for Point Source Dischargers, Variance Program for Salinity, and Exception from Implementation of Water Quality Objectives for Salinity, Final Staff Report, June 2014 (Final Staff Report), at p. 45. (Central Valley Water Board, 2014)

[45] The three case study cities are City of Tracy, City of Stockton and City of Manteca. In short, each city cannot consistently meet stringent salinity WQBELs imposed in their NPDES permits, and each city has implemented source control programs. While water quality improved, such improvements were not sufficient to consistently comply with effluent limitations. Further, it was determined that factors under title 40 of the Code of Federal Regulations, Sections 131.10(g)(3) and 131.10(g)(6) were met because imposition of WQBELs on the POTWs would not result in attainment of water quality standards, and because the economic impact of implementing reverse osmosis would be substantial (Final Staff Report, pp. 7, 28–29.) (Central Valley Water Board, 2014).

[46] Final Staff Report, pp. 43–45. (Central Valley Water Board, 2014)

- A Salinity Reduction Study Work Plan that includes specified minimum information;
- An explanation of the basis for concluding that there are no readily available or cost–effective methodologies available to consistently attain the WQBELs for salinity;
- A detailed discussion explaining why the permittee's situation is similar to or comparable to the case studies;
- A detailed discussion of proposed interim discharge limitation(s) that represents the highest level of treatment that the permittee can consistently achieve during the term of the variance;
- Documentation of the applicant's active participation in CV-SALTS as indicated by a letter of support from CV-SALTS; and
- A detailed plan of how the applicant will continue to participate in CV-SALTS and how the applicant will contribute to the development and implementation of the SNMP.

A key requirement for granting a salinity variance, is the requirement that the discharger needs to prepare and implement a Salinity Reduction Study Work Plan. A Salinity Reduction Study Work Plan shall at a minimum include the following:[47]

1) Data on current influent and effluent salinity concentrations;
2) Identification of known salinity sources;
3) Description of current plans to reduce/eliminate known salinity sources;
4) Preliminary identification of other potential sources;
5) A proposed schedule for evaluating sources; and
6) A proposed schedule for identifying and evaluating potential reduction, elimination, and prevention methods.

After considering the dischargers' application, the Central Valley Water Board may adopt a variance from WQBEL based on salinity water quality standards after public notice and hearing. The Central Valley Water Board may take action to approve a variance and issue a new, or reissue or modify an existing NPDES permit as part of the same Board meeting. The permit must contain all conditions necessary to implement the variance, which includes in part the following: (a) interim effluent limitations that are attainable during the term of the variance; (b) a requirement to implement the Salinity Reduction Study Work Plan; (c) a requirement to participate in CV-SALTS; (d) any additional monitoring that is determined necessary; (e) a provision to reopen and modify the permit based on any revision to the variance; and (f) other conditions determined necessary to implement the terms of the variance. Under the existing Salinity Variance Program, variances can be renewed upon the request of the discharger although no salinity variances can be approved after 30 June 2019.

4.2.6.1.2 Alternative to Modify the Current Salinity Variance Program

This alternative proposes that the current Salinity Variance Program be amended to provide the Central Valley Water Board with the necessary authority and flexibility to permit salinity

[47] Final Staff Report, p. 44.

discharges in a manner that is consistent with the goals, milestones and timelines of the recommended Salt Control Program.

1) Extend the provision prohibiting the Central Valley Water Board from authorizing new salinity variances or reauthorizing previously approved salinity variances from June 30, 2019 to 15 years from the effective date of Basin Plan amendments that revise the Salinity Variance Program. As part of the Prioritization and Optimization Study, the Salinity Variance Program should be reconsidered, and it should be determined at that time if the Salinity Variance Program, and the terms related thereto, should be revised to implement Phase II of the Salinity Management Strategy.
2) Extend application of the Salinity Variance Program to Water Quality Based Effluent Limits (WQBELs) for salinity water quality standards that are related to the MUN beneficial use, and not just the AGR beneficial use.
3) Revise the current Salinity Variance Program to require participation in the Prioritization and Optimization Study (P&O Study).
4) The current Salinity Variance Program should be amended to make clear that salinity variances are intended to facilitate implementation of the phased Salt Control Program, and that salinity variances are not available to individuals/permittees that elect not to participate P&O Study. As indicated previously, application of salinity variances for Phases II and III of the Salinity Management Strategy should be considered in conjunction with findings from the P&O Study, and any Basin Plan amendments determined appropriate at the close of Phase I.

Salinity variances be authorized by the Central Valley Water Board in relatively the same manner as set forth in the current Salinity Variance Program. The conditions for authorizing the salinity variance would remain the same, except as revised based on the recommendations above.

Authorization for salinity variances may be granted by the Central Valley Water Board for individual dischargers, or for multiple dischargers under a watershed-based NPDES permit for salinity discharges. Terms and conditions associated with the granting of a salinity variance will be incorporated into relevant NPDES permits, and failure to comply with such terms and conditions may result in the termination of the variance and/or an enforcement action.

4.2.6.2 Evaluation

The Central Valley Water Board's original rationale for adopting the Salinity Variance Program was to provide temporary permitting flexibility while CV-SALTS was developing the SNMP, and to encourage dischargers throughout the region to actively participate in that process. The existing Salinity Variance Program included a sunset date to encourage participation and completion of CV-SALTS SNMP. If CV-SALTS stakeholders determined that an extension, or permanent Salinity Variance Program was necessary to ensure successful implementation of the SNMP, the Central Valley Water Board instructed the stakeholders to describe and justify their recommendations in the SNMP itself. Alternative 2 reflects that recommendation.

The proposed Salt Control Program recommends a long-term Salinity Management Strategy that is phased over time. The first phase (Phase I) consists of developing a Prioritization and Optimization Study (P&O Study) for salinity management, which is intended to further define the

conceptual design of SSALTS[48] into a feasibility study that identifies appropriate regional and sub–regional projects, including location, routing and implementation/operation of salt management projects. Phase II will generally consist of environmental permitting, obtaining funding, and engineering and design. Phase III would then consist of construction of physical projects, as identified in previous phases, to manage salt on a long-term, comprehensive basis, e.g., a Central Valley regulated brine line. Because salinity management is phased in over time, the Salt Control Program recommends that an Interim Salinity Permitting Approach be implemented during Phase I, and then be re–evaluated prior to implementation of Phase II. The Salt Control Program recommends that the Interim Salinity Permitting Approach be set in place for 15 years to coincide with completion of the P&O Study and any additional Basin Plan Amendments needed to facilitate Phase II.

The Interim Salinity Permitting Approach for Phase I would essentially allow dischargers to participate in the P&O Study in lieu of meeting stringent end–of–pipe salinity limitations. Dischargers would either be subject to conservative permitting approaches or could elect to participate in the P&O Study.

For surface water dischargers that are subject to federal National Pollutant Discharge Elimination System (NPDES) permits, and municipal POTWs in particular, the federal regulatory process provides the Central Valley Water Board with little discretion in allowing dischargers to participate in the P&O Study in lieu of meeting strict WQBELs when there is reasonable potential to exceed water quality standards. To allow POTWs that are subject to NPDES permits to participate in the Priority and Optimization Study, such dischargers may need to seek approval of a variance from meeting effluent limitations based on salinity water quality standards. To do so, the current Salinity Variance Program needs to be extended and expanded. Those not participating in the P&O Study would not be eligible to obtain a variance under the Salinity Variance Program.

4.2.6.3 Recommendation

Staff recommends amending the existing Variance Program for Salinity Water Quality Standard in the manner identified in the alternative to provide the Central Valley Water Board with the necessary authority and flexibility to permit salinity discharges from permittee subject to a NPDES permit in a manner that is consistent and supportive of the Salt Control Program.

4.2.7 Proposed Modifications to the Basin Plans' Exceptions Policy

The Central Valley Water Board has within its authority the ability to grant exceptions to water quality objectives for non-NPDES dischargers to surface water and for discharges to groundwater when the Board finds that it is infeasible, impracticable or unreasonable to prohibit the otherwise non–compliant discharge. The Basin Plans currently provide clarification to this authority in regards to salinity constituents under the Salinity Exception Policy. The existing Salinity Exception Policy is scheduled to sunset on 30 June 2019. The alternative discussed below is in regard to whether the existing program should be modified to align it with the proposed Salt and Nitrate Control Program as well as provide clarification on the requirements to pursue and exception to boron water quality standards.

[48] *Strategic Salinity Alternatives Land and Transportation Study (SSALTS), Final Phase 2 Report: Development of Potential Salt Management Strategies*, prepared by CDM Smith on behalf of CV-SALTS, October 1, 2014

4.2.7.1 Alternatives

Two alternatives were identified: 1) No Action Alternative; and 2) Modify and Update the Current Exception Policy to Apply to Salt, Nitrate and Boron.

4.2.7.1.1 No Action Alternative

In general, the current Exceptions Policy allows dischargers to apply to the Central Valley Water Board for an exception to discharge requirements from the implementation of water quality objectives for salinity. The definition of "salinity" includes only: electrical conductivity, total dissolved solids, chloride, sulfate and sodium. The current Policy does not provide the Central Valley Water Board with guidance to approve exceptions for any other pollutants including nitrate and boron. The exception may apply to the issuance of effluent limitations and/or groundwater limitations (i.e., receiving water limitations) that implement water quality objectives for salinity in groundwater, or to effluent limitations and/or surface water limitations that implement water quality objectives for salinity in surface water discharges that are not subject to regulation under the Clean Water Act.

The current policy does not automatically grant an exception in any given instance. Exceptions must be authorized through a separate Central Valley Water Board action. Also, under the current policy, exceptions must *"…be set for a term not to exceed ten years. For exception terms greater than five years, the Regional Water Board will review the exception five years after approval to confirm that the exception should proceed for the full term."*[49] That review must be conducted in a public hearing.

Under the current Exception Policy, a discharger's application must include the following:[50]

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

A key requirement for granting an exception, preparation and implementation of a Salinity

[49] Variance & Exceptions Policy; page 51.

[50] Variance & Exceptions Policy; page 50.

Reduction Study Work Plan, or a salinity–based watershed management plan. A Salinity Reduction Study Work Plan shall at a minimum include the following:[51]

1) Data on current influent and effluent salinity concentrations;

2) Identification of known salinity sources;

3) Description of current plans to reduce/eliminate known salinity sources;

4) Preliminary identification of other potential sources;

5) A proposed schedule for evaluating sources; and

6) A proposed schedule for identifying and evaluating potential reduction, elimination, and prevention methods.

A salinity–based watershed management plan shall at a minimum include the following:[52]

1) A discussion of the physical conditions that affect surface water or groundwater in the management plan area, including land use maps, identification of potential sources of salinity, baseline inventory of identified existing management practices in use, and a summary of available surface and/or groundwater quality data;

2) A management plan strategy that includes a description of current management practices being used to reduce or control known salinity sources;

3) Monitoring methods;

4) Data evaluation; and

5) A schedule for reporting management plan progress.

After considering the discharger's application, the Central Valley Water Board may adopt an exception for salinity constituents after public notice and hearing through a resolution, or by amending WDRs/Conditional Waivers.

4.2.7.1.2 Alternative to Modify and Update the Current Basin Plans' Exception Policy to Apply to Salt, Nitrate and Boron.

The proposed Salt and Nitrate Control Program recommends that exceptions be authorized by the Central Valley Water Board subject to certain conditions and performance obligations on the discharger(s). This provides a mechanism to ensure that exceptions serve the greater good. Two important expectations governing the manner in which exceptions are likely to be considered by the Central Valley Water Board are:

1) Exceptions for nitrate will not be considered unless an adequate supply of clean, safe, reliable and affordable drinking water is available for those living in the area adversely affected by the non–compliant discharge(s). Said availability must take the form of a detailed work plan, schedule of milestones, and financial commitments to provide interim and permanent alternate water supplies. Performance bonds may be required to ensure timely implementation.

[51] Variance & Exceptions Policy; page 51.

[52] Variance & Exceptions Policy; page 52.

2) Dischargers are expected to continue to make reasonable "best efforts" to comply with applicable WDRs. The specific nature of these efforts will be identified at the time the exception is proposed and authorized.

Under the proposed Salt and Nitrate Control Program, authorization for exceptions may be granted by the Central Valley Water Board for individual dischargers, recognized third party groups on behalf of its members or for multiple dischargers under a management zone. Terms and conditions associated with the granting of an exception will be incorporated into relevant WDRs, and failure to comply with such terms and conditions may result in the termination of the exception and/or an enforcement action.

Other Option Considered: Exceptions may only be applied on a permit-by-permit basis, not to a management zone.

This alternative proposes that the Exception Policy be amended to provide the Central Valley Water Board with the necessary authority and flexibility to permit discharges in a manner that is consistent and supports the proposed Salt and Nitrate Control Program. The majority of existing conditions required for a salinity exception are proposed as boron conditions, while the salt and nitrate conditions are linked to requirements under the proposed Salt and Nitrate Control Program. The following conditions apply to salt, nitrate and boron.

- Delete the provision prohibiting the Central Valley Water Board from authorizing new exceptions or reauthorizing previously approved exceptions after June 30, 2019. Because the Central Valley Water Board can decide for itself whether to grant or not grant specific exceptions, there is no need for any sunset provision that restricts their overall authority to make such decisions.

- Add nitrate and boron to the list of chemical constituents for which the Central Valley Water Board may authorize an exception. In order to ensure this is implemented as intended, it may also be necessary to include total nitrogen and various forms of nitrogen (total inorganic nitrogen [TIN], total Kjeldahl nitrogen [TKN], etc.) to the same list.

- Delete current provision limiting the term of an exception to no more than 10 years. Add a new provision stating that when authorizing an exception, the term for the exception shall generally not exceed 10-years, however the Central Valley Water Board shall have the discretion to adopt an exception for up to 50 years if the applicant(s) can demonstrate that it is necessary to further the management goals of the Salt and Nitrate Control Program. The Central Valley Water Board will have the authority to reauthorize (renew) an exception for one or more additional terms, the length of which shall be determined by the Central Valley Water Board but may only exceed 50 years if the management practices under the exception is resulting in significant, measurable and continuing improvements in water quality. The authorization of an exception, or any reauthorization, shall require approval of the Central Valley Water Board, after notice and hearing. The Central Valley Water Board shall also have the authority to rescind the authorization of an exception when the applicant(s) are not complying with the terms and conditions that are part of the exception. Any rescission of an exception may only occur after notice and hearing.

  Other Options Considered:

  a) Establish a 50-year timeframe for achieving balance and restoration for both salt and nitrate. "Restoration" nitrate is defined by either: 1) 50 percent of MCL; 2) 75 percent of MCL; or 3) 100 percent of MCL.

b) Retain existing 10-year limit for exception term; exceptions can be renewed at 10-year intervals with no end date.

c) No 10-year limit on an exception term; instead the Board has the discretion to decide actual term.

- Those discharger(s) with authorized exceptions, in conjunction with Central Valley Water Board staff, should prepare a status report for presentation to the Central Valley Water Board every 5 years summarizing compliance with the terms and conditions of the exception. The Central Valley Water Board staff maintains discretion to present such status reports to the Central Valley Water Board for individual exceptions, or collectively for multiple exceptions granted to multiple dischargers.

- Clarify that nothing in the policy prevents the Central Valley Water Board from considering authorization of an exception for boron if adequate supporting documentation to justify the exception is provided by the applicant. This would include providing supplemental environmental review and analysis, where needed, to supplement such analyses completed to support development of the Salt and Nitrate Control Program.

- Clarify that exceptions are intended to facilitate long-term attainment of water quality standards under the Salt and Nitrate Control Program or to provide the time needed to revise an inappropriate water quality standard. Exceptions will only be considered under this program if the applicant is had documented actively participating the Salt and Nitrate Control Program and/or meets specific boron documentation requirements.

- Requirements associated with seeking and approving an exception include, but are not limited to: eligibility criteria, mitigation responsibilities, monitoring/reporting obligations, and expectations relevant to implementing the Salt and Nitrate Control Program goals.

  Other Option Considered: Also add in the following new conditions for obtaining an exception:

  - "Best Efforts" are to be provided[53].
  - Participation in a mitigation fund or other mitigation program that fully mitigates impacts to drinking water.
  - Long-term management plans show improved water quality trends over a 10 and 20-year horizon.
  - Participation in a program that restores the aquifer to meet water quality objectives within 50 years.

- As a condition for reauthorizing/renewing an exception, dischargers with authorized exceptions terms greater than ten years will be required to prepare and submit a report every ten years that reassess Best Management Practices (BMPs) and survey available

[53] The "best efforts" approach involves the Central Valley Water Board establishing limitations expected to be achieved using reasonable control measures. Factors which should be analyzed under the "best efforts" approach include the effluent quality achieved by other similarly situated dischargers, the good faith efforts of the discharger to limit the discharge of the constituent, and the measures necessary to achieve compliance. SWRCB Order WQ 81–5, at p. 7. The State Water Board has applied the "best efforts" factors in interpreting BPTC. (See State Water Board Order Nos. WQ 79–14, and WQ 2000–07).

treatment technologies to determine if feasible, practicable and reasonable compliance options have become available.

Other Option Considered: In addition to above, the following specific performance measures are a condition for renewing exceptions.

- Demonstration that aquifer restoration / mitigation projects have been effective and identification of additional actions, if needed.
- Long-term management plans show improved water quality trends over: 1) a 10- and 20-year horizon at first and second renewal; 2) a 20-year horizon at third and fourth renewals.
- Long-term management plans show salt/nitrate balance and restoration of aquifer to meet water quality objectives in as short a time as practicable, but not to exceed: 1) 40 years at first renewal, 2) 30 years at second renewal, 3) 20 years at third renewal, and 4) 10 years at fourth renewal.

- Where exceptions are sought in order to provide time to develop and approve a more appropriate water quality standard (uses and/or objectives), there must be a well–defined work plan (including a schedule of milestones) and a commitment by dischargers to provide the resources needed to complete the proposed process.

- Where existing water quality standards are unlikely to change, dischargers must explain how the proposed exception facilitates the larger long-term strategy designed to ultimately attain those standards while, in the interim, allocating available resources to address more urgent water quality priorities (e.g., safe drinking water), where applicable.

Exception Requirements Specific to Salinity

- Permittee must demonstrate full participation in the Alternative Salinity Permitting Approach proposed under the Salt Control Program

- An application seeking consideration of drought, water conservation, and/or water recycling as part of an exception to the implementation of water quality objectives for salinity must include a description of any drought impacts, irrigation, water conservation and/or water recycling efforts that may be causing or cause the concentration of salinity to increase in effluent, discharges to receiving waters, or in receiving waters.

  Other Option Considered: Under Phase I of the Salt Control Program, permittees are considered in compliance with salinity limits if they are meeting the Phase 1 Alternative Salinity Permitting Approach requirements, therefore an Exception is not required. A place holder noting this fact should be included in the Exception Policy which also notes that additional salinity conditions may be incorporated into the Exception Policy during Phase 2 and Phase 3 of the Salt Control Program.

Exception Requirements Specific to Nitrate

- Add a new provision requiring dischargers to ensure availability of an adequate supply of safe, reliable and affordable drinking water in those areas of the groundwater basin or sub-basin adversely affected by the non–compliant discharge (or discharges).

- An applicant's request for an exception shall include:

- An explanation/justification as to why the exception is necessary, and why the discharger is unable to ensure consistent compliance with existing effluent and/or groundwater/surface water limitations associated with nitrate at this time;
- A description of the alternative compliance project(s), Early Action Plan (EAP) or other implementation measures that the applicant will implement or participate in, consistent with the proposed Nitrate Control Program for individual or collective groups of dischargers.
- Copies of any documents prepared and certified by another state or local agency pursuant to Public Resources Code section 21080 et seq.; or, such documents as are necessary for the Central Valley Water Board to make its decision in compliance with Public Resources Code section 21080 et seq.
- A work plan to provide an interim and permanent water supply for any person living in the area adversely affected by the discharge under the requested nitrate exception. The water supply work plan shall include a schedule of milestones and a description of financial commitments to ensure completion of the interim and permanent water supply. Performance bonds may be required to ensure timely implementation.
- A detailed schedule with milestones of how the applicant will meet long-term goals of the Nitrate Control Program.

Option: In addition to above, the following specific performance measures are a condition for renewing exceptions.

- Demonstration that short-term drinking water solutions were effectively implemented.
- Demonstration that mitigation fund / alternative drinking water projects have been effective and identification of additional actions, if needed.

Exception Requirements Specific to Boron

Specific requirements similar to the Salt and Nitrate Control Program have not yet been developed for boron, therefore, requirements specific to boron discharges reflect those previously adopted for salinity discharges.

- The permittee will be required to prepare and implement a Boron Reduction Study Work Plan, or a boron based watershed management plan. A Boron Reduction Study Work Plan shall at a minimum include the following:
  - Data on current influent and effluent boron concentrations;
  - Identification of known boron sources;
  - Description of current plans to reduce/eliminate known boron sources;
  - Preliminary identification of other potential sources;
  - A proposed schedule for evaluating sources; and

- A proposed schedule for identifying and evaluating potential reduction, elimination, and prevention methods.

- A boron based watershed management plan shall at a minimum include the following:
  - A discussion of the physical conditions that affect surface water or groundwater in the management plan area, including land use maps, identification of potential sources of boron, baseline inventory of identified existing management practices in use, and a summary of available surface and/or groundwater quality data;
  - A management plan strategy that includes a description of current management practices being used to reduce or control known boron sources;
  - Monitoring methods;
  - Data evaluation; and,
  - A schedule for reporting management plan progress.
- A requirement to participate in the P&O Study and contribute to the development and implementation of the Salt and Nitrate Control Program.
- An application for an exception to the implementation of water quality objectives for boron under this Program must include the following:
  - An explanation/justification as to why the exception is necessary, and why the discharger is unable to ensure consistent compliance with existing effluent and/or groundwater/surface water limitations associated with boron constituents at this time;
  - A description of boron reduction/elimination measures that the discharger has undertaken as of the date of application, or a description of a salinity–based watershed management plan and progress of its implementation;
  - A description of any drought impacts, irrigation, water conservation and/or water recycling efforts that may be causing or cause the concentration of boron to increase in the effluent, discharges to receiving waters, or in receiving waters;
  - Copies of any documents prepared and certified by another state or local agency pursuant to Public Resources Code section 21080 et seq.; or, such documents as are necessary for the Central Valley Water Board to make its decision in compliance with Public Resources Code section 21080 et seq.
  - Documentation of the applicant's active participation in the long-term Salt Control Program as indicated by a letter of support from the entity managing the P&O Study.
  - A detailed plan of how the applicant will continue to participate in Salt Control Program and how the applicant will contribute to the development and implementation of the long-term management activities.

4.2.7.2 Evaluation

The Central Valley Water Board is required to implement the Basin Plans when it authorizes discharges through the adoption of Waste Discharge Requirements and Conditional Waivers

(WDRs/Conditional Waivers). This includes incorporating into the WDRs/Conditional Waivers provisions that ensure beneficial uses are protected, and that receiving waters meet or are better than water quality objectives that are adopted to protect beneficial uses. When permitting discharges, the Central Valley Water Board traditionally looks to see if the discharge itself meets (or is better than) the applicable water quality objective, and if not, determines if assimilative capacity is available in the receiving water. In cases where there is assimilative capacity, the Central Valley Water Board considers the particular facts of the discharge to determine whether if it can make the findings as required by the State Antidegradation Policy to authorize use of assimilative capacity.

In the Central Valley, there may be circumstances where the discharge is not better than the applicable water quality objective and no assimilative capacity is available, or the Central Valley Water Board is unable to make the findings necessary to authorize use of assimilative capacity even if it is available. Traditionally, in such circumstances, the State Water Board has directed that Central Valley Water Board either prohibit the discharge, adopt a time schedule in the order that requires the discharger to come into compliance with needed WDR provisions, or revise the applicable water quality standard.

Due to the extensive areas where groundwater concentrations already exceed applicable water quality objectives there may be instances where it is infeasible, impracticable or unreasonable for dischargers to comply with certain WDRs even with a compliance schedule. When there is little or no assimilative capacity available, the Central Valley Water Board presently has only two regulatory options available: (a) where appropriate, revise the applicable water quality standards and related WDRs, or (b) disallow the discharge.

To provide another alternative, the Central Valley Water Board adopted a Policy for Exceptions from Implementing Water Quality Objectives for Salinity (Exceptions Policy) in Resolution No. R5–2014–0074, on June 6, 2014. The State Water Board approved that policy in Resolution No. 2015–0010, on March 17, 2015. The Policy amended the Basin Plans and established "*procedures for dischargers that are subject to WDRs and conditional waivers to obtain a short-term exception from meeting effluent or groundwater limitations for salinity constituents."*[54]

The Exceptions Policy established a Salinity Exception Program that is *"in effect during the development and initial implementation of the Salt and Nitrate Management Plans"*[55] being prepared through the CV-SALTS process. The Salinity Exception Program (aka "Streamlined Policy") applies only to electrical conductivity, total dissolved solids, chloride, sulfate and sodium.[56] The current Exceptions Policy prohibits the Central Valley Water Board from authorizing new exceptions or reauthorizing previously approved exceptions after June 30, 2019. The sunset date was included because the Central Valley Water Board intended that any permanent, long-term exceptions policy should be developed through the CV-SALTS process and that stakeholders needed to make appropriate recommendations for such a policy in the SNMP.

Revising water quality standards (uses and or objectives) is a complex, timely process requiring considerable documentation and numerous opportunities for public comment. Consequently,

[54] Central Valley Water Board Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins and the Water Quality Control Plan for the Tulare Lake Basin To add Policies for Variances from Surface Water Quality Standards for Point Source Dischargers, Variance Program for Salinity, and Exception from Implementation of Water Quality Objectives for Salinity; Final Staff Report, June 2014, Final Staff Report ("Variance & Exceptions Policy"); page ES–3 (Central Valley Water Board, 2014).

[55] Variance & Exceptions Policy; page ES–3. (Central Valley Water Board, 2014)

[56] Variance & Exceptions Policy; page 51. (Central Valley Water Board, 2014)

legally allowing for an exception to meeting the objective may be needed to provide time to complete the full regulatory review and approval process for revising the water quality standard. Or, in many cases, the Central Valley Water Board will be reluctant to revise the water quality standard and would prefer to adopt an exception that is discharger and/or area specific and time-limited rather than a general and more lasting water quality standard revision.

Prohibiting the discharge may also be infeasible, impracticable or unreasonable. If the Central Valley Water Board determines that a non–compliant discharge cannot or should not be prohibited, then some form of exception is required. Examples of situations where the Central Valley Water Board may conclude that it is infeasible, impracticable or unreasonable to prohibit the non–compliant discharge include, but are not limited to:

1) Situations where compelling the discharge to comply with the applicable WDR (assuming it was possible to do so) would not significantly improve water quality or ensure attainment of the related standards in the foreseeable future (≈20 years).

   Other Option Considered: Delete this justification from the Salinity Exception Program.

2) Situations where allowing the discharge is likely to result in nominal but insignificant changes in receiving water quality with no meaningful increase in public health risk.

3) Situations where disallowing/prohibiting the discharge would likely result in widespread and substantial adverse social and economic impacts in the area and/or region.

4) Situations where allowing the discharge even though it is above an applicable objective is projected to improve existing or expected quality in the receiving water; or, where prohibiting the discharge would be more harmful to water quality and/or the environment than allowing it to continue despite the failure to comply with the WDR provisions for which the exception is sought.

5) Situations where allowing the discharge to continue is necessary to preserve or sustain other beneficial uses, or to implement other important water resource management policies established by state authorities (e.g., increased water conservation, increased use of recycled water, increased groundwater recharge/storage, increased drought protection, etc.).

6) Situations where allowing the discharge to continue facilitates the Salt and Nitrate Control Program's management goals for a more comprehensive long-term program to achieve salt and nitrate balance and, where reasonable and feasible, attain water quality standards in the groundwater (aka "restoration").

Other Options Considered: during the development of the proposed Basin Plan Amendments, the Board and stakeholders also considered the following elements that could be incorporated into the existing Exception Policy:

Limit exceptions to permit-by-permit application; do not authorize for a management zone: Although requirements of an authorized Exception would become part of individual permit provisions, restricting application to individual permits discourages broad-based, collaborative approaches to addressing groundwater quality conditions and is not consistent with the proposed Salt and Nitrate Control Program.

Appropriate Term Limits: An option to limit terms for Exceptions to a 50-year maximum, with no opportunity for renewal assumes that groundwater quality conditions will be

restored within the 50-year timeframe or that beneficial uses/water quality objectives will be revised within 50-years. The Aggressive Restoration Study (Luhdorff & Scalmanini and Larry Walker Associates, 2016b) documented the need for much longer time periods to restore nitrate conditions in a 200 square mile area to below 10 mg/L nitrate as nitrogen. Is some portions of the aquifer being modelled, nitrate concentrations continued to exceed 10 mg/L after 100-years. Conditions were improving, but the concentrations were still above those protective of drinking water. The current alternative to recommend 10-year term limits with ability to approve a 50-year term providing that review of the status of projects supporting the Exception be conduct every 5-years at a public hearing. Any renewal/extension past 50-years would require a finding that water quality conditions are showing continuing, measurable improvements and that conditions for provision of safe drinking water supplies (if necessary) have been met.

An option for unlimited renewals of 10-year terms places a large administrative burden on long-term efforts. An option to provide no guidelines on term limits has the potential to dilute expectations by not articulating specific goals that dischargers should strive for.

Include Additional Conditions for Obtaining an Exception: Most of the additional conditions proposed are incorporated as part of the intent of the exception (utilizing Best Efforts and management plans setting milestones to provide improved water quality trends). Some clarity in the language may be appropriate.

The option to require participation in a mitigation fund or other mitigation program appears duplicative and restrictive with the condition that exceptions for nitrate will not be considered unless an adequate supply of clean, safe, reliable and affordable drinking water is available for those living in the area adversely affected by the non–compliant discharge(s).

The option to participate in a program that restores the aquifer to meet water quality objectives within 50 years appears unrealistic for some areas in the valley due to current nitrate concentrations and limitations in treatment alternatives. The proposed alternative sets a goal of 50 years and provides the Central Valley Water Board the discretion to extend the Exception where there is significant, measurable and continuing improvements in water quality. The proposed alternative provides appropriate flexibility to address the diversity of conditions in the Central Valley.

Include Additional, Specific Performance Measures as a Condition for Renewing Exceptions: One of the proposed options (demonstration on the effectiveness of current practices and identification of additional actions if needed) are incorporated as part of the intent of the exception but clarity in the proposed language may be appropriate.

The two additional options for reporting periods both end at the 50-year mark and as such are unrealistic for the anticipated timeframes to address current nitrate conditions in groundwater.

4.2.7.3 Recommendation

Staff recommends the alternative to modify the existing Salinity Exception Program in the Basin Plans, grant exceptions for salinity constituents, nitrate and boron in non-NPDES program WDRs where it concludes that it is infeasible, impracticable or unreasonable to prohibit an otherwise non–compliant discharge to groundwater.

Staff also recommends that it is appropriate to include the following language under "Requirements Specific to Salinity" due to the proposed requirements under the Salt Control Program:

> *"Under Phase I of the Salt Control Program, permittees that are in compliance with the conditions for the Alternative Permitting Approach are in compliance with their salinity permit limits. Additional conditions for exceptions to water quality objectives for salinity under Phase II and Phase III of the Salt Control Program may be incorporated in the future."*

4.2.8 Drought and Conservation Policy

Extended periods of below normal precipitation (i.e., "droughts") as well as implementation of encouraged or mandated water conservation practices can increased TDS/EC and other salinity–related constituents in influent and effluent. This increase may be caused by one or more of the following conditions:

a) Higher Salinity Source Water. During droughts and for a period of time after a drought, there is generally less high quality surface water available and water agencies commonly increase their reliance on lower quality (higher TDS/EC) groundwater or recycled water sources to augment their water supply. Most municipal and some industrial wastewater treatment systems are not designed to remove TDS/EC. Consequently, higher salinity in the water supply tends to result in higher salinity in effluent.

b) Increase reuse reduces dilution. Encouraged and/or mandatory conservation measures undertaken in response to prolonged drought may significantly alter the behavior of water users (restricted lawn watering, shorter showers, larger laundry loads, less frequent flushing, less industrial water use, etc.). The cumulative effect of these behavioral changes combine to reduce water use, which previously helped dilute the average TDS/EC concentration in raw sewage and treated wastewater.

   Increasing TDS/EC is also caused by widespread adoption of high efficiency, low–flow fixtures and appliances and greater use of in–home water softening technologies that increase TDS/EC discharged to sewer systems.

Drought conditions create similar concerns for agricultural operators and other dischargers (e.g., food processors). Reduced availability of high quality (low TDS) surface water forces increased reliance on lower quality (high TDS/EC) sources to maintain crop yields or ensure long-term survival for vines and orchards, or to run operations. Periods of low rainfall reduce the flushing of salts from the root zone. The net result is temporarily higher TDS/EC concentrations recharging to groundwater below the root zone. For land discharge application, similar concerns exist.

Once water conservation practices are implemented, they are likely to continue, especially if they necessitated capital investment (i.e. redirection for landscape irrigation, low flush toilets, drip irrigation, etc.).

With Climate Change and continued increasing demands on limited water supplies, conservation and reuse are encouraged throughout the Central Valley. Drought exacerbates salinity increases already occurring due to increased reuse.

The alternative discussed in this section evaluate whether a Drought and Conservation Policy to account for these increased salinity concentrations should be incorporated into the Basin Plans.

4.2.8.1 Alternatives

Three alternatives were identified: 1) No Action Alternative; 2) Incorporate a Drought and Conservation Policy into the Basin Plans; and 3) Revise the Drought and Conservation Policy as part of the Prioritization and Optimization Study and incorporate under Phase 2 of the Salt Control Program. For the second alternative, options to some of the elements were also identified by stakeholders and are included in the discussion.

4.2.8.1.1 No Action Alternative

Under current Basin Plan provisions, permits may include restrictions on the salt concentration in the final effluent or in treated municipal wastewater based on one of the following:

a) The applicable narrative or numeric water quality objective;

b) High quality receiving water;

c) Maximum allowable increase in Total Dissolved Solids (TDS) compared to the average salinity concentration in the water supply source; or

d) Best demonstrated performance using representative historical discharge data.

Permits rarely include any special provision or consideration for variations in effluent quality, directly or indirectly related to recurrent drought conditions or for ongoing, expanding and sometimes mandated conservation practices unless those provisions have been specifically adopted as part of the implementation provisions for a control program (e.g. the Control Program for Salt and Boron Discharges into the Lower San Joaquin River). In addition, the occasions when discharge quality is substantially better than required are not usually considered when assessing whether that discharge is causing or contributing to an exceedance of water quality objectives in groundwater that has a longer water quality “memory” than a flowing stream.

4.2.8.1.2 Alternative to Incorporate a Drought and Conservation Policy

This alternative is to provide interim salinity limits during specific emergency situations when source water quality can be expected to decrease (e.g. declared droughts) and/or to account for documented and continuing conservation practices. The interim limits are based both on the short-term secondary Maximum Contaminant Levels identified in Title 22 for short term drinking water supply and historical salt load in the effluent as follows.

Other Option Considered*:*

- *Establish a temporary variance/exception from salinity–related water quality objectives during certain drought conditions rather than an interim limit.*
- *Set the interim limit to the Upper Salinity Concentration under SMCLs (1600 µS/cm).*
- *Include boron as one of the constituents under the Drought and Conservation Policy.*

Unless otherwise excluded based on requirements of the Salt Control Program, a permittee (or third party group on behalf of collective dischargers) may qualify for interim permit limits for salinity under one or more of the following conditions:

a) A drought emergency is declared by an authorized federal or state authority, as defined by the California Emergency Services Act;
b) A local drought emergency or other emergency is declared, consistent with the California Emergency Services Act that impacts availability of water supplies; or
c) Water conservation and/or water recycling efforts may be causing or cause the concentration of salinity to increase in the effluent, discharges to receiving waters, or in receiving waters.

Other Option Considered: *Include a condition for Extended Dry Periods similar to the conditions adopted as part of the Basin Plan Amendment case study to adopt salinity objectives in the Lower San Joaquin River upstream of Vernalis (Resolution R5–2017–0062). Provisions would allow an extension of interim permit limits one year after extended dry periods to allow flushing of salt from the root zone.*

During Statewide or Local Drought or Other Emergencies that Limit Water Supplies

Dischargers (or third party group on behalf of collective dischargers) shall receive interim effluent and/or groundwater/surface water limitations based on their historical salinity load (with consideration given to reasonable increment of use or changes in source water salinity concentration) and shall not exceed an EC concentration of 2,200 µS/cm as a 30–day running average. The water quality–based effluent/groundwater/surface water limitations may be established in terms of EC concentration or total dissolved solids (TDS) loading, however, concentration and loading limits shall not be applied at the same time. An EC to TDS ratio of 0.64 shall be used to convert the EC concentrations to TDS concentrations, unless a discharge–specific ratio can be demonstrated. The Central Valley Water Board has the discretion to adjust these limitations based on local conditions including but not limited to local beneficial use protection and site–specific salinity objectives. The interim effluent and/or groundwater/surface water limitations will remain in effect during the time period when one or more of the conditions noted in a or b, above, are met.

Limitations to Account for Water Conservation and Recycling Efforts

A discharger (or third party group on behalf of collective dischargers) may qualify for interim permit limits for salinity by submitting documentation that water conservation and/or water recycling efforts cause the concentration of salinity to increase in the effluent, discharges to receiving waters, or in receiving waters. Interim permit limits will be based on one of the

following.

a) Dischargers (or third party group on behalf of collective dischargers) who demonstrate that their permitted discharges have a lower salinity concentration than the receiving water salinity concentration shall receive interim effluent and/or groundwater/surface water limitations that do not exceed the receiving water salinity concentration, provided there are no unreasonable impacts to downstream/downgradient water quality.

b) The remaining dischargers (or third party group on behalf of collective dischargers) shall receive interim effluent and/or groundwater/surface water limitations based on TDS loading consistent with their historical load (with consideration given to reasonable increment of use or changes in source water salinity concentration) and shall not exceed an EC concentration of 2,200 µS/cm as a 30–day running average. An EC to TDS ratio of 0.64 shall be used to convert the EC concentrations to TDS concentrations, unless a discharge–specific ratio can be demonstrated. The Central Valley Water Board has the discretion to adjust these limitations based on other considerations such as local beneficial uses and site–specific salinity objectives.

Long Term Waste Discharge Requirements and Limitations for Groundwater

Dischargers to groundwater who submit documentation describing a long-term commitment (20 year planning horizon) to water conservation and/or water recycling efforts may be eligible to use a long-term (10+ year) flow–weighted average to calculate compliance with effluent and/or groundwater limitations when it can be demonstrated using recharge models and long-term precipitation estimates that applicable narrative or numeric salinity objectives can be met in the receiving water over the term of the compliance period. Periodic reassessments based on the best available data need to be conducted every five years unless otherwise directed in the waste discharge requirements to ensure that salinity objectives will be met and beneficial uses are protected.

Other Options Considered:

- *Conduct periodic assessment every 10 years.*
- *Authorize the use of "Offset Projects," particularly increased storm water capture and recharge, to demonstrate compliance with WDRs governing salinity discharges. Allow offset credits to be created and banked by constructing and operating such projects or by discharging well below the WDR threshold in non–drought years. Recognize that the credits needed to achieve compliance during periods of drought normally must be generated at times of above normal precipitation (especially El Niño winters) and, as such, must remain valid for at least 10 years.*
- *Explore the possibility to consider offsets credits during the P&O Study.*

4.2.8.1.3 Alternative to Further Review the Drought and Conservation Policy as Part of the Prioritization and Optimization Study under the Salt Control Program

Under this alternative, the proposed Drought and Conservation Policy would not be incorporated into the Basin Plan at this time but would be further reviewed as part of the Prioritization and Optimization Study under the proposed Salt Control Program. The review would include an evaluation of use of Extended Dry Periods.

4.2.8.2 Evaluation

During emergencies such as drought, high quality water supplies diminish. Climate change is also anticipated to diminish available water supplies. Water conservation and water recycling can stretch limited water supplies, providing benefits to the people of the state. Conservation and recycling has the unintended consequence of creating compliance issues due to increased concentrations of constituents, such as salinity in discharges. It is the intent of the Central Valley Water Board to encourage conservation and water resource management.

Under the No Action Alternative, no provisions would be incorporated into the Basin Plans. Dischargers would continue to face potential noncompliance with permit provisions for variations in effluent quality directly or indirectly related to recurrent drought conditions that are beyond the control of the permittee. Similarly, the permittee may also be out of compliance for ongoing, expanding, encouraged and sometimes mandated conservation practices. Inability to ensure consistent permit compliance for salinity discourages conservation and reuse including the routine use of water for landscape or crop irrigation. This problem is compounded by the fact that standard permit requirements for TDS may be evaluated instantaneously or using relatively short-term averaging periods (e.g., daily, weekly, monthly averages or means). Since droughts typically persist for several years, even limits expressed as an annual average may be impractical to meet given the elevated salinity concentrations in the best available water supplies at such times.

The purpose of Alternative 2 is to provide for permitting procedures to be applied to account for conditions associated with the loss of higher quality water supplies such as drought and climate change, and/or constituent increases directly related to voluntary and/or mandatory conservation measures and increased recycling efforts. The interim limits are based on Title 22 secondary MCLs to protect short term drinking water supplies based on poor supply water quality and/or limits the salt load that may be discharged if conservation practices are documented. The Title 22 limit provide drinking water protection for short term periods. The limits on salt load would be consistent with effective conservation practices where reuse is concentrating but not added to existing salt in the original volume of water. Some accounting for changing source water supplies is acknowledged. Some options to the various elements for Alternative 2 are discussed below.

> *Establish a temporary variance/exception from salinity–related water quality objectives during certain drought conditions rather than an interim limit.* Although a legal alternative, developing variance and exception conditions are duplicative administrative layers that results in the application of interim effluent limits. Developing an over–arching policy that deals directly with the conditions resulting from drought and documented conservation and reuse activities more directly addresses the salinity concerns.
>
> *Set the interim salinity concentration limit to the Upper SMCL of 1,600 µS/cm.* Maintaining the best water quality reasonable, feasible and practicable continues to apply under the proposed drought and conservation policy. The range in salinity concentrations to the Upper SMCL of 1,600 µS/cm is proposed as appropriate under “normal” hydrologic conditions for the protection of municipal and domestic supply with a goal of the recommended SMCL of 900 µS/cm. The SMCL of 2,200 µS/cm is specifically recognized in Title 22 as protective of short term drinking water supplies when source water quality is impacted and is more appropriate under drought conditions.

Include boron as one of the constituents under the Drought and Conservation Policy. No additional studies have been conducted to determine appropriate interim limits for boron under drought or conservation/reuse conditions. Therefore, it is inappropriate at this time to include boron in the proposed policy.

Include a condition for Extended Dry Periods similar to the conditions adopted as part of the Basin Plan Amendment case study to adopt salinity objectives in the Lower San Joaquin River upstream of Vernalis (Resolution R5–2017–0062). *Provisions would allow an extension of interim permit limits one year after extended dry periods to allow flushing of salt from the root zone*. The Basin Plan Amendment for the Lower San Joaquin River was completed with full Substitute Environmental Justification to support the proposed Extended Dry Period provisions. The documentation included an extensive review of water quality conditions within different reaches of the Lower San Joaquin River upstream of Vernalis during different water year types (Wet, Above Normal, Below Normal, Dry and Critical) as determined from the San Joaquin Water Year Index (State Water Board, 2000) in order to determine a pattern of extended dry periods and document the flushing of salt during the first year after the dry period. While a similar index exists for the Sacramento River Basin, similar evaluation of historical water quality conditions has not been conducted. A water year type index does not exist for the Tulare Lake Basin. Therefore, it is inappropriate at this time to include an Extended Dry Period condition in the proposed policy.

Conduct periodic assessment of groundwater conditions every 10-years (when utilizing option for long-term flow–weighted averages to calculate compliance). The current proposal recommended a five year term "unless otherwise directed in the waste discharge requirements". Changes to groundwater conditions over time are dependent on the numerable variabilities of each aquifers hydrologic characteristics. While groundwater conditions in general may not change rapidly, some flexibility in permit conditions is appropriate to account for local variability. Setting a specific 10-year assessment approach is too limiting given inherent potential variability.

Authorize the use of "Offset Projects," particularly increased storm water capture and recharge, to demonstrate compliance with WDRs governing salinity discharges. Allow offset credits to be created and banked by constructing and operating such projects or by discharging well below the WDR threshold in non–drought years. Recognize that the credits needed to achieve compliance during periods of drought normally must be generated at times of above normal precipitation (especially El Niño winters) and, as such, must remain valid for at least 10 years. This proposed policy authorization is consistent with the goal of recognizing the long-term memory of groundwater, variability in water year types, and potential mutual benefits in coordinated recharge projects. However, no case studies have been identified to frame potential constraints or guidelines for such projects based on environmental and antidegradation considerations. Therefore, it is inappropriate at this time to include Offsets credits as part of the proposed policy.

Explore the possibility to consider offsets credits during the P&O Study. See Alternative 3.

The third alternative identified is to postpone adopting a Drought and Conservation Policy until it can be further studied and vetted as part of the P&O Study under the Phase I Salt Control

Program. A risk with such a delay is that should the P&O Study be delayed or terminated, permittees would continue to be unable to comply with salinity limits during drought conditions or if pursuing conservation or reuse. A benefit is that the current proposed conditions could be further vetted and could include review of the addition of boron, extended dry periods, and offset credits. NPDES permittees would need to individually explore options for a variance to meeting water quality objectives for salinity while other permittees would need to apply for exceptions to water quality objectives for salinity until a Drought and Conservation Policy was in effect.

4.2.8.3 Recommendation

Staff recommends Alternative 2 – Incorporate a Drought and Conservation Policy. The alternative provides focused authority for the Central Valley Water Board to recognize impacts from Climate Change and drought and encourage conservation and reuse of limited freshwater supplies. Staff also recommended that the proposed P&O Study under the Salt Control Program include a review of:

- Use of Extended Dry Periods in the Sacramento River and Tulare Lake Basins;
- Inclusion of boron as one of the constituents under the policy; and
- Use of Offset Credits.

4.2.9 Offsets Policy

An offset is an alternative means of achieving compliance with permit requirements to achieve compliance with water quality objectives, either alone or in combination with other actions, for a given pollutant or pollutants that may be authorized by the Central Valley Water Board. An offset allows for the management of sources and loads of the constituent of concern (not directly associated with the regulated discharge) so that the combined net effect on receiving water quality from the discharge and the offset is functionally-equivalent to or better than that which would have occurred by requiring the discharger to comply with its WDR at the point-of-discharge.

The alternatives below evaluate whether providing the Central Valley Water Board the authority to permit offset project for salt or nitrate appropriately support the proposed Salt and Nitrate Control Program. The alternatives are focused on use of offsets for discharges to groundwater. In this regard, an offset project must be located within the same groundwater basin/sub-basin or management zone as the regulated discharge.

4.2.9.1 Alternatives

Two Alternatives were identified: 1) No Action Alternative; and 2) Incorporate an Offsets Policy for Salt and Nitrate.

4.2.9.1.1 No Action

The Basin Plans do not authorize the Central Valley Water board to consider offsets when evaluating compliance. If such authority is added to the Basin Plans, the Board must take a separate action, through the normal public notice and hearing process, to consider and approve any proposed offset. Should a permittee seek compliance for a discharge into a groundwater basin that does not have available assimilative capacity, the discharger would need to either meet applicable water quality objectives or meet obligations under a time schedule order to demonstrate improvements until water quality objectives are met.

4.2.9.1.2 Incorporate an Offset Policy for Salt and Nitrate Discharges to Groundwater

Overview

This alternative proposes to amend the Basin Plans to allow the use of offsets for discharges of salt and nitrate to groundwater. Offsets would provide an indirect approach to partial or complete compliance with a WDR/conditional waiver requirement for a given pollutant by managing other sources and loads so that the net effect on receiving water quality from all known sources is functionally–equivalent to or better than that which would have occurred through direct compliance with the WDR at the point-of-discharge. Authorization to allow use of offsets would provide:

- A mechanism to re–allocate the resources required to achieve compliance in order to produce greater public benefits (e.g., better net water quality, lower cost, less risk).
- A mechanism whereby diverse dischargers within the same management zone can pool available resources to implement alternative compliance projects, in phases, on a risk–priority basis.
- A mechanism to develop and fund large-scale, long-term regional water quality improvement projects by recognizing participation in such efforts as partial credit toward compliance.
- Market–based incentives to establish a mitigation fund designed to develop and implement water quality improvement projects, which are useful for pooling resources of relatively small dischargers into a critical funding mass to support projects that would normally be beyond their individual means.

4.2.9.1.3 Alternative 2

An offset project proposed for nitrate or salt discharges should be located within the same groundwater basin/sub-basin or management zone as the regulated discharge and is applicable to groundwater only. Application for an offset may be submitted by individual dischargers, or collective dischargers within a management zone, by a third party group on behalf of its members, or other forms of collective groups of dischargers recognized by the Central Valley Water Board. The decision to pursue an offset is voluntary. Offsets must be:

(1) Proposed by the permittee[57] as an Alternative Compliance Project (ACP)[58]

(2) Approved by the Central Valley Water Board; and

(3) Enforceable through a WDR or other orders issued by the Board.

The following requirements apply to all offsets:

[57] Throughout this document the term "permittee" can connote either an individual discharger or a coalition of dischargers regulated under a common set of categorical WDRs or watershed/groundwater basin/sub-basin permit or order, or dischargers working collaboratively within a management zone.

[58] See Attachment A-10 of the SNMP for guidance on development of an ACP project.

(1) Where an offset project is being considered for implementation, it should be consistent with any local implementation plans established to manage salinity or nitrate concentrations in the same area. And, in general, it is desirable to encourage offsets in the same groundwater basin/sub-basin where the discharge occurs. However, offsets may also be used to incentivize implementation of some large-scale projects such as a regional regulated brine line or establish a mitigation fund to provide safe drinking water, provided that the offsets still result in a positive net effect on receiving water quality.

Options:

- *Offsets should only apply within the immediate area of the discharge's contribution.*
- *Nitrate mitigation fund cannot be considered an "offset" if it does not result in groundwater quality improvements.*

(2) When there is no assimilative capacity available in the receiving water, the offset shall result in a net improvement in existing water quality (e.g., the offset ratio must be > 1:1) compared to baseline regulatory requirements. (Offset ratios < 1:1 may be authorized only in accordance with the state's antidegradation policy unless an exception is granted or Time Schedule Order or Compliance Schedule Order allows a less stringent interim ratio to apply.)

(3) Offsets shall be for substantially the same pollutant. Cross-pollutant trading to address nitrate impairments (e.g., TDS for nitrate, nitrate for arsenic, etc.) is not authorized under this policy.

(4) The proposed package (discharge + offset project) cannot result in unmitigated localized impairments (e.g., "hotspots") to sensitive areas (especially drinking water supply wells) or have a disproportionate impact on a disadvantaged community in the sub-basin. Downgradient well owners shall be notified and encouraged to participate in the offset approval process.

(5) Offsets shall be approved by the Central Valley Water Board. The Board may elect to approve a specific offset projects (a 1-step process) through the issuance of a permit, or the Board may generally authorize the use of offsets in a permit and subsequently approve individual offset projects in subsequent Board actions (e.g., a 2-step procedure).

(6) Offsets shall apply to a specific discharge for a defined period. Offsets may be renewed but must be periodically reviewed and reauthorized by the Central Valley Water Board. The length of that period will be specified by the Central Valley Water Board when the offset is approved.

(7) The terms and conditions governing an approved offset shall specify the remedial actions that must be undertaken by the discharger, and the metric(s) used to trigger such obligations, in the event that the offset project fails.

(8) The offset project shall include a monitoring and reporting program sufficient to verify that the pollution reduction credits are actually being generated as projected and that these credits are adequate to offset the discharge loads in the ratio approved by the Central Valley Water Board. Pollutant removal, reduction, neutralization, transformation,

dilution through recharge and support of a mitigation fund may all be acceptable means of generating offset credits (subject to appropriate verification).

When authorizing an offset, the Central Valley Water Board shall consider the following conditions:

(1) When it is not feasible, practicable or reasonable for the discharge to comply directly with applicable WDRs.

(2) When it is not feasible, practicable or reasonable to prohibit a discharge that is unable to comply with applicable WDRs.

(3) When there is no assimilative capacity available in the receiving water or as a condition for allocating any available assimilative capacity in order to authorize a discharge.

(4) When the net effect of authorizing the discharge, including the proposed offset project, would result in better water quality in the groundwater basin/sub-basin or better support beneficial use attainment than is likely to occur if the discharge was required to comply with the applicable WDRs at the point-of-discharge.

(5) When the proposed offset project will provide substantially greater and more immediate public health protection than is expected to result if the discharger was required to comply with the applicable WDRs at the point-of-discharge or the non-compliant discharge was prohibited completely.

(6) When the proposed offset project is an integral part of and facilitates a larger strategic plan or project designed to ultimately achieve attainment of water quality standards or restoration of a water body.

(7) Other factors such as the: relative location of the discharge and offset project and potential impacts on downgradient waters, reliability of the recharge, the extent that a groundwater recharge project puts more 'clean' water in the aquifer than what would occur without the project, impacts on the vadose zone over time, mixing assumptions, brine disposal, and whether the offset is proposed as a temporary or permanent alternate compliance strategy.

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

4.2.9.2 Evaluation

Based on the evaluation of ambient groundwater concentrations conducted throughout the Central Valley (Larry Walker Associates, 2013) broad expanses of groundwater underlying permittees already exceed salinity and nitrate water quality objectives to protect beneficial uses. In these area, permittees are currently restricted to individual time schedule order to ensure the discharge meets water quality limits or the discharge will be prohibited. The current no action alternative does not provide a mechanism for dischargers to collaborate and support the major management projects to balance salt and nitrate loading and lead to

restoration. Permittees would be required to continue to focus on the immediate impacts of their own discharge.

Alternative 2 recommends that the Basin Plans be amended to provide authority for the Central Valley Water Board to allow the use of offset projects to comply with WDRs, but only for groundwater. The offsets may be proposed to support a request for either an allocation of available assimilative capacity or an exception. Offsets must be (1) proposed by discharger (individual or group of dischargers); (2) approved by the Central Valley Water Board; and (3) enforceable through a WDR or other orders issued by the Board. One major goal of the offset policy is to allow pooling resources of many relatively small dischargers into a critical mass of funding to support water quality projects that would normally be beyond the means of individual dischargers to fund. As proposed, the Offsets Policy would provide:

- A regulatory alternative, other than prohibiting the discharge or issuing an exception, when it is infeasible, impracticable or unreasonable to require compliance with WDRs directly. Offsets are an Alternate Compliance Project under the proposed Salt and Nitrate Control Program that may be proposed to support a request for either an allocation of available assimilative capacity or an exception.
- A method for permitting discharges with pollutant concentrations greater than the objective or higher than the current receiving water quality. They potentially can provide better overall improvement, result in less degradation in that receiving water basin, sub-basin or management zone, or further other societal priorities such as more immediate provision of safe drinking water supplies.
- A mechanism whereby diverse dischargers within the same management zone can pool available resources to implement management activities, in phases, on a risk–priority basis. The option to pool resources creates a strong incentive to establish such management zones.
- A mechanism to develop and fund large–scale, long-term regional water quality improvement projects such as described by the Strategic Salt Accumulation Land and Transportation Study (SSALTS)[59] or the Nitrate Implementation Measures Study (NIMS)[60] by recognizing participation in such efforts as partial credit toward compliance.
- A market–based incentive to establish a mitigation fund designed to develop and implement water quality improvement projects within the same receiving water basin where the discharge occurs. Funds paid into a mitigation fund as an offset must be used within the same receiving water basin, sub-basin or management zone where the discharge occurs.
- Creative solutions to complex problems by measuring success at the most critical endpoint: Net effect of water quality on end–uses. This outcome–oriented approach is consistent with the primary purpose for imposing water quality standards–based permit requirements, i.e., to protect beneficial uses.

[59] *Strategic Salt Accumulation Land and Transportation Study (SSALTS), Final Phase 2 Report: Development of Potential Salt Management Strategies*. Report prepared by CDM Smith on behalf of CV-SALTS. October 1, 2014; *SSALTS, Final Phase 1 Report: Identification and Characterization of Existing Salt Accumulation Areas*. Report prepared by CDM Smith on behalf of CV-SALTS. December 13, 2013. (CDM Smith, 2013)

[60] *Nitrate Implementation Measures Study (NIMS) Final Report*. Report prepared by CDM Smith on behalf of CV-SALTS, March 31, 2016 (CDM Smith, 2016a)

Where an allocation of assimilative capacity is sought, implementing an offset project may be the best practicable treatment or control that is most consistent with maximum benefit to the people of the state. This is particularly true where the net effect on receiving water quality and/or end users is better than would otherwise occur by requiring strict compliance with water quality standards at the point of discharge.

Where there is no assimilative capacity available, or the Central Valley Water Board is unwilling to allocate the available assimilative capacity,[61] the discharger may need to apply for an exception. Because offsets can be used to minimize the net negative affect on receiving water quality, the proposed offset project may be included as a condition for authorizing the exception for the non–compliant discharge. In such cases, the offset program may be used to help demonstrate that the discharger is making "reasonable progress" at mitigating excess pollutant loads where feasible and practicable.

Although offset projects may be proposed for any type of discharge, they would be most useful to implement more cost–effective water quality control strategies where the Central Valley Water Board has elected to "prescribe general waste discharge requirements for a category of discharges"[62]. Offsets may offer the opportunity to focus and simplify monitoring and reporting requirements so that resources can be redirected to accelerate or expand water quality improvement projects.

To support this alternative, it may be appropriate to establish a mitigation fund designed to develop and implement water quality improvement projects within the same receiving water basin, sub-basin or management zone where the discharge occurs.

Two options were identified for elements of Alternative 2: restricting use to immediate area of discharge contribution; and not allowing use of a mitigation fund if it does not result in groundwater quality improvement.

> *Offsets should only apply within the immediate area of the discharge's contribution.* An offset project is designed to provide greater water quality improvements than would be attained by restricting improvements to the discharge itself. While such offsets projects may be appropriate in some cases (such as developing a stormwater recapture system within the discharge contribution area), limiting use to this extent returns regulation to a permit-by-permit approach and reduces incentive for multiple dischargers to pool resources for the large–scale, long-term regional water quality improvement projects.
> *Nitrate mitigation fund cannot be considered an "offset" if it does not result in groundwater quality improvements.* An offset is traditionally based on conducting activities in other portions of a receiving water body that provides for overall improved water quality. This option focuses directly on that component of an offset project. Under the proposed Salt and Nitrate Control Program, the highest management priority is to ensure safe drinking water supplies. While use of a mitigation fund to provide safe drinking water supplies is appropriate under the program for the short-term, participation in the fund should not be considered an "offset" unless the project includes long-term improvements in the impacted water body.

[61] Wat. Code, § 13263, subd. (b).

[62] Wat. Code, § 13263, subd. (i).; examples: WDRs issued to the dairy industry or various agricultural coalitions.

4.2.9.3 Recommendation

Staff recommends incorporating the proposed Offset Policy into the Basin Plans in order to provide the Central Valley Water Board the authority to allow permittees to collaborate and pool funds to develop and implement long-term, large–scale, regional water quality improvement projects.

The proposed Offsets Policy appropriately prevents an offset project from being approved if it would result in unmitigated localized impairments to sensitive areas (especially drinking water supply wells or have a disproportionate impact on a disadvantaged community, including a requirement that downgradient well owners be notified and encouraged to participate in any offset approval process.

The current proposed alternative should be revised to clarify that use of a mitigation fund to provide safe drinking water supplies does not in itself satisfy requirements of an offset project. The overall project funded through the mitigation fund must also address long-term improvements to the impacted water body in order to qualify.

The evaluation of use of offsets for salt in surface water should be evaluated as part of the P&O Study.

4.2.10 Secondary Maximum Contaminant Level (SMCL) Clarification

Secondary Maximum Contaminant Levels (SMCLs) 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."[63]

SMCLs established by the California Code of Regulations, Title 22 (Title 22)[64] (the secondary drinking water standards regulations) are incorporated by reference in the Chemical Constituent sections in the Water Quality Objectives Chapter of both Basin Plans. The only portions of Title 22 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. The SMCLs were included in the Basin Plans for the purpose of protecting drinking water use, however, 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 Title 22 tables were adopted as water quality objectives.

[63] Health & Saf. Code, § 116275, subd. (d).

[64] Cal. Code Regs., tit. 22, § 64449 et seq.

The alternatives discussed in this section evaluate whether it is appropriate to provide clarification in the Basin Plans on how SMCLs are to be interpreted as water quality objectives as well as how such objectives should be implemented when determining compliance. In general, there are two types of SMCLs being evaluated: 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.

4.2.10.1 Alternatives

Two alternatives were identified: 1) No Action; and 2) Provide Clarification on SMCLs as Water Quality Objectives and Their Use. Options to elements contained in Alternative 2 were identified and are discussed as part of the evaluation.

4.2.10.1.1 No Action

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:[65]

> *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 Central Valley Water Board may apply limits more stringent than MCLs.*[66]

The above referenced SMCL tables, Tables 64449–A and 64449–B from Title 22 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.

[65] (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.

[66] 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–*tert*–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	500	1,000	1,500
Specific Conductance, µS/cm[67]	900	1,600	2,200
Chloride, mg/L	250	500	600
Sulfate, mg/L	250	500	600

Although the Title 22 § 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. Appendix F 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 how such regulations may influence the application of numeric values from the tables.

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:

[67] For the purposes of this discussion, Specific Conductance is expressed as Electrical Conductivity.

- The TLB Basin Plan states that, "*The objectives of this plan do not require improvement over naturally occurring background concentrations."*[68] This finding applies to both inland surface water and groundwater quality objectives.[69]
- The SRSJR Basin Plan states that, "*These objectives do not require improvement over naturally occurring background concentrations.*"[70]
- 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*.[71]

Per the above Basin Plan statements, natural background should be considered when establishing WDRs. No additional guidance is provided on choosing the appropriate SMCL from the range provided, compliance timeframe or sample type (e.g. total or dissolved).

4.2.10.1.2 Alternative to Provide Additional Clarity on the Use of SMCLs

The proposed alternative clarifies implementation of SMCLs in permits for discharge to surface water and groundwater. These recommendations include:

- Clarifying the use of "Recommended", "Upper", or "Short Term" concentrations included in Title 22 tables and adopted as water quality objectives.
- Clarification on sample type (filtered or dissolved) and compliance time period (averaging period).

Under this alternative, there were specific elements recommended in the CV-SALTS SNMP and options to those elements identified through further stakeholder meetings and Board workshops. A list of SMCL clarification elements and options identified are provided in Table D-10 in Appendix D. Where agreement on approach was not reached, options are identified below by element.

Water Quality Objectives for Surface and Groundwaters

This alternative adds reference to the contextual language of Title 22 and provides clarification on the use of ranges in Table 64449–B, consideration of background conditions and averaging periods as follows.

Unless there is an approved site specific objective, for surface or groundwaters designated MUN, the concentration of chemical constituents shall not exceed the "secondary maximum contaminant level" specified in Title 22, Table 64449–A or the "Upper" level specified in Table 64449–B, unless otherwise authorized by the Central Valley Water Board in accordance with the provisions of Title 22, section 64449 et seq. Constituent concentrations ranging to the "Upper" level in Table 64449–B are acceptable if it is demonstrated that it is not reasonable or

[68] TLB Basin Plan, p. III–2

[69] 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.

[70] SRSJR Basin Plan, p. III–9.00

[71] SRSJR Basin Plan, p. IV–17.00; TLB Basin Plan, p. IV–21

feasible to achieve lower levels. Constituents ranging to the "Short Term" level in Table 64449–B may be authorized on a temporary basis consistent with the provisions of section 64449(d)(3), pending construction of treatment facilities or development of new water sources, and/or consistent with the Drought and Conservation Policy proposed as part of the Salt and Nitrate Control Program. In cases where the surface water natural background concentration of a particular chemical constituent exceeds the maximum contaminant level specified in 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 Central Valley Water Board authorizes it consistent with State Antidegradation Policy.

> Other Option Considered: *Only "Recommended" secondary MCL values may be used as the basis for WDRs.*

Surface Water: Compliance with any chemical constituent in Tables 64449–A or 64449–B shall be determined from the annual average of sample results.

Groundwater: Appropriate long-term averaging periods shall be used to evaluate compliance with any chemical constituent in Tables 64449–A or 64449–B.

> Option: *Compliance period for both surface and groundwater should be based on annual average of all collected samples.*

Application of SMCLs to Protect Municipal and Domestic Supply (MUN)

Secondary MCLs identified in Tables 64449–A and 64449-B were developed for public welfare and consumer acceptance. 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. For Table 64449-B, WDRs should consider the "Recommended" values. 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 Central Valley Water Board and State Water Board to encourage meeting the best possible water quality while allowing greater water conservation, increased use of recycled water, more stormwater harvesting, additional groundwater recharge and storage, better drought protection, and allowing agricultural and wastewater dischargers to continue to discharge to groundwater basins and surface water bodies.

The annual average of sample results will be used to evaluate compliance with the Secondary Maximum Contaminant Levels identified in Tables 64449-A or 64449-B.

> Option: *Allow long-term averaging to determine compliance in groundwater.*

For receiving waters that have been deemed exempt from surface water filtration requirements, compliance with chemical constituents in Table 64449–A shall be determined using an unfiltered water sample.[72]

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

For receiving waters that are not exempt from surface water treatment requirements (i.e. 40 CFR Part 141, Subparts H, P, T & W), compliance with the Secondary Maximum Contaminant Levels for aluminum, copper, iron, manganese, silver, zinc, color and turbidity in Table 64449-A will be determined from samples that have been passed through a 1.5-micron filter to reduce filterable residue[73]; metal constituents will then be analyzed using the acid-soluble procedure described in EPA Approved Methods[74] as appropriate, as appropriate or other methods approved by the Central Valley Water Board. Because this approach is intended to approximate the level of treatment normally applied to raw surface water sources before such water can be distributed to the public as drinking water, the Central Valley Water Board may adjust the filter size where necessary to more accurately represent site-specific conditions based on scientific evidence submitted for their consideration and after consultation with Division of Drinking Water and public comment. This provision applies solely to evaluating compliance with Secondary Maximum Contaminant Levels for certain metals and does not affect or alter the methods used to evaluate compliance with other water quality objectives that have been established for those same metals (e.g. as Primary MCLs, California Toxics Rule or National Toxic Rule constituents, or constituents with specific objectives listed in this Basin Plan).

For groundwaters, compliance with the Secondary Maximum Contaminant Levels for aluminum, copper, iron, manganese, silver, zinc, color and turbidity in Table 64449-A will be determined from samples that have been passed through a 1.5-micron filter to reduce filterable residue[78], metal constituents will then be analyzed using the acid-soluble procedure described in EPA Approved Method[79] as appropriate, or other methods approved by the Central Valley Water Board. Because this approach is intended to account for "removal of waste constituents as the water percolates through the ground to the aquifer," as described in WQ Order No. 73-04 and Water Quality Order No. 81-05, the Central Valley Water Board may adjust the filter size where necessary to more accurately represent site-specific conditions based on scientific evidence submitted for their consideration and after consultation with Division of Drinking Water and public comment. This provision applies solely to evaluating compliance with Secondary Maximum Contaminant Levels for certain metals and does not affect or alter the methods used to evaluate compliance with other water quality objectives that have been established for those same metals (e.g. Primary MCLs or constituents with specific objectives listed in this Basin Plan).

The Central Valley Water Board may require unfiltered samples be analyzed concurrently to assess general trends in receiving water quality, implement the state's Antidegradation Policy (Res. No. 68-16), and evaluate potential downstream impacts.

Other Option Considered:

For receiving waters that are not exempt from surface water filtration requirements, compliance with chemical constituents in Table 64449–A shall be based on the techniques in (a) and (b) below.

[73] Filter size recommended in EPA Approved Methods 30 CFR Part 136 for Total Dissolved Solids and Total Suspended Solids and is used for removing suspended solids from a solid prior to analysis. Filtering the sample will remove suspended solids that may contribute to turbidity and color in samples that may negatively impact analytical results for metal concentrations while better representing the dissolved solids that may pass through a water treatment plant's filtration system.

[74] Currently EPA Approved Methods are 200.7 and 200.8 for metals, Method 180.1 for turbidity and SM 2120 F-2011 for color. EPA methods are periodically updated and future approved methods may be applicable.

(a) Compliance with the chemical constituent water quality objective may be determined using tests other than for "total", using variations of filtered samples, where such methods have been analyzed for their appropriateness, for the following constituents identified in Title 22, section 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 Title 22, section 64449 (Table A): Foaming Agents (MBAs), Methyl–tert–Butyl Ether (MTBE), Odor–Threshold and Thiobencarb.

Option: *Compliance with WDRs based on secondary MCLs in Table 64449–A for metals, color, and turbidity and in Table 64449–B for TDS, EC, chloride, sulfate is based only on a non–filtered water sample.*

Option: *Compliance with WDRs based on secondary MCLs in Table 64449–A for metals, color, and turbidity is based only on a filtered water sample.*

Option: *Utilize standard methods for filtered water samples (0.45 micron) until such time that site specific translators can be developed to better represent applicable treatment processes.*

Other Option Considered: *Compliance with secondary MCLs must be achieved at the point of discharge. (This is more restrictive than baseline/existing conditions for surface water discharges, in which the Board has the authority to grant a mixing zone and adopt WDRs with dilution credit where there is assimilative capacity.)*

Other Option Considered: *If concentrations within a water body or groundwater basin reach 80 percent of the secondary MCL at the point of a water supply intake or well, a study will be conducted to evaluate actions to reduce the concentration of the constituent.*

Other Option Considered: *Establish a monitoring program for surface waters to characterize natural background and existing conditions with respect to secondary MCLs where available data is deemed to be insufficient.*

4.2.10.2 Evaluation

SMCLs as Water Quality Objectives

Contextual Language

In the mid-1990s, the Central Valley Water Board modified its Chemical Constituents objective language in the Basin Plan, to incorporate water quality objectives for salinity, by referencing the full range of SMCL drinking water standards identified in Title 22 Table 64449–B. None of the other associated text from §64449, i.e., §64449(d) or (e), explaining how the SMCLs were to be implemented, was incorporated in addition to the tables. For example, 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 Title 22 §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.[75] The unintentional omission of the contextual language was considered a non–substantive drafting error and, from 1994 to 2009, the Central Valley Water 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.[76] Subsequently, in October 2007, the California Sportfishing Protection Alliance (CALSPA) filed a petition with the State Water Board seeking review of the aforementioned permit.

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 water[77] 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,[78] 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 nitrate[79] and electrical conductivity.[80] In the adopted order, the State Water Board noted that the Chemical Constituents narrative water quality objective in the SRSJR Basin Plan[81] 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. 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 Central Valley Water 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 µS/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".[82]

While the focus of the State Water Board decision was on the Sacramento River and San Joaquin River Basin Plan, the Tulare Lake Basin Plan also provides limited additional context for application of the relevant Title 22 § 64449 tables. Consequently, neither of the Basin Plans

[75] Cal. Code Regs., tit. 22, § 64449, subd. (d)(2)

[76] Central Valley Water Board Order No. R5–2007–0113; NPDES No. CA0079243.

[77] See "Recommended" column in Table 64449–B from 22 CCR.

[78] Order WQ 2009–0005 was later amended by Order WQ 2012–0001. The amendments adopted to Order WQ 2009–00005 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.

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

[80] State Water Board Order WQ 2012–0001, p. 23

[81] SRSJR Basin Plan, see Pg. III–3.00 for inland surface waters and Pg. III–10.00 for groundwater (Central Valley Water Board, 2016)

[82] State Water Board Order WQ 2012–0001, p. 15

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:

- When receiving water quality already exceeds a water quality objective, and there is no assimilative capacity available, and discharge limits would ordinarily be set to a concentration at or below the objective contained in the Water Quality Control Plan. Therefore, restricting the TDS objective to only the "Recommended" SMCL value in Table 64449–B could limit the amount of assimilative capacity available and obligate the Central Valley Water 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 µS/cm EC), it is ambiguous as to whether the Central Valley Water Board would 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.[83] Explicitly providing the Central Valley Water Board's 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.

- A groundwater analysis[84] of TDS in Initial Analysis Zones (IAZs) and California Department of Water Resources designated groundwater basins/sub-basins in the Central Valley Region was conducted under the CV-SALTS initiative.[85] This study summarized TDS water quality for the upper zone, lower zone and production zone[86] of each groundwater basin/sub-basin in the valley floor and the basin as a whole for those basins outside the valley floor. Appendix B contains a summary of findings, in particular groundwater basins/sub-basins that exceed 500 mg/L TDS (900 µS/cm EC) or 1,000 mg/L TDS (1,600 µS/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 7 DWR Basins lack assimilative capacity for TDS in the Production Zone, respectively. Lack of assimilative capacity limits ability to authorize discharges containing salt.

- Using the "Recommended" concentration of 500 mg/L TDS (900 µS/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 µS/cm EC). When there is no assimilative capacity available, prior precedential orders by the State Water Board (73–4 & 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

[83] 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.

[84] 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 (Luhdorff & Scalmanini and Larry Walker Associates, 2016a)

[85] California Department of Water Resources. 2003. *California's Groundwater*. DWR Bulletin 118. California Department of Water Resources. http://www.water.ca.gov/ground water/bulletin118/index.cfm. (California Department of Water Resources, 2003)

[86] See Section 3.3.1.1 of the SNMP (CV-SALTS, 2016)

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 considers the "Recommended" TDS concentration of 500 mg/L (900 µS/cm EC) (Title 22 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 would typically anticipate concentrations below the root zone to increase by a factor of 1.6. must start with a TDS concentration no greater than 310 mg/L (560 uS/cm EC) in the irrigation supply water in order to ensure percolation below the root zone does not exceed 500 mg/L (900 µS/cm EC) when it reaches the groundwater table. Similarly, to avoid discharging TDS at concentrations greater than 1,000 mg/L (1,600 µS/cm EC) at the groundwater table, TDS in the irrigation supply water must be less than 625 mg/L (approximately 1000 uS/cm EC).[87] (Ayers & Westcot, 1985)
- Applying the "Recommended" TDS value of 500 mg/L as an annual average value immediately below the root zone at the groundwater table would also discourage 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.

The No Action Alternative would continue the conservative evaluation of the salinity SMCLs while the Alternative to Clarify Use of SMCLs would incorporate the contextual language surrounding use of the ranges of salinity values providing the Board the authority to provide additional flexibility with WDR limits when appropriate. Utilizing 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."*

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 Title 22 §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.[88] This consideration 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

[87] 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.

[88] 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.

is pending as specified in Title 22 §64449(d)(3) or to be consistent with the proposed drought and conservation policy which recognizes additional instances of short term elevated concentrations of salt.

An option to the proposed alternative was to clarify that only the Recommended Values of Table 64449–B be identified as the water quality objectives. The conservative value was proposed in order to support preservation of high quality source waters and reduce potential for cumulative impacts of increasing salinity concentrations. The conservative approach proposed does support such efforts but is inconsistent with the original intent and purpose of the SMCLs in Title 22 and does not fully consider the requirements of the Antidegradation Policy to find maximum benefit to the people of the state before allowing any degradation to a high quality water. More detail is provided below.

- Title 22, section 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….*"[89] Revising the Basin Plans to incorporate the provisions associated with the implementation of Title 22, sections 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 downgradient (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.[90] 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 Regional Water Quality Control Boards have not adopted SMCLs as water quality objectives in their respective Basin Plans.[91] 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 Title 22 Tables 64449–A and 64449–B, along with the associated text in section 64449, are used to inform the process of translating narrative objectives into appropriate WDRs.
- The SMCLs are primarily intended to protect public welfare and consumer acceptance 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

[89] Cal. Code Regs., tit. 22, §64449, subd.(b).

[90] See Wat. Code, §13263, subd. (b)

[91] 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).

to address human health concerns.[92] 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.[93] The current numeric water quality objectives for SMCLs do not adequately account for the influence of these other variables.[94] Revising the Basin Plans will afford the Central Valley Water Board more flexibility to consider all relevant factors that may affect consumer acceptance of these constituents in drinking water where raw water supplies may be influenced by wastewater discharges.

- The Basin Plans establish site–specific water quality objectives for selected water bodies. Incorporation of the full range of "Consumer Acceptance Contaminant Levels," as described in Title 22 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 Title 22 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 ongoing obligation to issue WDRs consistent with the State Antidegradation Policy and Water Code section 13370 provides adequate protection against water quality degradation for the constituents identified in Title 22 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 ensure 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 Title 22, section 64449.

Application of SMCLs When Measuring Compliance

Under the No Action Alternative, the Basin Plan does not clarify consideration of natural background, whether required treatment processes may influence appropriate sample for determining compliance with a SMCL (e.g. filtered or not filtered), or appropriate assessment time periods when determining compliance. The lack of clarification has led

[92] https://www.epa.gov/dwstandardsregulations/secondary–drinking–water–standards–guidance–nuisance–chemicals

[93] 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 (CDM Smith, 2016d)

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

to inconsistencies in application as well as a potential to be over conservative with compliance provisions as follows.

- *Consideration of Natural Background* – Some areas in the Central Valley have natural background TDS or EC or other constituent concentrations that exceed the "Recommended" or higher values in Table 64449–A and/or 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. (See Appendix A for ranges of constituent concentrations in surface and groundwater.)

- *"Specific Treatment Requirements" – Language for Inland Surface Waters* – 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.*"[95] 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. This issue is related to the following regarding appropriate sampling method to measure compliance.

- *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. However, drinking water suppliers collect samples after some filtration of its source water occurs either through natural filtration provided by the soil in groundwater or physical filtration treatment for surface water supplies. Wastewater dischargers collected ambient source water samples that have not been filtered. Per Title 22 and federal regulations,[96] 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 and consumer acceptance 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.[97] For wastewater dischargers to continue to rely on unfiltered samples to assess compliance with SMCLs in the receiving water may overestimate the potential consumer acceptance 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.

[95] SRSJR Basin Plan, page III–3.00, and TLB Basin Plan, page III–3

[96] Federal Register 44, July 19, 1979, page 42199

[97]. https://www.epa.gov/dwstandardsregulations/secondary–drinking–water–standards–guidance–nuisance–chemicals

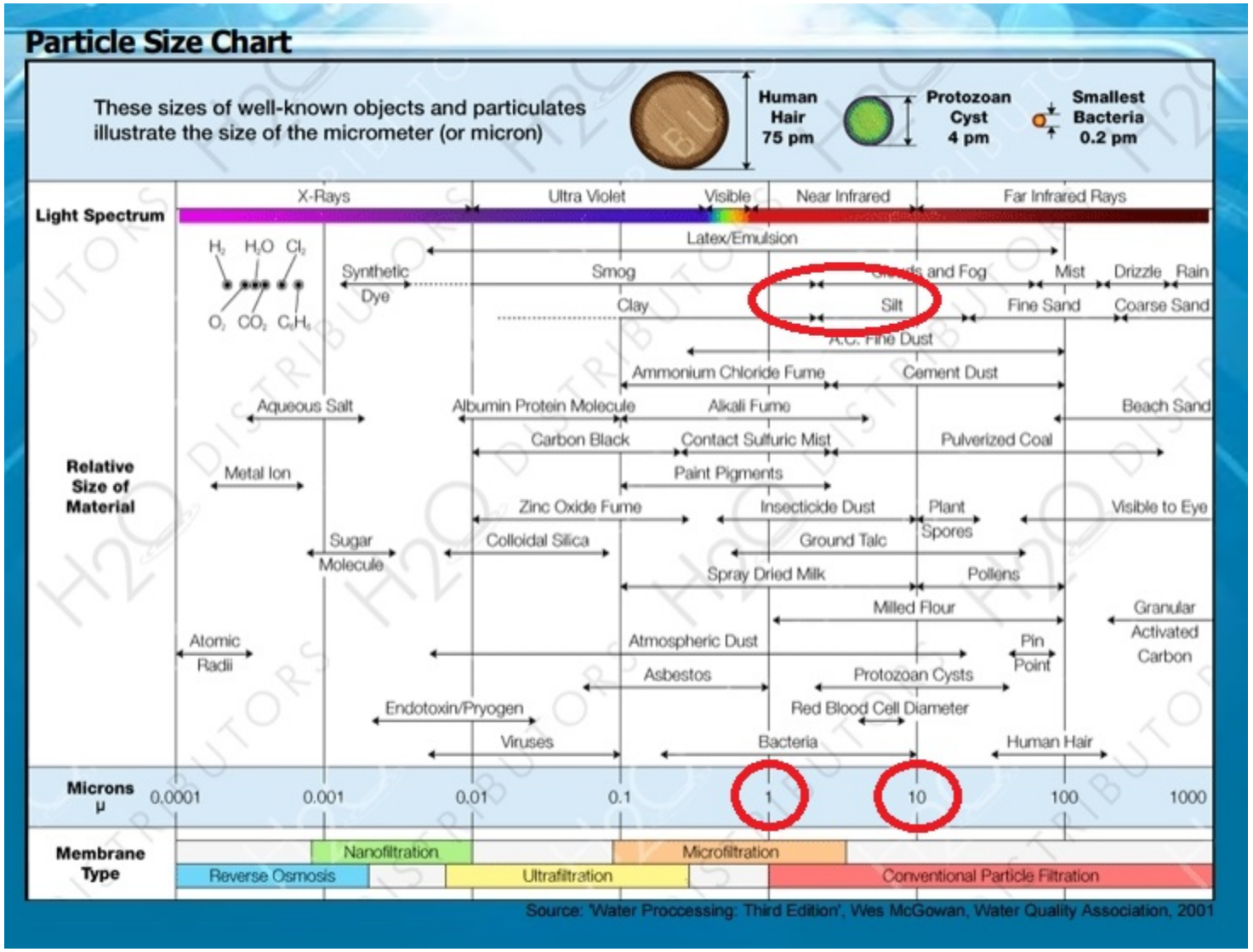
The amount of filtration that source water is subjected to prior to being delivered to the consumer will vary by treatment facility. Figure 4–9summarizes approximate corresponding filter size for various treatment processes. Stakeholders representing water purveyors identified a standard range of 1 to 10 microns for typical treatment processes (McGowan, 2001).

- *Compliance Assessment Time Period* – Per Title 22 §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 single annual sample. If values exceed the SMCLs for constituents in Table 6449–A, then water systems must initiate quarterly monitoring under Title 22 §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. Title 22 §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 Title 22.

The proposed Alternative to Provide Clarification includes recommendations to address each of the noted concerns.

Consideration of Natural Background – The propose Alternative incorporates the statement from the implementation sections of the Basin Plans into both the Water Quality Objectives section specific to utilizing SMCLs as chemical constituents as well as the implementation section specific to application of SMCLs. While duplicative of the original implementation language, incorporating the language does not functionally change the Boards authority or discretion to consider natural background concentrations when developing permit limits. The proposed amendment clarifies 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 Title 22 Table 64449–A or Upper 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 proposed language also 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 Title 22, section 64449, subdivision (d)(3), which may include drought conditions when normal water supplies are not available. Within the implementation section the Recommended levels are noted as desirable and to be considered water quality management goals to encourage meeting the best possible water quality while promoting increased reuse where and when appropriate.

Figure 4 - 9. Range in Particle Size Distribution Under Alternative Filtration Techniques



- *Measuring Compliance with SMCLs* – The proposed amendment addresses the concern that use of a method measuring the total amount of an SMCL present in the source water may be an over conservative measure of the SMCL that would be delivered to the consumer.

  In California, the secondary drinking water standards are enforceable and community water systems are required to assess compliance with SMCLs by monitoring their groundwater sources or monitoring their distribution system entry points following source treatment.[98]

  Groundwater undergoes some natural filtration as that water moves through the vadose zone. USEPA's drinking water regulations require nearly all surface water sources to be filtered.[99] 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 after treatment and prior to analysis, does not have much impact on the reported concentration of Total Recoverable Metals.

  Wastewater samples collected at the point-of-discharge and natural surface water 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.

  Requiring dischargers to use an unfiltered sample or utilizing an unfiltered sample to evaluate whether a source water is meeting water quality objectives based on SMCLs, improperly assumes that the wastewater or natural source waters 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, very few receiving waters are exempt from surface water filtration requirements. Any discharges to receiving waters from water supply systems that have been legally exempted from filtration requirements in the Enhanced Surface Water Treatment Rule, are proposed to have compliance with all SMCLs evaluated using an unfiltered sample.

[98] Title 22 §64449(b)

[99] 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).

The proposed alternative modifies the current Central Valley Water Board staff practice to utilize dissolved measurements of SMCL constituents when determining need for limitations with Waste Discharge Requirements for SMCLs. Dissolved measurements require water samples to be filtered through a 0.45-micron filter prior to analysis[100]. A 0.45-micron filter may not represent the level of filtration utilized by water treatment facilities drawing from the source water (Figure 4–9). Therefore, the proposed alternative establishes the use of filtered samples to measure compliance in wastewater discharges or in source waters. Specifically, the alternative establishes samples to be filtered through a 1.5-micron filter[101] prior to being analyzed for their total fraction utilizing approved EPA analytical methods[102]. Filtering the sample will remove suspended solids that may contribute to turbidity and color in samples that may negatively impact analytical results for metal concentrations while better representing the dissolved solids that may pass through a water treatment plant's filtration system. The proposed amendments allow the Central Valley Water Board to adjust the filter size where necessary to more accurately represent site-specific conditions based on scientific evidence submitted for their consideration and after consultation with Division of Drinking Water and public comment. The proposed amendment also clarifies that these proposed provisions apply solely to evaluate compliance with constituents identified with Secondary Maximum Contaminant Levels. The amendment does not affect or alter the methods used to evaluate compliance with other water quality objectives that have been established for those same constituents (e.g. as Primary MCLs, California Toxics Rule or National Toxic Rule constituents, or constituents with specific objectives listed in this Basin Plan).

One option evaluated was to continue the current practice of evaluating the dissolved fraction of the SMCL constituents using a 0.45–micron filter in accordance with Federal Regulation, 40 CFR Part 136, to determine compliance. This alternative recognized using a total sample is typically over conservative and may not represent the level of filtration utilized by water treatment facilities drawing from surface waters. To address this, this alternative identified the need for the development of translators to convert dissolved objectives to effluent limitations based on total metals for a permittee, and required studies to be conducted within 10 years of the effective date of the amendment to establish appropriate guidance for developing the translators by water body segment, water body or region. The studies were to account for location of existing drinking water treatment facilities, current state and federal drinking water treatment requirements, existing treatment capabilities, and the anticipated change in source water at the drinking water treatment facility.

Several options were identified related to the use of filtered samples to measure compliance in wastewater discharges or in source waters. Options ranged from using only unfiltered samples, to specifically identifying constituents to be filtered or unfiltered, to specifically identifying filter size, to developing studies to determine appropriate filtration techniques based on the treatment processes employed. One specific option was to determine compliance 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

[100] Federal Regulations 40 CFR Part 136, Appendix C, Definitions

[101] Filter size recommended in EPA Approved Methods 30 CFR Part 136 for Total Dissolved Solids and Total Suspended Solids and is used for removing suspended solids from a solid prior to analysis

[102] Currently EPA Approved Methods are 200.7 and 200.8 for metals, Method 180.1 for turbidity and SM 2120 F-2011 for color. EPA methods are periodically updated and future approved methods may be applicable.

agents (MBAs; surfactants), Methyl–tert–butyl ether (MTBE) (gasoline additive), Odor Threshold and Thiobencarb (pesticide) would be determined from a non–filtered sample due to the potential for volatilization or other chemical changes that the filtration process may instigate. None of these constituents, except odor, is an element or quality found in the natural environment.

The primary issues noted with any option was that utilizing a total sample would in most cases be over conservative but that use of standard methods to analyze a dissolved sample would not necessarily represent filtration that occurs in a water treatment plant.

- *Compliance Assessment Time Period* – Language has been proposed for 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 Title 22 §64449(c)(1) as it applies to Table 64449–A. Title 22 §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.

  Longer compliance time periods are identified in the alternative as being appropriate for groundwater. While consumer protection in water supplied is required to be based on annual averages, for the groundwater basin as a whole, it is appropriate to consider the fact that many groundwater wells are screened so that they extract groundwater from multiple aquifer levels that are recharged from different areas over different time intervals. Consistent with Water Code section 13263's requirement to consider the water quality objectives "reasonably required" to protect beneficial uses, a Regional Water Board has some discretion to determine where and how compliance with a water quality objective must be demonstrated. For groundwater aquifers with longer "memory" and varying water quality and recharge conditions, overall protection of beneficial use would need to account for local conditions and allow for longer term averaging periods.

- *Establishing triggers and monitoring requirements.* Options were proposed to incorporate triggers within the implementation section so that if a water supply intake or well reached 80% of the secondary MCL at the point of a water supply intake or well, a study would be conducted to evaluate actions to reduce the concentration of the constituent. This option was proposed in tandem with establishing a monitoring program for surface waters to characterize natural background and existing conditions with respect to SMCLs where available data was deemed to be insufficient.

  The Central Valley Water Board relies upon a variety of measures to obtain surveillance and monitoring information including: data collected by other agencies; coordination with State Water Board efforts; special studies; compliance monitoring and complaint investigations. The Basin Plans state the Board's "… *long-term goal to have a system in place that facilitates consolidation of information gathered from all agencies in a format that can be readily utilized to provide the foundation for regular assessments of ambient surface water quality conditions…"* Part of the information relied upon includes the watershed sanitary surveys required under Title 22, section 64665 et seq. These surveys require an evaluation of changing conditions within watershed providing source water to consumers as related to impacts to drinking water supplies. As part of the case study Basin Plan Amendment to develop a standardized process to evaluate appropriate designation and level of protection of MUN in agriculturally dominated water bodies, amendments to the Surveillance and

Monitoring sections of the Basin Plans were proposed (and adopted through Resolution R5–2017–0088) as follows.

> *". . . As resources permit, Regional Water Board staff will work with other agencies and regional monitoring programs to monitor chemical constituents, pesticides, and radionuclides contained in the Title 22 of the California Code of Regulations approximately every 3 to 5 years in major water bodies identified with existing or potential MUN use including but not limited to the Sacramento River, Feather River, San Joaquin River and Delta. The data gathered will support Watershed Sanitary Surveys (Cal. Code Regs, tit. 22, § 64665 et seq.) as well as the California Integrated Report (Clean Water Act Section 303(d)/305(b)). . . "*

The coordinated and collaborative monitoring proposed under the case study is consistent with the overall long-term goal of the Board to utilize information from all agencies for regular assessments of ambient surface water quality conditions. Information gathered in and recommendations from watershed sanitary surveys are an appropriate component of broad based monitoring efforts. Understanding overall ambient and changing conditions in watersheds would be a critical factor before developing specific numeric triggers to evaluate actions to reduce concentrations on a site by site basis.

- *Option to focus clarifying amendments to SMCLs identified in Table 64449–B and to exclude discussion of SMCLs in Table 64449–A.* Initial public scoping sessions for the development of a Central Valley–wide Salt and Nitrate Management Plan held in 2013, initially identified inconsistencies with application of SMCLs in Table 64449–B (TDS, EC, chloride and sulfate). During the public scoping meetings and during publicly accessible stakeholder meetings under the CV-SALTS initiative, inconsistencies in application of all SMCLs were identified including consideration of natural background conditions, averaging periods and sample type (total vs. dissolved). Limiting proposed clarifications to constituents identified in Table 64449–B would be inefficient and inconsistent with issues identified at the scoping meetings and further public discussions. Consideration of natural background conditions and averaging periods translates clearly to constituents in both tables. Greater variability occurs when clarifying appropriate sampling type as noted in the section above discussing "Measuring Compliance with SMCLs" and use of dissolved or total samples or some other filtration technique for a "non–total" sample. Additional information was collected on background conditions of Table 64449–A constituents and impacts of different filtering techniques on resulting particle size. Proposing clarifications for all SMCLs during this amendment process is efficient and appropriate.

4.2.10.3 Recommendation

Staff recommends the Alternative to Provide Clarifying Language for Use of SMCLs with the following understandings.

- The Basin Plans should be amended to incorporate implementation provisions recognizing the contextual information in Title 22, Division 4, Chapter 15, Article 16, especially §64449 and §64449.2 and clarify consideration of natural background conditions, compliance assessment time period, and sample type – as appropriate to clarify use of SMCLs.

- The proposed changes apply only for the purpose of interpreting and implementing the SMCLs. Some SMCL constituents (e.g., priority pollutants, primary MCLs) have separate water quality objectives intended to protect aquatic life and public health. The proposed

change would not change these other objectives or the manner in which compliance with these objectives is currently assessed.

- The proposed clarifications do not alter any site-specific objectives that have been adopted including but not limited to those that apply in the Sacramento–San Joaquin Delta or the Lower San Joaquin River.

- It is appropriate for dischargers to work collaboratively with Central Valley Water Board staff and water purveyors to better understand natural background conditions, trends and filtration procedures that better represent area treatments systems supplying drinking water. Until translators are identified by water body segment, water body or basin, it is appropriate to utilized dissolved samples when measuring compliance with metals identified in Table 64449–A as well as turbidity and color. Volatile constituents should continue to be analyzed using total methods.

- 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 further describe how the following existing Basin Plan language would be considered when developing WDRs for discharges to inland surface waters: "*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 address concerns expressed related to source water protection, several considerations were identified for use during the development of WDRs. These considerations are listed in Appendix G.

4.3 SUMMARY

Based on information gathered during the CV-SALTS initiate, follow–up stakeholder efforts, CEQA scoping meetings, and Board workshops the following project alternatives for a Central Valley–wide Salt and Nitrate Control Program were developed:

1. No Action
2. Incorporate a Central Valley–wide Salt and Nitrate Control Program with supporting policies and guidance based on alternatives to specific components of the CV-SALTS SNMP (2016) recommendations as developed through further stakeholder discussion and Board workshops.

4.3.1 No Action Alternative

A No Action Alternative is required by CEQA and would result in no amendments to the Basin Plans; rather the Basin Plans would continue to maintain existing regulatory framework to control the discharges of salt and nitrate throughout the Central Valley. Discharges of salinity and nitrate would continue to be regulated on a permit-by-permit basis with a focus on source control to protect beneficial uses within the receiving water body. No groundwater salt and nitrate management plans would be incorporated.

4.3.2 Incorporate a Central Valley–wide Salt and Nitrate Control Program with Supporting Policies and Guidance

This alternative prioritizes management of salt and nitrate to first ensure safe drinking water supplies; then continue and increase ongoing activities to balance salt and nitrate loading; followed by requiring long-term, managed restoration. Several components are included: a phased salt management strategy; a prioritized nitrate permitting strategy that includes authorities for regulation under management zones and means of alternative compliance; a sampling and monitoring plan; a conditional prohibition for salt and nitrate dischargers; a monitoring and surveillance program; recommendations to other agencies; and several supporting policy recommendations (revisions to the Exceptions and Variance Policies; a new Offsets Policy; a new Drought and Conservation Policy; and consideration of use of secondary maximum contaminate levels to protect the MUN beneficial use).

Staff recommends incorporation of a Central Valley–wide Salt and Nitrate Control Program with supporting policies and guidance. Guidance includes use of models and studies developed under the CV-SALTS SNMP (2016) as well as the SNMP itself. Specific guidance is also proposed for the development of Alternative Compliance Projects (Appendix H), Maximum Benefit Determinations (Appendix I), and SMCL considerations when developing permits (Appendix G). Further review under the P&O Study is recommended for the following issues:

- Determination of appropriate compliance point for discharges to groundwater (e.g. effluent; upper zone; defined shallow zone; etc.);
- Determine whether consumption use guidelines are an appropriate compliance measure for future phases of salt management. ;
- Use of Extended Dry Periods in the Sacramento River and Tulare Lake Basins;
- Inclusion of boron as one of the constituents under the policy;
- Use of Offset Credits for long-term management of salt in groundwater basins; and
- Use of offsets for surface water discharge compliance.

The proposed amendments provide the regulatory authority to sustainable manage salt and nitrate within the Central Valley while ensuring safe drinking water supplies and moving toward long-term, managed restoration of groundwater basins, where reasonable, feasible and practicable. The proposed amendments do not remove any existing authorities of the Central Valley Water Board, which may use its discretion whether a discharge needs more prescriptive regulation.

Summaries of the Salt Control Program and the Nitrate Control Program with examples of anticipated activities for different categories of permittees are provided in Appendices I and J, respectively.

5 ANTIDEGRADATION

5.1 ANTIDEGRADATION COMPLIANCE

This section contains an evaluation of the proposed Central Valley Salt and Nitrate Control Program's consistency with the State and federal antidegradation policies. The proposed program consists of a suite of policies and guidance that are intended to achieve the following goals:

- Ensure a Safe Drinking Water Supply;
- Achieve Balanced Salt and Nitrate Loadings, where reasonable and feasible;
- Implement a Managed Aquifer Restoration Program, where reasonable and feasible.

The Basin Plan Amendments that have been developed to implement the program would establish a regulatory framework to achieve long-term improvements in ambient water quality conditions in surface waters and groundwater in the Central Valley. However, achieving the goals will not be immediate; water quality degradation will occur while long-term management practices are being developed and implemented. This antidegradation analysis is a programmatic assessment of this degradation. Subsequent project-level antidegradation analyses will be performed by local agencies or entities that will implement projects under the proposed program.

5.1.1 State Antidegradation Policy

The State Water Board has adopted the Statement of Policy with Respect to Maintaining High Quality Waters, State Water Board Resolution No. 68-16 (State Antidegradation Policy). High-quality waters are those surface waters or areas of groundwater that have a baseline water quality better than required by water quality control plans and policies. The State Antidegradation Policy requires the Central Valley Water Board to issue WDRs that maintain the high quality of those waters unless it finds that any degradation of water quality:

(1) will be consistent with maximum benefit to the people of the state;
(2) will not unreasonably affect present or probable future beneficial uses of such water; and
(3) will not result in water quality less than prescribed in water quality control plans or policies.

In addition, any waste discharge requirements issued by the Central Valley Water Board must require that discharges to high quality waters result in the best practicable treatment or control necessary to ensure that no pollution or nuisance will occur and the highest water quality consistent with the maximum benefit to the people of the State will be maintained.

5.1.2 Federal Antidegradation Policy

The USEPA has established a federal antidegradation policy applicable to water quality programs in 40 CFR section 131.12 (Federal Antidegradation Policy). The Federal Antidegradation Policy states:

(a) The State shall develop and adopt a statewide antidegradation policy and identify the methods for implementing such policy pursuant to this subpart. The antidegradation policy and implementation methods shall, at a minimum, be consistent with the following:

(1) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

(2) Where the quality of the waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

(3) Where high quality waters constitute an Outstanding National Resource Waters, such as waters with exceptional ecological, recreational or environmental assets, that water quality shall be maintained and protected.

(4) In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with section 316 of the Act.

5.1.3 Degradation that May Reasonably Be Expected to Occur After Adoption of the Salt and Nitrate Control Program

Broadly speaking, the Central Valley-wide Salt and Nitrate Control Program will establish a Salt Control Program, a Nitrate Control Program, Guidance for Implementing Secondary Maximum Contaminant Levels, and a several policies that will be incorporated into the Basin Plans to effectuate and implement the Salt and Nitrate Control Program. This section of the staff report evaluates the potential degradation that may occur due to the implementation of the Salt and Nitrate Control Program in the following three areas where water quality degradation is reasonably expected to occur:

- Salinity Degradation that may occur Under the Salt Control Program and its associated policies (Variance Policy, Offsets Policy, and Drought Policy)
- Nitrate Degradation that may occur under the Nitrate Control Program and its associated policies (Exceptions Policy and Offsets Policy)
- Degradation that may occur due to the new implementation provisions for Secondary MCLs

In this evaluation, “short term” is defined as the period prior to implementation of long-term salt or nitrate management actions (on the order of two or more decades). “Long term” is defined as the period after implementation of salt and nitrate actions to address the program goals (on the order of 20 to 50 years).
Because the Basin Plan is not self-implementing, the Board’s adoption of the Salt and Nitrate Control Program would not itself authorize any activities that would cause water quality degradation. The analysis contained herein therefore does not contain a granular analysis of every permittee whose permit may be modified pursuant to the Salt and Nitrate Control Program. Instead, this analysis describes how the implementation of the Salt Control Program would change how the Board permits activities that may cause degradation, and how such

degradation will be required to be consistent with applicable state and federal antidegradation policies.

Lastly, given that it is unusual to find substantial amounts of high quality historical data from the 1970's and 1980's, let alone 1968[103], for many areas in the Central Valley, the findings presented herein are presented as qualitative assessments. In this qualitative evaluation, current water quality conditions in the Central Valley provide a frame of reference.

5.2 SALT CONTROL PROGRAM

The proposed Program for Control and Permitting of Salt Discharges in the Sacramento-San Joaquin River Basins and in the Tulare Lake Basin (Salt Control Program) provides the Central Valley Water Board with the authority to manage salinity in the Central Valley by establishing a structure through which permittees that are contributing to salinity degradation can work collaboratively to control the rate of salinity degradation, achieve long-term sustainability (salt balance), and protect beneficial uses. The Salt Control Program includes three phases:

Phase I – Prioritization and Optimization Study (P&O Study)
Phase II – Project Development and Acquisition of Funds
Phase III – Project Implementation

Phase I of the Salt Control Program will be primarily focused on advancing the P&O Study, a collaborative planning effort designed to include most permittees in the Central Valley, as well as other parties who will benefit from long-term salinity management. The information developed for the P&O Study will be the basis for determining and demonstrating how salinity in the Central Valley will be managed over the short and long-term to meet the applicable management goals.

The key elements of the P&O Study include: identification of the suite of regional and sub-regional projects to be implemented to manage salinity, conceptual design of regional and sub-regional projects, development and implementation of a funding plan and financing strategy for the identified projects, establishment of a governance plan, strategic planning to address regulatory and policy issues, and stakeholder coordination. The P&O Study is intended to set the stage for design and construction of the identified salinity management projects, which may include out-of-valley solutions such as a regulated brine line.

Under Phase I of the Salt Control Program, permittees that discharge salinity will be subject to a "Conservative Salinity Permitting Approach" unless the permittee elects to be regulated under an "Alternative Salinity Permitting Approach."

The main element of the Conservative Salinity Permitting Approach is application of conservative numeric values to implement water quality objectives in Board-issued permits. Under the Conservative Salinity Permitting Approach, when the Board develops permit requirements to protect the AGR beneficial use, it will generally use the numeric value of 700 µS/cm electrical conductivity (EC) (as a monthly average). When the Board applies a Secondary Maximum Contaminant Level (SMCL) for protection of a MUN beneficial use, the Central Valley

[103] If data are available, the State Antidegradation Policy generally defines "baseline" based on the water quality that existed in 1968 (the year that the policy was adopted), minus any degradation that has been legally authorized since then. It should be noted that the consideration of water quality conditions existing in 1968 should be used in project-specific evaluations where ambient data is available to enable such an assessment.

Water Board will generally use the recommended SMCL of 900 µS/cm EC (as an annual average). NPDES Permittees regulated under the Conservative Salinity Permitting Approach are ineligible for variances.

In contrast, the Salt Control Program's Alternative Salinity Permitting Approach gives permittees the opportunity to participate collectively in the P&O Study with other permittees, the Central Valley Water Board, and other stakeholders during Phase I of the Salt Control Program. Instead of the stringent numeric values applied to the discharge, permittees participating in the Alternative Salinity Permitting Approach will be required to participate in P&O Study, implement reasonable salinity management practices, source control efforts, and pollution prevention plans, generally maintain current discharge levels of salinity, and monitor for salinity as required in the associated Surveillance and Monitoring Program (SAMP).

NPDES Permittees participating in the Alternative Salinity Permitting Approach may seek variances consistent with the modified Variance Policy during Phase I of the Salt Control Program (and possibly into later phases). The Salt and Nitrate Control Program also includes an Offsets Policy, which would allow the Board to authorize a type of Alternative Compliance Project where a permittee that is unable to comply with certain permit limitations would instead undertake a beneficial off-site project that would result in a net beneficial effect on receiving water quality. The Salt and Nitrate Control Program would also establish a Drought and Conservation Policy, which would give the Board additional flexibility in establishing permit limitations when permittees are unable to achieve compliance with permit limits due to the effects of a drought or due to increased water conservation.

5.2.1 Degradation that May Occur Under the Salt Control Program and Related Policies

5.2.1.1 Salt Control Program

For NPDES permittees that discharge to surface waters, the Central Valley Water Board generally prescribes water quality based effluent limitations for salinity to protect beneficial uses in the receiving water. For non-NPDES surface water discharges and discharges to groundwater, the Central Valley Water Board currently requires that permittees comply with water quality objectives developed for the protection of beneficial uses in surface waters and/or in the "first-encountered groundwater" underlying their discharge. The Board enforces these requirements through permit limitations and requires monitoring to verify compliance with the Board-imposed requirements. For the MUN use, salinity objectives are in the form of secondary maximum contaminant levels (SMCLs), which are derived from Title 22 of the California Code of Regulations, and consist of a range of salinity concentrations designed to protect the aesthetics, taste, and consumer acceptance of drinking water. For the AGR use, narrative salinity objectives are implemented to protect the growth and yield of salt-sensitive crops.

The proposed Salt Control Program would change how the Board will determine compliance with salinity water quality objectives during Phase I– a time period which is expected to span 10-15 years. During Phase I, the Salt Control Program mandates compliance with one of two permitting pathways. Under the first pathway, the Conservative Salinity Permitting Approach, dischargers will either be held to stringent standards to protect MUN and AGR (700 or 900 EC, respectively), or would be subject to permit terms that would require the discharge to achieve even better quality, if application of BPTC would result in even less degradation. Thus, there will be little to any degradation expected under the Conservative Salinity Permitting Approach. In other words, under the Conservative Salinity Permitting Approach, degradation is expected to

be minimal, because the Board will be imposing stringent limitations as permit terms, and will still be conducting an antidegradation analysis when imposing these permit limitations.

However, permits issued under the second pathway, the Alternative Salinity Permitting Approach, are expected to result in water quality degradation in some areas. Under the Alternative Salinity Permitting Approach, the focus of permittees' efforts will be on maintaining current performance and participating in the P&O study. Studies conducted in conjunction with the development of the SNMP documented the widespread degradation that current salinity management are causing throughout the Central Valley. Because permittees regulated under the Alternative Salinity Permitting Approach would be held to permit requirements largely based on current performance levels, degradation would be expected to continue at current levels for these permittees during Phase I of the proposed Salt Control Program. However, the Salt Control Program is nonetheless consistent with the State Antidegradation Policy because the degradation that could be authorized by the Board during Phase I is limited to the extent practicable, and the long-term strategy is expected to result in significant water quality improvements over subsequent phases of the program. The Salt Control Program is consistent with the federal Antidegradation Policy because it preserves existing instream water uses and the level of water quality necessary to protect these existing uses, even considering degradation expected during Phase I.

5.2.1.2 Variance Policy – Salinity Degradation

The Central Valley Water Board adopted amendments to the Basin Plans to incorporate a salinity variance program in 2014 (Salinity Variance Program). The Salinity Variance Program is a multiple-surface-water-permittee variance program that is applicable to publicly owned treatment works (POTWs) that have a situation comparable to the three case study cities included in the Central Valley Water Board's supporting documentation for the 2014 basin plan amendments.[104] The existing Salinity Variance Program applies to the following parameters: EC, TDS, chloride, sulfate and sodium. The Salinity Variance Program allows POTWs to obtain a variance from water quality objectives that would otherwise require compliance with water quality based effluent limitations that they are unable to meet.

The proposed revisions to the Salinity Variance Program would enhance the Central Valley Water Board's authority to issue salinity variances; while the existing Salinity Variance Program prohibits the Central Valley Water Board from approving any salinity variance after June 30, 2019, the proposed revisions would extend this date to 15 years after the effective date of the Salt Control Program. In addition, the proposed Salinity Variance Revisions would extend application of the existing Salinity Variance Program to include salinity water quality objectives related to the MUN beneficial use in addition to the AGR beneficial use. However, degradation that could occur as an indirect result of these revisions is expected to be limited because the revisions to the Salinity Variance Program will establish requirements that must be met for the Central Valley Water Board to approve variances. For example, the proposed Salinity Variance Revisions will require that POTWs prepare a Salinity Reduction Study Work Plan, implement salinity reduction/elimination measures, participate in a P&O Study as Phase I of a Salt Control Program, and otherwise contribute to the development and implementation of the phased Salt Control Program for the Central Valley.

[104] [Permittees that are not a significant source of salinity, and can't do much to reduce salinity except going to R/O, which would be a costly waste of resources.]

5.2.1.3 Offsets Policy

The Offsets Policy would allow the Central Valley Water Board to approve projects whose aggregate net effect on receiving water quality is functionally equivalent to or better than that which would have occurred by requiring a discharger to comply with its permit at the point of discharge. Permittees with an approved offset would perform the Board-approved offset project which, in combination with the existing discharge, would result in a project deemed to be equal to, or better than, the results obtained through application of the current approach. For salinity, offsets are critical to the establishment of out-of-valley salinity solutions and salt sinks.

Offset projects, by their very nature, will result in localized degradation. However, the conditions placed upon any Board-approved offset, in combination with the implementation placed on the project itself, are expected to result in degradation that will be consistent with the state and federal antidegradation policies as described below. These include conditions requiring that offsets projects be enforceable through permit terms, not result in unmitigated localized impairments, and include a monitoring and reporting program sufficient to verify that projected pollution reduction credits are actually realized.

5.2.1.4 Drought and Conservation Policy

The proposed Drought and Water Conservation Policy (Drought & Conservation Policy) would augment the Board's authority to establish permit limits designed to account for the effects of drought where discharges are impacted by either inferior water supplies (due to a switch from surface water to groundwater supplies) or by water conservation measures. Specifically, under the proposed Drought & Conservation Policy, the Board could establish permit limits based on a long-term flow-weighted average to determination of compliance with salinity water quality objectives in groundwater. This approach would account for the effects of natural precipitation and stormwater recharge, and could also account for times when discharge quality is substantially better than required to meet permit limits. The Drought & Conservation Policy could also authorize the use of offset projects (consistent with the Offsets Policy) to demonstrate compliance with permit limits for salinity through the use a "banking" system where the quality of discharges during drought and non-drought years would be taken into account over a long planning horizon (i.e. at least 20 years).

Little degradation is expected to occur due to the establishment of the Drought & Conservation Policy, because the practices regulated by the new policy provisions have been ongoing in the Central Valley for decades. Droughts are nothing new, and communities and growers have regularly been forced to utilize additional groundwater supplies in times of surface water scarcity. Further, water conservation practices, though they may result in increases in salinity concentrations, do not generally result in significant new loading. One of the policy priorities of both the Central Valley Water Board and the State Water Board is to increase drought resiliency statewide. The resiliency authorized through the Drought & Conservation Policy is consistent with this policy priority and with the state and federal antidegradation polices as discussed below.

5.2.2 Consistency with the State Antidegradation Policy

The Salt Control Program anticipates that the Central Valley Water Board will revise WDRs, conditional waivers, and NPDES permits to incorporate salinity requirements, which may allow for degradation in the short-term. When approving such WDRs, conditional waivers and NPDES permits, the Board must find that degradation authorized by the permit is consistent with the maximum benefit to the people of the state, that the degradation will not unreasonably affect

present or probable beneficial uses, that the degradation will not result in water quality less than prescribed in applicable water quality control plans or policies, and that the permittee(s) will employ treatment or control methods that will result in "best practicable treatment or control" of the wastes in their discharges. In addition, in order for the Board to authorize degradation when issuing permits to permittees regulated under the Conservative Salinity Permitting Approach, the Board must specifically find that allowing a permittee to degrade high-quality water better serves the people of the state rather than their participation in the P&O Study.

The Salt Control Program will not eliminate the need for the Central Valley Water Board to conduct hearings and make findings regarding whether or not WDRs, conditional waivers, and NPDES permits adopted under the Salt Control Program will ensure that all of the conditions of the State Antidegradation Policy are satisfied before the discharge is authorized. The following subsections describe the considerations that will go into the Board's evaluation of any degradation authorized under the Salt Control Program.

5.2.2.1 Degradation authorized under the Salt Control Program will be Consistent with Maximum Benefit to the People of the State

Elevated salt concentrations in portions of the Central Valley impair, or threaten to impair, the region's water and soil quality. If left unaddressed, ongoing salt accumulation will have dire consequences on agricultural productivity. Expansive areas of groundwater basins already contain concentrations in excess of levels known to impact beneficial uses. Studies documenting potential restoration alternatives indicate that current technologies are expensive and will take decades to implement. These studies demonstrate that the volume and mass of unmanaged salt will remain high, even under scenarios where existing salt management tools are widely adopted. Therefore, a comprehensive solution to the salinity issues in the Central Valley will need to rely on both local and sub-regional solutions as well as broad region-wide projects that will export salt out of the Central Valley.

The Salt Control Program is designed to allow short-term degradation while comprehensive basin-wide salinity management strategies are developed and implemented. Authorizing such degradation would grant permittees the latitude to develop long-term implementation plans that are both cost-effective and that prioritize compliance alternatives that will have a greater net regional and/or sub-regional effect on salinity reduction. Though these measures will ultimately require that permittees and other parties make substantial and meaningful investments in salinity reduction strategies and control measures, granting extended compliance timelines helps ensure that regulatory measures do not unreasonably affect the economic vitality of the Central Valley's communities by allowing productive agricultural activities to continue, cities and municipalities to grow, water deliveries to continue, and industries to thrive while these stakeholders collectively pursue a basin-wide salt management strategy. For these reasons, the Salt Control Program, and the degradation that may be authorized thereunder, is consistent with the maximum benefit of the people of the State.

5.2.2.2 Degradation under the Salt Control Program will not unreasonably affect present or probable future beneficial uses of such water

For the MUN beneficial use, salinity degradation can impact consumer acceptance of the water. For the AGR beneficial use, salinity can impact the yield for salt sensitive crops. Aquatic life beneficial uses also depend on certain salinity concentrations, though those concentrations are

generally higher than those necessary to impact the MUN and AGR beneficial uses[105]. The Salt Control Program seeks to ensure the long-term protection of these beneficial uses in the Central Valley by establishing a long-term strategy to avoid salt accumulation in the Central Valley's soils and groundwater that could ultimately result in vast swaths of the valley becoming unusable for traditional agriculture and that could place severe restrictions on the growth of communities and industry.

The Central Valley Water Board recognizes that, by authorizing discharges that do not meet the most protective salinity standards while long-term strategies are developed, degradation will occur. However, all elements of the Salt Control Program are designed to restrict degradation such that beneficial uses will be preserved in the long-term. For permittees regulated under the Conservative Salinity Permitting Approach, which are only those dischargers that can meet the 700/900 EC thresholds, additional degradation would be limited because the Board will still require permittees to achieve even better quality, if practicable means of reducing degradation are available. For those permittees participating in the Alternative Salinity Permitting Approach, the following conditions limit the effect that degradation may have on present and probable future beneficial uses:

- Permittees must implement salinity management practices and/or source control efforts;
- Permittees must implement pollution prevention plans, watershed plans, and/or salt reduction plans;
- Permittees must monitor of salinity in surface waters and groundwater as part of existing monitoring programs, or through regional monitoring programs, which will be coordinated under the associated Surveillance and Monitoring Program (SAMP); and
- Permittees will be required to maintain current discharge levels of salinity to the extent feasible, reasonable and practicable.

Variances, which would apply when a NPDES Permittee cannot meet thresholds reasonably protective of beneficial uses, have even more stringent requirements that would limit the amount and duration of any degradation that could occur as a result of the Board's approval of the variance. Likewise, offsets for salinity, though they would authorize spatially-limited degradation, would still result in a positive net effect on water quality and are subject to a host of conditions to ensure that offset credits are actually being generated and that credits are adequate to offset discharge loads. Lastly, the Drought and Conservation Policy will allow degradation during droughts, when the overarching concern is not the salinity of the water source, but the availability of water, which is largely outside the control of the discharger. Even so, the main elements of the Drought and Conservation Policy are not expected to result in significant detriments to beneficial uses – the drought elements primarily allow the Board to consider long-term averaging periods without authorizing significant load increases, and water conservation, though it may result in concentration increases, is not expected to result in increased salt loading.

In limited cases, the Central Valley Water Board may need to evaluate the need to alter beneficial uses. However, such a consideration is a last resort, and only after it has been demonstrated that attainment of objectives not reasonably achievable. Otherwise, all salinity management strategies need to include long-term implementation plans for protecting beneficial uses.

[105] In limited cases, spawning sturgeon in specific water bodies during certain seasons may require salinity concentrations lower than those that would be protective of the MUN and AGR beneficial uses. Permit limitations will require the protection of such species on a case-by-case basis.

5.2.2.3 Degradation under the Salt Control Program will not result in water quality less than prescribed in other applicable water quality control plans or policies

The State Antidegradation Policy requires that degradation authorized by the Central Valley Water Board not result in water quality less than prescribed in applicable water quality control plans or policies. As a program that will be implemented through amendments to the Central Valley Water Board's water quality control plans, degradation authorized under the Salt Control Program will be consistent with the water quality control plan. Consistency with other policies is analyzed in section 6.0 of this Staff Report.

5.2.2.4 Degradation under the Salt Control Program will be limited by the requirement that discharges to high-quality waters implement BPTC

Both of the Salt Control Program's permitting pathways would require the implementation of BPTC by dischargers regulated under Board-issued permits. As described above, permittees regulated under the Conservative Salinity Permitting Approach would either be subject to stringent 700/900 EC thresholds or permit limits that require even better quality, if practicable means of reducing degradation beyond those thresholds may be feasibly implemented by the permittee.

The Alternative Salinity Permitting Approach differs from the Board's current permitting approach in that it would allow the Board to consider the "practicability" of the actions of permittees in the context of their participation in the long-term salinity management efforts through support of the P&O Study, in setting permit requirements. Under the current permitting approach, the practicability of individual treatment or control methodologies is examined on a case-by-case basis, with focus on either the shallow zone of the groundwater aquifer or the surface water in the immediate vicinity of a discharge. In other words, if the Board was considering waste discharge requirements for multiple individual facilities on a permit-by-permit basis, it would need to evaluate whether each individual facility was implementing pollution or control methods that were "best practicable treatment or control" based on the financial and technical capacities of each of the facilities on its own. Under the traditional permitting approach, if the facilities found that it might be practicable for them to participate in a larger regional or sub-regional effort to control salinity that would reduce pollutant loadings to a greater degree in the long term than each could individually afford on their own, there would still be some ambiguity as to whether the Board could consider this alternative the "best practicable treatment or control" alternative.

However, under the Alternative Salinity Permitting Approach, the Board would be afforded the ability to take a broader view of practicability on the scale of the Central Valley. This broader view is critical to basin-wide management, where studies commissioned by CV-SALTS have conclusively demonstrated that individual actions cannot reasonably be expected to achieve long-term salinity balance in the Central Valley basin, which is necessary to preserve beneficial uses well into the future. This does not mean that BPTC is jettisoned under the Alternative Salinity Permitting Approach. Rather, the Salt Control Program allows the Board to take the position that a significant portion of the resources available to a discharger (these resources, of course, define what is considered "practicable") are better expended on regional solutions rather than on site-specific treatment or control methodologies. Furthermore, the Board would still be expected to evaluate whether the regional treatment or control methodologies proposed by the P&O Study should be considered "BPTC" in the latter phases of the Salt Control Program.

5.2.3 Consistency with the Federal Antidegradation Policy

Consistent with the provisions of the Federal Antidegradation Policy, which is applicable to the regulation of discharges to navigable surface waters of the United States, the following additional requirements are applicable to the proposed Salt Control Program:

(1) Existing in-stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

(2) Where the quality of the waters exceeds levels necessary to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

5.2.3.1 Ensuring that existing in-stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected

The proposed Salt Control Program elements are only intended to be applicable to salinity water quality objectives associated with the MUN and AGR beneficial uses. Neither of these uses is considered to be an in-stream beneficial use.

Regardless, the implementation of the proposed Salinity Variance Revisions will ensure reasonable protection of all beneficial uses in the long-term. The provisions of the proposed Salinity Variance Revisions are designed to ensure that, regardless of whether surface waters are considered high-quality or not, beneficial uses will be protected through implementation of the Salt Control Program. Furthermore, as described above, the Salinity Variance Revisions will ensure that any change to high quality waters authorized by the Board pursuant to any NPDES permit issued following the adoption of the Salinity Variance Revisions will not unreasonably affect present and anticipated beneficial uses of such water or cause water quality less than water quality objectives in the long-term because any permittee receiving a salinity variance will be required to participate in the implementation of the Salt Control Program.

5.2.3.2 Ensuring that, where the quality of the waters exceeds levels necessary to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located

In the case studies for the existing Salinity Variance Program, demonstration was made that a lowering of water quality was necessary to accommodate important economic or social development in the communities in question. The proposed Salinity Variance Revisions require a detailed explanation by the applicant describing why the applicant's situation is similar to the three POTW case studies previously considered in the adoption of the existing Salinity Variance Program. The Central Valley Water Board must evaluate the information provided by the

applicant for a salinity variance and render a finding, through a public hearing process, that a lowering of water quality is necessary in its approval of a salinity variance in an NPDES permit.

5.2.3.3 Ensuring that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control

The proposed Salinity Variance Revisions require that a salinity variance must be authorized by the Central Valley Water Board in relatively the same manner as set forth in the current Salinity Variance Program. That approach requires the applicant for a salinity variance to provide the following information which is pertinent to a showing that the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control shall be achieved:

- A description of the salinity reduction/elimination measures that have been undertaken as of the application date;
- A Salinity Reduction Study Work Plan;
- An explanation of the basis for concluding that there are no readily available or cost-effective methodologies available to consistently attain the WQBELs for the salinity constituent(s) in question;
- A detailed discussion explaining why the applicant's situation is similar to the three POTW case studies examined in the adoption process for the Salinity Variance Program;
- A detailed discussion of proposed interim discharge limitations that represents the highest level of treatment and control that the applicant can consistently achieve during the term of the variance;
- Documentation of the applicant's active participation in the P&O Study; and
- A detailed plan of how the applicant will continue to participate in P&O Study and how the applicant will contribute to the development and implementation of the P&O Study.

Fulfillment of the above responsibilities pertaining to salinity reduction/elimination measures, ongoing salinity reduction activities, demonstration that there are no readily available or cost-effective methodologies to consistently attain WQBELs and a description of the highest level of treatment and control that can be attained demonstrate that the highest statutory and regulatory requirements have been achieved.

5.3 NITRATE CONTROL PROGRAM

5.3.1The Nitrate Control Program

The nitrate water quality objective of 10 mg/L correlates to the primary drinking water maximum contaminant level (MCL), which is designed to protect the beneficial use most sensitive to nitrate impacts, the MUN beneficial use. For discharges that may affect the quality of groundwater, the Board currently requires that permittees, at a minimum, comply with a water quality objective of 10 mg/L in the uppermost surface of saturated subsurface materials (i.e., "first-encountered groundwater"). Compliance with the water quality objective may currently be enforced through the adoption of a variety of permit terms that limit discharges from causing or contributing to a violation of the water quality objective.

However, despite significant advances in wastewater treatment technology, widespread adoption of agricultural practices that reduce nitrogen inputs, and increasing efforts to refine

management practices at concentrated animal facilities, many permittees are unable to consistently meet permit limits designed to protect the MUN beneficial use in groundwater.[106] This has resulted in widespread nitrate pollution in the Central Valley's aquifers. The Nitrate Control Program represents a significant departure from the Central Valley Water Board's existing inadequate permitting approach, with the goal of arresting and rectifying nitrate pollution where it is reasonably feasible to do so. Although additional degradation will occur while the Nitrate Control Program strategies are developed and implemented, impacts due to this degradation will be mitigated through programs designed to provide drinking water to individuals and communities whose wells have been rendered unusable because of nitrate pollution.

Similar to the Salt Control Program, the Nitrate Control Program allows permittees to choose from one of two different permitting pathways: Path A, an individual permitting approach, and Path B, an approach that involves participation in a Groundwater Management Zone. Under Path A, the permitting approach and Board-imposed requirements will vary depending on which of five categories is applicable to the discharge in question, as follows:

[106] Surface water impairments due to nitrate are not recognized as a significant problem in the Central Valley. Thus, the Nitrate Control Program only alters the Board's approach to regulating discharges of nitrogen to groundwater.

Table 5 - 1. Categories of Discharge Quality and Impact to Groundwater

Category	Discharge Quality and Impact to Groundwater
Category 1 No Degradation	Discharge quality, as it reaches the Shallow Zone[107], is better than the applicable water quality objective and is better than the average nitrate concentration in the Shallow Zone.
Category 2 *De Minimis* Impacts	The average nitrate concentration in the Shallow Zone is better than the applicable water quality objective, and, over a 20-year planning horizon: • The effect of the discharge on the average nitrate concentration in the Shallow Zone is expected to use less than 10% of the available assimilative capacity in the Shallow Zone; and • The discharge, in combination with other nitrate inputs to the Shallow Zone, is not expected to cause average nitrate concentrations in the Shallow Zone to exceed a nitrate trigger of 75% of the applicable water quality objective.
Category 3 Degradation Below Trigger	The average nitrate concentration in the Shallow Zone is better than the applicable water quality objective. Estimated that discharge is more than *de minimis*, but will not cause the average nitrate concentration in the Shallow Zone to exceed a trigger of 75% of the applicable water quality objective over a 20-year planning horizon.
Category 4 Degradation Above Trigger	The average nitrate concentration in the Shallow Zone is better than the water quality objective. Though the discharge is reasonably expected to cause the average nitrate concentration in the Shallow Zone to exceed a trigger of 75% of the applicable water quality objective over a 20-year planning horizon, the average nitrate concentration in the Shallow Zone is expected to remain at or below the applicable water quality objective over the same 20-year planning horizon.
Category 5 Discharge Above Objective	Either: • The average nitrate concentration in the Shallow Zone is better than the applicable water quality objective, but the discharge may cause the average nitrate concentration in the Shallow Zone to exceed the water quality objective over a 20-year planning horizon; or, • The average nitrate concentration in the Shallow Zone exceeds the applicable water quality objective and the discharge quality, as it reaches the Shallow Zone, also exceeds the applicable water quality objective.

The Path B permitting approach, on the other hand, is for permittees that decide to meet nitrate requirements of the SNMP by participating in a Groundwater Management Zone. Under Path B, permittees must define areas of the aquifer that have been adversely impacted by their nitrate discharges and must develop plans to address impairments in these areas (Implementation Plans). Implementation Plans must establish a governance structure for participating permittees, ensure that the needs of individuals and communities that depend on the aquifer as their source of drinking water are met, propose Alternative Compliance Projects, where necessary, and, where feasible, balance nitrate inputs and implement long-term projects to rectify groundwater impairments. When evaluating available assimilative capacity for the portion of the aquifer addressed by an Implementation Plan, the Board may look at volume-weighted nitrate

[107] For the purposes of this Table, the "Shallow Zone" is the portion of the aquifer whose areal extent is defined by the boundaries of the discharge area and whose vertical extent is defined by the depth of the shallowest 10% of the domestic water supply wells near the discharge or an equivalent alternative.

concentrations in the upper zone. Assimilative capacity, if it exists, would be defined as the additional nitrate loading that could occur up until the volume-weighted average of nitrate concentrations measured in the upper zone reach the water quality objective. If assimilative capacity is nonexistent, the Board may authorize an Exception that meets the requirements as set forth in the Exceptions Policy. The Implementation Plan, once approved by the Board, would become enforceable through the Board's reissuance or modification of waste discharge requirements.

Permittees regulated under Path A whose discharges will result in the degradation of high-quality waters (certain permittees regulated under Categories 3, 4, and 5) will be required to conduct a antidegradation analysis in connection with their permit application. Permittees that have developed an Implementation Plan that relies on the Board granting available assimilative capacity where the volume-weighted average of water within the upper aquifer exceeds 75% of the nitrate MCL, would need to conduct a comprehensive antidegradation analysis that must include demonstration that "there is sufficient assimilative capacity to ensure that the proposed discharge, together with discharges from participants to the same management zone, including discharges to recharge projects, will not cause the volume-weighted average water quality in the appropriate zone underlying the management zone to exceed the applicable Basin Plan objective(s)."

Under the process described in the proposed Nitrate Control Program, permittees applying for allocation of assimilative capacity that would exceed 75% of the volume-weighted average nitrate MCL would be responsible for explaining/justifying why the assimilative capacity is necessary, state why the permittee is unable to consistently comply with existing effluent limitations or groundwater quality objectives, define areas of the aquifer that have been adversely impacted by nitrate discharges, develop plans to address impairments in these areas, and require permittees to ensure availability of an adequate supply of safe, reliable and affordable drinking water for any persons within the zone of contribution as a condition for authorizing use of the limited assimilative capacity for nitrate. Permittees must also make reasonable efforts to reduce or maintain their nitrogen loading to the greatest extent practicable for the duration of their permit.

5.3.1.1 Modified Exceptions Policy

The Basin Plans currently have an Exception Policy that applies to salts. In addition to eliminating the sunset provision for salts, the proposed revisions to the Exceptions Policy would establish a process by which participating permittees could apply for and implement an exception to otherwise-applicable nitrate limits. The exception may apply to the issuance of effluent limitations and/or groundwater limitations, and thus degradation is likely to occur in many circumstances when the Board grants an exception under the modified Exceptions Policy.

Under the process described in the proposed revisions to the Exception Policy, permittees applying for an exception would be responsible for explaining/justifying why the exception is necessary, state why the permittee is unable to consistently comply with existing effluent limitations or groundwater quality objectives, define areas of the aquifer that have been adversely impacted by nitrate discharges, develop plans to address impairments in these areas, and require permittees to ensure availability of an adequate supply of safe, reliable and affordable drinking water as a condition for authorizing an exception for nitrate. Permittees must also make reasonable efforts to reduce or maintain their nitrogen loading to the greatest extent practicable for the duration of the exception.

The specific nature of these efforts will be identified at the time the exception is authorized in a Board-issued permit or set of permits. Furthermore, as a condition of reauthorizing/renewing an exception, the Board will require permittees to reassess their management practices and survey available treatment technologies to determine if feasible, practicable and reasonable compliance options have become available that were not available at the time of the previous exception approval.

5.3.1.2 Offsets Policy

The Offsets Policy would allow the Central Valley Water Board to approve projects whose aggregate net effect on receiving water quality is functionally equivalent to or better than that which would have occurred by requiring a discharger to comply with its permit at the point of discharge. Instead of determining compliance with applicable water quality objectives in first encountered groundwater in the direct vicinity of the discharge, permittees with an approved offset would perform the Board-approved offset project which, in combination with the existing discharge, would result in a project deemed to be equal to, or better than, the results obtained through application of the current approach. For nitrates, the two most critical limitations placed on offsets is that they do not result in any adverse impacts to local water users and that the overall net effect of the offset is greater than that which would have been realized under permit compliance alone.

Offset projects, by their very nature, will result in localized degradation. However, the conditions placed upon any Board-approved offset, in combination with the implementation placed on the project itself, are expected to result in degradation that will be consistent with the state and federal antidegradation policies as described below. These include conditions requiring that offsets projects be enforceable through permit terms, consistent with any local plans to manage nitrate in the same area, not result in unmitigated localized impairments, and include a monitoring and reporting program sufficient to verify that projected pollution reduction credits are actually realized.

Cross-pollutant pollutant trading, which would have an unknown effect on nitrate water quality degradation, is a concept that was discussed but ultimately not included in the proposed Nitrate Control Program. Offsets projects for nitrates that would mitigate local impacts through projects in far-off basins are likewise not authorized under the proposed Offsets Policy. Lastly, though a drinking water mitigation fund may be considered as an element of an offset proposal to address nitrates, simply paying into a drinking water mitigation is not sufficient to be considered an “offset”; such a proposal must be accompanied by meaningful efforts to reduce nitrate loading.

5.3.2 Consistency with the State Antidegradation Policy

The Nitrate Control Program anticipates that the Central Valley Water Board will revise many permits to incorporate new nitrate requirements based off of a prioritization strategy outlined in Section 4.0. The Nitrate Control Program recognizes that numerous permitting options, both under Path A and Path B, will allow additional nitrate degradation to occur over the short-term. When approving such permits, the Board must find that degradation authorized by the permit is consistent with the maximum benefit to the people of the state, that the degradation will not unreasonably affect present or probable beneficial uses, that the degradation will not result in water quality less than prescribed in applicable water quality control plans or policies, and that the permittee(s) employ treatment or control methods that will result in “best practicable treatment or control” of the wastes in their discharges.

Permits issued by the Board under the Nitrate Control Program will be issued after noticed hearings, and the Board must make findings regarding whether or not permits adopted under the Nitrate Control Program will ensure that all of the conditions of the State Antidegradation Policy are satisfied before the discharge is authorized. The following subsections describe the considerations that will go into the Board's evaluation of any degradation authorized under the Nitrate Control Program.

5.3.2.1 Degradation under the Nitrate Control Program Will Be Consistent with Maximum Benefit to the People of the State

The Nitrate Control Program has been designed to address decades of nitrate impacts that have impaired drinking water sources in many areas of the Central Valley. Under the Nitrate Permitting Strategy, the Board could authorize permittee-proposed projects (including Alternative Compliance Projects) and implementation plans, provided that they would ultimately result in nitrogen balance and aquifer restoration, where reasonable and feasible. However, the proposed Nitrate Control Program would allow the Board to allow nitrate impairments to persist for years, if not decades, in order to prioritize projects that must ultimately result in nitrate load reductions.

This degradation would nonetheless would be consistent with the maximum benefit to the people of the state because, as a condition of the Board's approval of permits to implement the Nitrate Control Program, permittees, either individually or as participants in a Management Zone, must provide alternate water supplies for nitrate-affected individuals and communities while long-term strategies are being implemented. In addition, even before the Central Water Board would approve updated permits or Implementation Plans, permittees electing to participate individually or collaboratively through a management zone must develop Early Action Plans to address immediate drinking water needs for those that rely on groundwater within the zone of contribution of an individual's discharge or within the tentative management zone boundary. Further, implementation measures must include meaningful participation from the communities who are affected by ongoing and legacy nitrogen impairments from the individual discharge or within the boundaries of a Management Zone.

The Nitrate Control Program will require that permittees make substantial and meaningful investments in nitrate reduction strategies and control measures, and granting extended compliance timelines to implement these strategies and control measures helps ensure that regulatory measures do not unreasonably affect the economic vitality of the Central Valley's communities. Because the Nitrate Control Program both addresses the economic well-being of permittees in the Central Valley and mandates that the Board require that Implementation Plans ensure that all affected users will be provided a safe drinking water supply, the degradation that the Board may authorize pursuant to the Nitrate Control Program and the policies designed to effectuate that program is expected to be consistent with the maximum benefit of the people.

5.3.2.2 Degradation that May Occur under the Nitrate Control Program, Including Related Policies, will not unreasonably affect present or probable future beneficial uses of such water

The Nitrate Control Program was designed to meet the SNMP goals of achieving nitrate balance within the affected aquifers and restoring water quality within those aquifers, where restoration is reasonable and feasible, which helps ensure that the Nitrate Control Program does not unreasonably affect existing and probable future beneficial uses. Regardless of whether a permittee is being regulated under Path A or Path B, the first requirement imposed by the

Nitrate Control Program (after a permittee in a prioritized basin receives a Notice to Comply or plans on making a material change to their discharge that increases nitrate in the discharge and subjects them to the Nitrate Control Program) will be for the permittee to conduct an initial assessment of groundwater conditions and to characterize nitrate conditions in their discharge. This assessment and characterization then forms the basis for demonstrating how nitrate in the affected groundwater basin will be managed over the short and long-term to ensure the protection of beneficial uses.

The Nitrate Control Program differentiates between those individual dischargers that threaten to degrade groundwater in a significant manner or that are projected to occur in a heavily-impacted area (Categories 4 and 5) from those that don't threaten to cause degradation that would potentially impair beneficial uses (Categories 1, 2 and 3). For those dischargers that represent a negligible threat of degradation, the Nitrate Control Program sets a margin of safety by establishing triggers at 75% of the objective, further ensuring that present or probable future beneficial uses will be protected.

Permittees that are required to implement Alternative Compliance Projects under Path A (i.e., permittees that fall under Categories 4 and 5) and permittees that have developed Management Zone Implementation Plans under Path B are required to protect beneficial uses through the development of long-term plans to achieve the goals of the SNMP. For example, a minimum requirement of a management zone implementation plan is identification of short (≤ 20 years) and long-term (≥ 20 years) projects and/or planning activities that will be implemented within the management zone, and in particular within prioritized areas (if such areas are identified in the implementation plan), to make progress towards aquifer restoration such that present or probable future beneficial uses are protected. Following the long-term implementation of the Nitrate Control Program, groundwater throughout Management Zones that have been established throughout the priority basis and groundwater in areas where Alternate Compliance Projects have been authorized is expected to meet the drinking water MCL or the highest quality water technically and economically achievable. In this way, the Nitrate Control Program protects present or probable future beneficial uses to the maximum extent practicable.
In cases where nitrate balance and/or restoration is not reasonable or feasible, the Central Valley Water Board may need to evaluate the need to alter beneficial uses. However, such a consideration is a last resort, and only after it has been demonstrated that restoration of the basin in question to meet water quality objectives is in fact not reasonable or feasible.

5.3.2.3 Degradation that may occur under the Nitrate Control Program, including related policies, will not result in water quality less than prescribed in other applicable water quality control plans or policies

The State Antidegradation Policy requires that degradation authorized by the Central Valley Water Board not result in water quality less than prescribed in applicable water quality control plans or policies. As a program that will be implemented through amendments to the Central Valley Water Board's water quality control plans, degradation authorized under the Nitrate Control Program will be consistent with the water quality control plan. Consistency with other policies is analyzed in section 6.0 of this Staff Report.

Even absent the new provisions of the Nitrate Control Program, the Board is authorized to allow permittees time to rectify management practices that are insufficient to result in compliance with water quality objectives, provided that those time schedules are as short as practicable. The compliance time schedules authorized under the Nitrate Control Program are well within the Board's statutory authority and consistent with all applicable policies. Ultimately, the

requirements in the Nitrate Control Program, as implemented through the Board's issuance of permits to effectuate the program, will ensure that any changes to high quality waters will not result in water quality less than water quality objectives when evaluated and considered over the long-term.

5.3.2.4 Degradation under the Nitrate Control Program will be limited by the requirement that discharges to high-quality waters implement BPTC

The Central Valley Water Board's establishment of the Nitrate Control Program, including the revisions to the Exceptions Policy and the Offsets policy, will not, on its own, authorize or cause any degradation of high-quality waters. However, implementation of the Nitrate Control Program through the Board's issuance of WDRs or Conditional Waivers pursuant to the Nitrate Control Program may result in water quality degradation over and above that which the Central Valley Water Board could authorize pursuant to currently applicable Basin Plan provisions. However, when approving the WDRs and/or Conditional Waivers, the Board must find that the treatment or control methods that will be employed by the permittees while they implement the permit requirements will result in "best practicable treatment or control" of the wastes in their discharges.

Similar to the Salt Control Program, the Nitrate Control Program differs from the Board's current permitting approach in that it would allow the Board to consider the "practicability" of the actions undertaken by individual permittees developing and implementing Alternative Compliance Projects or by groups of permittees developing and implementing Management Zone Implementation Plans. In other words, if the Board was considering WDRs for two individual facilities on a permit-by-permit basis, it would need to evaluate whether each individual facility was implementing pollution or control methods that were "best practicable treatment or control" based on the financial and technical capacities of each of the facilities on its own. Under the traditional permitting approach, if the two facilities found that it might be practicable for them to collectively finance a pollution treatment methodology that would reduce pollutant loadings to a greater degree than each could individually afford on their own, there would still be some ambiguity as to whether the Board could consider this alternative the "best practicable treatment or control" alternative.
Even though the Board could take a broader view of "best practicable treatment or control" when evaluating treatment or control methodologies proposed in Alternative Compliance Projects or Management Zone Implementation Plans (as well as any permit amendments adopted to effectuate such projects or plans), the Nitrate Control Program would not obviate the need for the Central Valley Water Board to hold a public hearing and carefully consider whether the project or plan actually describes actions, infrastructure, and methodologies that would be considered the best practicable treatment or control for the nitrates in the permittees discharge. Furthermore, in authorizing degradation through the approval of an Implementation Plan, the Board would need to make the necessary findings consistent with the State's Antidegradation Policy to authorize degradation of any high quality water.

5.3.3 Consistency with the Federal Antidegradation Policy

The Nitrate Control Program solely geared towards rectifying and addressing issues related to nitrates in groundwater therefore the Federal Antidegradation Policy does not apply.

5.4 SECONDARY MCLS

Maximum Contaminant Levels (MCLs) are designed to protect public welfare and health by setting standards for drinking water supplied to the public. State and federal drinking water regulations require that most surface waters be filtered and disinfected prior to being served to the public, unless an exemption to filtration requirements has been granted. Secondary MCLs (SMCLs) are designed to protect the aesthetic quality (taste, odor and appearance) of drinking water (i.e. the MUN beneficial use), and are identified in section 64449 (Tables A and B) of Title 22 of the California Code of Regulations (Title 22) and were developed to protect public welfare and consumer acceptance by addressing aesthetic qualities and not intended to address public health[108]. The Board prospectively incorporated the primary and secondary MCLs into the Basin Plans' Chemical Constituents water quality objective, but neglected to fully incorporate explanatory language from Title 22. The components of the proposed Basin Plan Amendments that affect SMCLs (SMCL Revisions) would revise the Basin Plans to clarify the intent and use of applying the SMCLs in permitting actions.

The SMCL Revisions would address two types of SMCLs: those associated with salinity, and those associated with other types of constituents in Table 64449-A of Title 22. For salinity constituents, the proposed revisions would clarify how the Board will apply values within those ranges as water quality objectives, consistent with the intent of Title 22.The proposed revisions would state that permit limits are to be derived based a on a filtered water sample for SMCLs pertaining to aluminum, color, copper, iron, manganese, silver, turbidity and zinc unless receiving waters in question have been exempted from filtration requirements in the Enhanced Surface Water Treatment Rule (otherwise, compliance with SMCLs is to be evaluated using an unfiltered samples). Both revisions are consistent with the Board's current permitting practices, and thus, degradation is expected to be negligible following the adoption of the SMCL Revisions.

5.4.1 Degradation that may occur under the SMCL Revisions

The Board currently requires that permittees that discharge constituents identified in Tables 64449-A and 64449-B comply with water quality objectives specified in these tables. Compliance with the water quality objectives may currently be implemented through the adoption of effluent limitations, or through the adoption of receiving water limits that limit discharges from causing or contributing to a violation of the water quality objective in the receiving water. The proposed revisions will not result in a change in the character of current discharges related to the Secondary MCL constituents. They instead provide a process that will clarify ambiguities that could otherwise require the Board to prescribe overly restrictive requirements that would require facility upgrades or other costly measures where such changes are not needed to ensure water quality is protected.

5.4.2 Consistency with the State Antidegradation Policy

The Central Valley Water Board's adoption of the proposed SMCL Revisions itself will not authorize or cause any degradation of high-quality waters, and implementation of the SMCL Revisions through the Board's issuance of WDRs or conditional waivers would not result in

[108] Primary Maximum Contaminant Levels (MCLs) are mandatory water quality standards for drinking water contaminants. These are enforceable standards called which are established to protect the public against consumption of drinking water contaminants that present a risk to human health. These apply to drinking water which is delivered to the consumer. These proposed amendments do not revise alter or delete the incorporation of Primary MCLs into the Central Valley Water Board's Basin Plans and do not alter or change how the Central Valley Water Board implements the Primary MCLs through its regulatory actions.

water quality degradation over and above that which the Central Valley Water Board could authorize pursuant to currently applicable Basin Plan provisions. As indicated previously, the SMCL Revisions is intended to clarify the Board's approach and existing authority.

To the extent that a permittee would request revisions of its permit based on the SMCL Revisions, the SMCL Revisions would not obviate the need for the Central Valley Water Board to hold a public hearing and carefully consider whether the proposed permit actually describes actions, infrastructure, and methodologies that would be considered the best practicable treatment or control of salinity and other SMCL constituents necessary to ensure that no pollution or nuisance will occur and the highest water quality consistent with the maximum benefit to the people of the State will be maintained.

5.4.3 Consistency with the Federal Antidegradation Policy

Consistent with the provisions of the federal Antidegradation Policy, which is applicable to the regulation of discharges to navigable surface waters of the United States, the following additional requirements are applicable to the proposed SMCL Revisions:

1) Existing in-stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

2) Where the quality of the waters exceeds levels necessary to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

5.4.3.1 Defining the Process by which the Board will ensure that existing in-stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected following adoption of the proposed SMCL Guidance.

The proposed SMCL Revisions provisions apply only to water quality objectives associated with the MUN beneficial use. This use is not considered to be an in-stream beneficial use. Regardless, the implementation of the proposed SMCL Revisions will ensure the reasonable protection of all beneficial uses, as is currently required under the existing Basin Plan language; the SMCL Revisions are consistent with existing permitting practices, and will not eliminate the requirement that the Central Valley Water Board to hold a public hearing and carefully consider whether the proposed permit actually describes actions, infrastructure, and methodologies that would be considered the best practicable treatment or control of salinity and other SMCL constituents necessary to ensure that no pollution or nuisance will occur and the highest water quality consistent with the maximum benefit to the people of the State will be maintained.

5.4.3.2 Defining the Process by which the Board will ensure that, where the quality of the waters exceeds levels necessary to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located.

In the adoption of NPDES permits, WDRs or Conditional Waivers which implement SMCLs in surface waters in accordance with the proposed SMCL Revisions, the Board must find that a lowering of water quality is necessary to accommodate important economic or social development in the communities in question. The proposed SMCL Revisions require the development of information to demonstrate consistency with federal antidegradation policies. The Central Valley Water Board must evaluate the information provided by the permittee and render a finding, through a public hearing process, that a lowering of water quality is necessary in its approval of effluent limitations and/or receiving water limitations.

5.4.3.3 Defining the Process by which the Board will ensure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

The existing permitting processes for issuing NPDES Permits for discharges to surface waters and for issuing non-NPDES Permits for surface water discharges and for discharges that may affect groundwater currently incorporate processes to ensure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint sources. The proposed SMCL Revisions will not alter such considerations.

5.5 LIMITATIONS

The antidegradation analysis is for the programmatic level commensurate with the development of the SED for the Preferred Alternative. There is no ability at the current time to evaluate any particular project that may occur as a result of implementing the elements of the proposed strategies, policies, and guidance. However, antidegradation analyses will be performed as specific projects and discharge conditions warrant.

6 CONSISTENCY WITH LAWS, PLANS, AND POLICIES

Proposed changes to the Board Basin Plans must be consistent with state laws and regulations, including adopted State and Central Valley Water Board policies, and, to the extent applicable, the federal CWA regulations implemented by the State and Central Valley Water Boards. This chapter summarizes existing federal and state laws and policies that are relevant to the proposed Basin Plan Amendments. Federal regulations apply to surface waters of the United States. State regulations apply to all waters of the state, which includes both groundwater and surface waters.

As applicable, the sections in this chapter may address the proposed Basin Plan Amendments as a whole or with more specific focus on the relevant components of these amendments.

6.1 CONSISTENCY WITH FEDERAL AND STATE LAWS

Federal agencies have adopted regulations implementing federal laws to which Central Valley Water Board actions must conform. To maintain consistency with the NPDES program, the following Federal laws were evaluated for the proposed Basin Plan Amendments:

- Clean Water Act
- Federal & State Endangered Species Acts (16 U.S.C. § 1531 et seq., Fish and G. Code §2050-2116 et seq.)

Consistency of the proposed Basin Plan Amendments to these laws are described in the following sections in addition to state law.

6.1.1 Clean Water Act

6.1.1.1 Federal Requirements for Review of Water Quality Standards

Under section 303(c) of the CWA, water quality standards adopted by a State that affect waters of the United States are subject to USEPA approval. Water quality standards consist of the designated uses and the water quality criteria to protect these uses. (33 USC § 1313, subd. (c)(2)(A) and 40 CFR § 131.3, subd. (i).) When designating new or revised uses, the State must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation. (40 CFR § 131.10, subd. (a).) States may adopt sub-categories of a use and set the appropriate criteria to reflect varying needs of such sub-categories of uses. (40 CFR § 131.10, subd. (c).) States may remove a use that is not an existing use if it demonstrates attaining the use is not feasible because of one of the six factors listed in Section 3.2.1 (40 CFR § 131.10 subd. (g).)

The proposed Basin Plan Amendments do not designate, remove or revise beneficial uses. Therefore, these federal requirements are not applicable to the proposed amendments.

6.1.1.2 Federal Regulations Pertaining to NPDES Permits

Section 402 of the CWA requires a permitting system which USEPA addressed by promulgating 40 CFR Part 122, which are the regulations pertaining to the NPDES program. The State's regulations pertaining to NPDES permits must be consistent with the federal regulations. Title 40 Code of Federal Regulation section 122.44(d)(1)(ii) sets forth the regulations for determining whether a discharge has a reasonable potential to cause or contribute to a violation of water quality standards. It states, "When determining whether a discharge causes, has the reasonable

potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water."

The proposed Basin Plan Amendments do not recommend any new or modification to federal or state NPDES permitting procedures, with the exception of the modifications to the variance policy, discussed below, and the new language pertaining to the use of filtration in the evaluation of Secondary MCLs ("for a period of no more than 10 years or upon development of a translator, reasonable potential analysis will be conducted based on dissolved metals data using a 0.45-micron filter in accordance with Federal Regulations, 40 CFR Part 136.") This would standardize considerations that are currently being made by the Central Valley Water Board on a case-by-case basis. During Phase 1 of the Salt Control Program, interim limits in the Drought and Conservation Policy are proposed for use as interpretation of the narrative water quality objectives when setting water quality based effluent limits under the Variance Policy. These Basin Plan Amendments are consistent with federal and state NPDES procedures and depend on the continued implementation of these procedures to provide appropriate protection to surface waters of the United States.

6.1.1.3 Federal Regulations Pertaining to Water Quality Variances

States may adopt water quality standards variances, as defined in 40 C.F.R § 131.3(o). A water quality standards variance is a water quality standard subject to EPA review and approval or disapproval in accordance with 40 C.F.R. 131.10. The criteria for USEPA's approval or disapproval of a water quality standards variance is found at 40 C.F.R. 131.14. The following are the relevant elements of USEPA's approval criteria, which are met by the proposed modifications to the Variance Policy:

i. *It is infeasible to meet a water quality-based effluent limit (WQBEL) that is as stringent as necessary to meet the applicable WQS but may be feasible to meet such a WQBEL in the future (80 FR 51020).*

   The Variance Policy established by the revisions require a demonstration that the facility seeking the variance is in a situation similar to those facilities evaluated as a part of the Board's consideration of Resolution R5-2014-0074, the existing salinity Variance Policy (i.e., salt management strategies were being implemented by the POTW, but further reductions were not possible without causing substantial and widespread socioeconomic impacts related to implementation of pollution controls necessary to meet water quality standards, such as reverse osmosis treatment).

ii. *The underlying use and criterion are retained, and all other water quality standards not specifically addressed by the variance continue to apply (40 CFR 131.14(a)(2)).*

   The revisions to the Variance Policy to not change the underlying use and criterion, and all other water quality standards will continue to apply.

iii. *Establishment of the revisions to the variance policy will not result in any lowering of currently attained ambient water quality (40 CFR 131.14(b)(1)(ii)).*

   As a criteria for meeting the conditions for the Board to issue a salinity variance, the permittee must be subject to performance-based limits designed to maintain existing ambient water quality, to the extent practicable.

iv. *The variance will be the applicable standard for purposes of developing NPDES permit limits and requirements only for the permittee(s) specified in the WQS variance (40 CFR 131.14(a)(3)).*

The variance policy established by the revisions is a multi-discharger variance program that contains eligibility requirements that make clear what characteristics a permittee must have in order to be subject to the WQS variance. The facilities covered by the WQS variance will have their permits posted on the Central Valley Water Board's website.

v. *Establishment of the variance policy, and the periodic reevaluation thereof, will meet public participation requirements at § 131.20(b) (40 CFR 131.14)), the term of the WQS variance that is only as long as necessary to achieve the highest attainable condition (40 CFR 131.14(b)(1)(iv)), and a commitment that the Variance Policy will be evaluated at least once every 5 years (40 CFR 131.14(b)(1)(v)).*

The revised Variance Policy includes a variance term and includes provisions for reviewing variances during triennial reviews. The triennial review is a public process that meets applicable federal regulatory requirements.

vi. *The identity of the pollutant(s) or water quality parameter(s) to which the WQS variance applies (40 CFR 131.14(b)(1)(i)).*

The salinity constituents that may be subject to the variance are defined in the revised Variance Policy.

vii. *A highest attainable condition specified as a quantifiable expression in one of the following ways (40 CFR 131.14(b)(1)(ii)(A)(1-3)): a highest attainable interim criterion; or an interim effluent condition that reflects the greatest pollutant reduction achievable, or specific eligibility requirements in the WQS variance*

The revisions to the Variance Policy will require permittees to continue to implement all practicable means (salinity source reduction, evaluations of industrial sources, etc.) of reducing salinity and will subject permittees to performance-based limits during the time the variance is operative.

viii. *A provision specifying that if the state does not complete a reevaluation at the specified frequency or does not submit to EPA the results of a reevaluation within 30 days of completion of the reevaluation, the underlying designated use and associated criterion, rather than the WQS variance, will be the applicable water quality standard for CWA purposes until such time the state completes and submits the reevaluation to EPA (40 CFR 131.14(b)(1)(vi)).*

Such a statement has been included in the revised Policy.

6.1.1.4 Requirements for Avoiding Wetland Loss

Under CWA section 404 and the Rivers and Harbors Act of 1899 Section 10, alteration of waterways, including wetlands that affect navigable waters requires a permit from the Federal government and assurance that impacts will be avoided or mitigated. The U.S. Army Corps of Engineers operates the 404 permit program with a goal of achieving "no net loss" of wetlands. For projects proposing unavoidable impacts on wetlands, compensatory mitigation in the form of replacing the lost aquatic functions is generally required. Under authority of CWA section 401, the State also reviews federally authorized projects, including permits issued by the US Army Corps of Engineers for dredge and fill activities under CWA section 404 and construction

permits issued under Section 10 of the Rivers and Harbors Act that could have water quality impacts on jurisdictional water bodies.

The proposed Basin Plan Amendments will not adversely affect or have net loss to current wetlands. The amendments do not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board that would change the landscape and impact wetlands. Therefore, these laws and regulations pertaining to wetland loss are not applicable to the proposed Basin Plan Amendments. Construction of any project for an out-of-valley salinity solution may require wetland mitigation and/or permits under Clean Water Act section 404 and Section 10 of the Rivers and Harbors Act. Any impacts to wetlands will be considered and evaluated when those projects are proposed, or when the Basin Plans are amended once those projects are known.

6.1.2 Federal and State Endangered Species Act

The Federal Endangered Species Act of 1973 (16 U.S.C. § 1531 et seq.) was established to identify, protect and recover imperiled species and the ecosystems upon which they depend. It is administered by the Interior Department's U.S. Fish and Wildlife Service (USFWS) and the Department of Commerce's National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS). The USFWS has primary responsibility for terrestrial and freshwater organisms, while the NMFS has primary responsibility for marine species such as salmon and whales. In addition, the State of California enacted the California Endangered Species Act (Fish & G. Code, §2050-2116 *et seq*.), which is administered by the California Department of Fish and Wildlife and similarly requires that the State maintain lists of rare, threatened and endangered species.

As discussed in the Environmental Checklist (Appendix K, Section IV, Biological Resources), the proposed amendments would not change the biological resources-related beneficial use designations (e.g., WARM, COLD, WILD, BIOL, RARE, MIGR, SPWN) or associated water quality objectives, or implementation programs related to these beneficial uses or objectives. Any new surface water discharges or substantial changes to existing discharges must be reviewed by the Board before any permit is granted. The proposed amendments do not alter the Board's responsibility to evaluate information provided by the permittee and render a finding, through a public hearing process, if a lowering of water quality is necessary in its approval of effluent limitations and/or receiving water limitations in an NPDES permit, WDR, or Conditional Waiver.

These proposed amendments also do not prevent the Board from establishing more conservative permit limitations or site-specific objectives to protect endangered species as applicable. For example, although the salinity permitting strategy focuses on protection of the salt-sensitive AGR and MUN beneficial uses, there may be areas in the Central Valley where the aquatic life beneficial use may be an additional consideration. Select species of fish (green and white sturgeon as well as striped bass) are sensitive to elevated salinity concentrations, especially during spawning (Klimley, et al., 2015). The spawning habitat of green sturgeon, which is listed as a threatened species on the federal Endangered Species Act list, is known to be contained within the Delta and the Sacramento River Basin (Klimley, et al., 2015). As such, discharges to these areas may be subject to salinity limitations lower than those established for AGR and MUN in order to protect applicable aquatic life beneficial uses.

In addition, the proposed Basin Plan Amendments do not directly involve the construction of new buildings or other facilities. Thus, these amendments would have no direct impact on the quality or quantity of habitat for any fish or wildlife species, including rare or endangered plant or animal species. However, projects that may be constructed as a result of implementation of the

proposed Basin Plan Amendments may result in altered instream flow patterns (e.g., on-farm recharge projects) or new discharges to surface waters (e.g., brine line discharges to San Francisco Bay) may result in indirect impacts to biological resources. A separate project-specific environmental review would be performed prior to project construction and operation to identify project-specific environmental impacts and to incorporate any necessary measures to avoid, reduce, or mitigate for any identified significant environmental impacts. For examples, should future projects include use of federal funds, require a Clean Water Act 404 permit issued by the U.S. Army Corps of Engineers or in another way involve a federal agency, then federal agency consultation under Section 7 of the federal endangered species act (ESA) may be required prior to implementation of projects. This ESA consultation would further ensure that the development or implementation of a project will not result in a take of ESA-listed species.

In conclusion, the proposed Basin Plan Amendments are not expected to affect special status fish and wildlife and are therefore consistent with the Federal and State Endangered Species Acts.

6.1.3 Consistency with Water Code section 106.3

Water Code section 106.3 states that it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. Water Code section 106.3 states, in relevant part, that:

a. It is hereby declared to be the established policy of the state that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.

b. All relevant state agencies, including the department, the state board, and the State Department of Public Health, shall consider this state policy when revising, adopting, or establishing policies, regulations, and grant criteria when those policies, regulations, and criteria are pertinent to the uses of water described in this section.

Related resolutions supporting this policy were adopted by the State Water Board (Resolution No. 2016-0010) and Central Valley Water Board (Resolution No. R5-2016-0018).

The Salt and Nitrate Control Program is built on achieving the following prioritized Central Valley Region management goals for salt and nitrate:

Goal 1: Ensure a safe drinking water supply.

Goal 2: Achieve balanced salt and nitrate loadings, where reasonable and feasible.

Goal 3: Implement managed aquifer restoration program, where reasonable and feasible.

These management goals recognize the need to focus limited resources first on health risks associated with unsafe drinking water. Subsequent goals will require longer implementation timelines and include balancing salt and nitrate loading and restoring water quality, where reasonable and feasible. The proposed Basin Plan Amendments are consistent with Water Code section 106.3 in a number of different ways, as described in the applicable categories below:

- Salt Control Program – The implementation of the proposed Salt Control Program over the long-term will ensure the reasonable protection of all beneficial uses, including the MUN beneficial use, as is currently required under the existing Basin Plans. Permittees

that select the Conservative Pathway will be required to meet strict salinity water quality limitations that are protective of municipal and domestic supply in waterbodies designated with the MUN use. Permittees that select the Alternative Compliance Pathway will be required to maintain current discharge levels of salinity while participating in the Prioritization and Optimization study, which will convert current conceptual salinity management projects into feasibility studies for long-term management of salinity in the Central Valley.

- Nitrate Control Program – To meet Central Valley nitrate management goals, the Nitrate Control Program establishes new nitrate management requirements applicable to permittees that discharge nitrates to groundwater. To meet program requirements that focus on three goals: (1) ensuring a safe drinking water supply is available for users relying on groundwater for their water supply; (2) establishing a nitrate balance (where reasonable and feasible); and (3) developing and implementing a long-term plan for restoration of groundwater (where reasonable and feasible) and pathways to meet the nitrate water quality objective. Under both of the compliance pathways, permittees must assess nitrate levels in groundwater. Permittees responsible for adverse nitrate impacts to drinking water users must ensure the provision of safe drinking water.
- Conditional Prohibition for Salt and Nitrate – Proposed amendments provide assurance that drinking water supplies will be protected from degradation if permittees do not respond to and/or participate in the requirements of the Salt and Nitrate Control Program through the use of a conditional prohibition. For the Nitrate Permitting Strategy, these requirements include the early participation in the implementation of EAPs for certain categories of discharges until permits can be amended to include short and long-term solutions.
- Secondary MCL Policy – Secondary MCLs are drinking water standards to protect the odor, taste, and appearance of drinking water. The Secondary MCL Policy incorporates language that clarifies the use of upper and short-term values for TDS, EC, chloride and sulfate as water quality objectives. It sets recommended values as goals and allows for upper and short-term values to be used consisted with Title 22. In addition, it provides language regarding compliance with the chemical constituent water quality objective using filtered samples analyzed for total fractions to better reflect treatment practices prior to distribution to consumers for the following: aluminum, MBAs, color, copper, iron, manganese, silver, turbidity and zinc. The additional language is more restrictive than the Board's current practice of evaluating compliance based on dissolved fraction of the constituents. However, as described in the Environmental Checklist (Appendix K, Section IX, Hydrology and Water Quality), there would be no substantial degradation of water quality for these constituents upon adoption and implementation of the Secondary MCL Guidance.

- Drought and Conservation Policy –The proposed amendments for the Drought and Conservation Policy pertain only to salinity discharges and are intended to provide permitting procedures to be applied to account for emergency situations that diminish higher quality water supplies such as drought and climate change, and/or constituent increases directly related to voluntary and/or mandatory conservation measures and increased recycling efforts. Any interim effluent and/or groundwater/surface water limitations will need to go through an antidegradation analysis before they are incorporated as permit terms. To protect the MUN beneficial use, these limitations will not exceed the short-term secondary MCL for salinity as a 30-day running average. Interim limitations for conservation efforts shall be based on either not exceeding the

receiving water concentration and not causing down gradient impacts or maintaining TDS loading consistent with historical load (with consideration given to reasonable increment of use or change in source water salinity concentration) while not exceeding the short-term secondary MCL.

- Offsets Policy – The Offsets Policy proposes to allow permittees to use offset projects within the same groundwater basin, subbasin or management zone toward compliance with WDRs for a given pollutant, allowing consideration of the net effect of the discharge and the offset project on groundwater quality. As a condition of approval and implementation, the discharge plus an offset project cannot result in unmitigated localized impairments to sensitive areas, especially drinking water supply wells, nor have a disproportionate impact on a disadvantaged community.

- Exceptions Policy – The current Salinity Exception Program applies to EC, TDS, chloride, sulfate, and sodium. The Exceptions Policy proposes to expand the program to include nitrate and boron. Nitrate is the only constituent that has a primary MCL and is a human health drinking water concern. To address any degradation of drinking water supplies due to nitrate, permittees would be required to ensure availability of an adequate supply of safe, reliable, and affordable drinking water as a condition of obtaining an exception for nitrate. This assurance must include a credible and realistic framework to construct/install a permanent long-term solution and an immediate commitment to make available temporary replacement water. Salinity exceptions are only eligible to participants in the Prioritization and Optimization Study during Phase 1 of the Salt Control Program, when the conceptual models developed during the CV-SALTS initiative will be converted into local and region-wide feasibility studies, thereby laying the groundwork for the long-term management strategy.
- Variance Policy – these related amendments pertain only to point-sources discharges of salinity to surface waters and propose to amend the existing policy to allow for authorization of variances up to 15 years after the Basin Plan effective date. This policy allows the Board the authority to grant short-term exceptions from meeting water quality based effluent limitations to discharges subject to NPDES permits. Variances will only be eligible to participants in the Prioritization and Optimization Study during Phase 1 of the control program. As such, use of these exceptions in the short-term will support the development and implementation of long-term salinity management solutions for the Central Valley that protect designated beneficial uses, including the MUN use.

In conclusion, these proposed Basin Plan Amendments are protective of the MUN beneficial use because they promote the balancing of salt and nitrate discharges and the restoration of aquifers used as a source of drinking water. The proposed Basin Plan Amendments are therefore consistent with Water Code section 106.3 and the resolutions listed above.

6.1.4 Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act, which went into effect January 1, 2015, gives local agencies the authorities to manage groundwater in a sustainable manner and allows for limited state intervention when necessary to protect groundwater resources. See Section 3.7.3 for more information.

These proposed Basin Plan Amendments are consistent with this policy through the use of Management Zones for nitrate management and the requirement for coordination with existing Groundwater Sustainability Agencies (GSAs). In general, a Management Zone would consist of

multiple parties, including but not limited to, permittees and local entities working collectively to first ensure safe drinking water, then to manage nitrates to create a balance within the defined management area (where reasonable and feasible), and ultimately to develop and implement a long-term plan for restoration of groundwater (where reasonable, feasible and practicable) to meet applicable water quality objectives. As part of both Paths A and B of the Nitrate Permitting Strategy, Early Action Plans (EAPs) are required if public water supply or domestic wells in the area of contribution are contaminated by nitrate. EAPs must include a process to coordinate with stakeholders within the zone of influence of the Management Zone, including local GSAs. The Guidelines for Alternative Compliance Plans (see Appendix H) also stipulate that the development of a governance framework should include any identified GSAs within the zone of influence of the Management Zone.

6.1.5 Assembly Bill 32 – California Global Warming Solutions Act

Assembly Bill (AB) 32 is a California State Law that fights global warming by establishing a comprehensive program to reduce greenhouse gas emissions. AB 32 is largely implemented by the California Air Resources Board, which has been directed by AB 32 to adopt regulations to achieve cost-effective GHG emission reductions, thereby mitigating the risks associated with climate change, while improving energy efficiency and expanding the use of renewable energy resources.

The Water Boards are committed to the adoption and implementation of effective actions to mitigate greenhouse gas emissions and to adaptation of our policies and programs to the environmental conditions resulting from climate change. In establishing the proposed Basin Plan Amendments, potential impacts of climate change were evaluated and noted to cause more frequent extended dry periods, additional recycling, conservation and reuse, and reduction in availability of assimilative capacity. To address the potential impacts to salinity discharges, the proposed Basin Plan Amendments include the following policy:

- Drought and Conservation Policy – adjusted salinity WQOs during drought periods to allow permittees more flexibility to reuse and conserve limited water resources which typically increases salinity concentrations.

6.2 CONSISTENCY WITH STATE WATER BOARD POLICIES

The State Water Board is authorized to adopt state policy for water quality control. (Wat. Code §13140.) State Water Board water quality control plans supersede any regional water quality control plans for the same waters to the extent of any conflict. (Wat. Code §13170.) The following are the State Water Board plans and policies:

- State Policy for Water Quality Control
- State Water Board Resolution 68-16, the Statement of Policy with Respect to Maintaining High Quality of Waters in California (State Antidegradation Policy)
- Policy and Action Plan for Water Reclamation in California
- Water Quality Control Policy for the Enclosed Bays and Estuaries of California
- Sources of Drinking Water Policy
- Pollutant Policy Document
- Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code section 13304
- Consolidated Toxic Hot Spots Cleanup Plan

- Nonpoint Source Management Plan & the Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program
- Water Quality Enforcement Policy
- Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California
- Policy for Developing California's CWA Section 303(d) list (Listing Policy)
- Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options
- Policy for Compliance Schedules in Nation Pollutant Discharge Elimination System Permits
- Onsite Wastewater Treatment Systems Policy
- Policy for Water Quality Control for Recycled Water
- Human Right to Water as a Core Value and Directing its Implementation in Water Board Programs and Activities
- The Division of Drinking Water's "Extremely Impaired Sources Policy"

6.2.1 State Policy for Water Quality Control

Adopted in 1972, this policy declares the State Water Board's intent to protect water quality through the implementation of water resources management programs and serves as the general basis for subsequent water quality control policies.

The proposed Basin Plan Amendments do not change how the state will implement water resources management programs or water quality control policies.

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

- Resolution 68-16

See Section 5 for a discussion of this policy and the Antidegradation Analysis of the proposed amendments.

6.2.3 Water Quality Control Policy for the Enclosed Bays and Estuaries of California

- Resolution 74-43
- Resolution 95-84

This policy was adopted by the State Water Board in 1974 and updated in 1995. This policy provides water quality principles and guidelines for the prevention of water quality degradation in enclosed bays and estuaries to protect the beneficial uses of such waters. The Regional Water Boards must enforce the policy and take actions consistent with its provisions. For the San Francisco Bay-Delta system, the policy requires implementation of a program which controls toxic effects through a combination of source control for toxic materials, upgraded waste treatment, and improved dilution of wastewaters to provide full protection to the biota and the beneficial uses of San Francisco Bay-Delta waters.

The proposed Basin Plan Amendments do not eliminate or contradict the core requirement of the Water Quality Control Policy for the Enclosed Bays and Estuaries of California that the Central Valley Water Board ensure that persistent or cumulative toxic substances be removed from waste discharges to the maximum extent practicable through source control or adequate

treatment. Furthermore, the proposed Basin Plan Amendments do not change the Bay-Delta WQOs. Therefore, the proposed Basin Plan Amendments are consistent with this policy.

6.2.4 Policy and Action Plan for Water Reclamation in California

- Resolution 77-1

This policy was adopted on 6 January 1977. Because reclamation provides an alternative source of water suitable for irrigation, reuse is encouraged by the State Water Board. The policy also encourage water conservation and calls for other agencies to assist in implementation.

The proposed Basin Plan Amendments will not restrict reclamation and in fact encourage water conservation and reuse. The implementation of the SMCL policy allows reuse of water up to the upper limits recommended by Title 22 as long as downgradient/downstream water is not impacted (consistent with Antidegradation Analysis findings). Also, the Drought and Conservation Policy supports reuse when water supplies are limited.

6.2.5 Sources of Drinking Water Policy

- Resolution 88-63
- Resolution 2006-0008
- Resolution 2015-0002

See description in Section 3.1.3

The proposed Basin Plan Amendments will not change the MUN beneficial use designations for water bodies in the Central Valley and are therefore consistent with this policy.

6.2.6 Pollutant Policy Document

- Resolution 90-67

This policy, adopted in 1990, requires in part, that the Central Valley and San Francisco Bay Water Boards use the Pollutant Policy Document (PPD) as a guide to update portions of their Basin Plans. The PPD requires that the Central Valley Water Board develop a Mass Emissions Strategy (MES) for limiting loads of pollutants from entering the Delta. The purpose of the MES is to control the accumulation in sediments and the bioaccumulation of pollutant substances in the tissues of aquatic organisms in accordance with the statutory requirements of the state Porter-Cologne Water Quality Act and the Federal C.

The proposed Basin Plan Amendments primarily address salt and nitrate, which do not increase the accumulation of pollutants in sediment or bioaccumulation of pollutant substances in tissues of aquatic organisms. Changes to the WQOs and implementation of Secondary MCLs are specific to the protection of the MUN beneficial use and do not change criteria protective of aquatic life. Therefore, these amendments are consistent with this policy.

6.2.7 Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code section 13304

- Resolution 92-49

- Resolution 94-49
- Resolution 96-79

The State Water Board adopted this policy in 1992 and updated this policy in 1994 and 1996. This policy contains procedures for the Central Valley Water Board to follow when issuing orders pursuant to Water Code section 13304 that require the cleanup of discharges of wastes that have impacted, or that threaten to impact, waters of the state.

The proposed Basin Plan Amendments do not change or circumvent the applicable procedures pertaining to cleanup and abatement activities. Therefore, the proposed Basin Plan Amendments are consistent with this policy.

6.2.8 Consolidated Toxic Hot Spots Cleanup Plan

- Resolution 99-065
- Resolution 2004-0002

As required by Water Code section 13394, the Consolidated Toxic Hot Spots Cleanup Plan (Cleanup Plan) was adopted by the State Water Board in June 1999 and updated in 2004.

The proposed Basin Plan Amendments do not address any toxic hot spot constituents needing cleanup plans. Therefore, the Cleanup Plan is not applicable.

6.2.9 Nonpoint Source Management Plan & the Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program

- Resolution 99-114
- Resolution 2004-0030

In December 1999, the State Water Board adopted the Plan for California's Nonpoint Source (NPS) Pollution Control Program (NPS Program Plan) and in May 2004, the State Water Board adopted the Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (NPS Policy). The NPS Policy explains how State and Central Valley Water Boards will use their administrative permitting authority under the Porter-Cologne Act to implement and enforce the NPS Program Plan. The NPS Policy requires all nonpoint source discharges to be regulated under WDRs, waivers of WDRs, a Basin Plan prohibition, or some combination of these administrative tools. The NPS Policy also describes the key elements that must be included in a nonpoint source implementation program: "[b]efore approving or endorsing a specific NPS pollution control implementation program, a RWQCB must determine that there is a high likelihood the implementation program will attain the RWQCB's stated water quality objectives." To ensure that there will be a "high likelihood" that a program will achieve water quality objectives, the NPS Policy requires that a NPS program contain the following five "key elements":

- An NPS control program must, at a minimum, address NPS pollution in a manner that achieves and maintains water quality objectives and beneficial uses.
- An NPS control implementation program shall include a description of the management practices that will ensure attainment of the implementation program's stated purpose(s), the process to be used to select or develop management practices, and the process to be used to ensure and verify proper management practice implementation.
- When a time schedule is necessary, the program shall include quantifiable milestones designed to measure progress toward reaching the specified requirements.

- An NPS control implementation program shall include feedback mechanisms so that the Regional Board, dischargers, and the public can determine whether the program is achieving its stated purpose(s).
- Each Regional Board shall lay out the consequences for when the program fails to achieve its stated purposes. These "consequences" are non-binding courses of action that would be triggered if the program fails (i.e., the Regional Board would impose prohibitions, revise WDRs, etc.).

To the extent that the Salt and Nitrate Control Program established by the amendments is considered a "NPS Program," it meets the requirements of the NPS Policy. With respect to key element 1, Goal 2 of the Salt and Nitrate Control Program requires the Central Valley Water Board to work towards achieving balanced salt and nitrate loading in issuing permits to regulate salt and nitrates, including to all NPS permittees. Goal 3 of the Salt and Nitrate Control Program will require all permittees, including NPS permittees, to implement long-term, managed restoration of impaired water bodies, where reasonable, feasible and practicable. Key elements 2 and 3 of the NPS Policy will be satisfied when the Board issues permits to NPS permittees, since the Board must make determinations as to whether or not a permittee's treatment or control management practices will reasonably be expected to ensure attainment of the Salt and Nitrate Control Program's stated purposes on a timeline that is as short as practicable at the time the permits are issued. However, the Salt and Nitrate Control Program does include important milestones for both the Salt Control Program and the Nitrate Control Program. Key element 4 is satisfied through the SAMP, which is discussed elsewhere in this Staff Report. Lastly, key element 4 is satisfied in that the Board has spelled out the consequences that would occur if the Salt and Nitrate Control Program fails to achieve its stated purpose: the Board would revert to permitting discharges of salinity and nitrates under its traditional permitting approach, with all of the adverse effects that would be associated with that approach (see the discussion of the No Action alternative in Section 4.0 of the Staff Report for a more thorough discussion).

6.2.10 Water Quality Enforcement Policy

- Resolution 2002-0040
- Resolution 2009-0083
- Resolution 2017-0020

The State Water Board adopted this policy in 2002 and updated the policy in 2009 and 2017. This policy ensures that enforcement actions are consistent, predictable, and fair. The policy describes tools that the State and Regional Water Boards may use to determine the following: type of enforcement order applicable, compliance with enforcement orders by applying methods consistently, and type of enforcement actions appropriate for each type of violation. The State and Regional Water Boards have authority to take a variety of enforcement actions under the Porter-Cologne Water Quality Control Act.

Any enforcement of the proposed Basin Plan Amendments or the permits adopted thereunder would occur in accordance with the Water Quality Enforcement Policy. The proposed amendments do not remove any authority of the Board to take enforcement actions. Therefore, these amendments are consistent with this policy.

6.2.11 Policy for Developing California's Clean Water Act Section 303(d) List (*Listing Policy*)

- Resolution 2004-0063
- Resolution 2015-0005

The *Listing Policy* was adopted in 2004 and updated in 2015. Pursuant to Water Code section 13191.3(a), this State policy for water quality control describes the process by which the State Water Board and the Regional Water Boards will comply with the listing requirements of CWA section 303(d). The *Listing Policy* establishes a standardized approach for developing California's section 303(d) list to achieve water quality standards and maintain beneficial uses in all of California's surface waters. The *Listing Policy* applies only to the listing process methodology used to comply with CWA section 303(d).

CWA section 303(d) requires states to identify waters that do not meet, or are not expected to meet by the next listing cycle, applicable water quality standards after the application of certain technology-based controls and schedule such waters for development of TMDLs (40 CFR §130.7(c) and (d).).

The policy requires that the listing of a water body needs to be re-evaluated if the water quality standard has been changed. The proposed Basin Plan Amendments clarify but do not substantively revise the water quality objectives related to Secondary MCLs. Future 303(d) list development will consider clarified Secondary MCL WQOs for MUN beneficial use assessments which incorporates Title 22 context for the adopted Tables 64449-A and 64449-B to provide clarity and consistency in application. Consistent with this policy, any improvements in water quality will need to be considered in determining if the waters will or will not meet the applicable water quality standards by the next listing cycle.

6.2.12 Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California

- Resolution 2000-015
- Resolution 2000-030
- Resolution 2005-0019

The Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (a.k.a. State Implementation Plan or SIP) applies to discharges of toxic pollutants into the inland surface waters, enclosed bays, and estuaries of California subject to regulation under the Porter-Cologne Water Quality Control Act and the Federal CWA. Regulation of priority toxic pollutants may occur through the issuance of NPDES permits. The goal of the SIP is to establish a statewide, standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters.

The proposed Basin Plan Amendments primarily address salt and nitrate, which are not priority pollutants. The proposed Secondary MCL Policy does not change the SIP's approach for permitting discharges of toxic pollutants to non-ocean surface waters.

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

- Resolution 2005-0050

The State Water Board's Impaired Waters Policy incorporates the following:

- CWA section 303(d) identification of waters that do not meet applicable water quality standards and prioritization for TMDL development;
- Water Code section 13191.3(a) requirements to prepare guidelines to be used by the Central Valley Water Boards in listing, delisting, developing, and implementing TMDLs pursuant to CWA Section 303(d) of 33 USC § 1313(d); and

- Water Code section 13191.3(b) requirements that State Water Board considers consensus recommendations adopted by the 2000 Public Advisory Group when preparing guidelines.

The Impaired Waters Policy includes the following statements:

A. If the water body is neither impaired nor threatened, the appropriate regulatory response is to delist the water body.

B. If the failure to attain standards is due to the fact that the applicable standards are not appropriate due to natural conditions, an appropriate regulatory response is to correct the standards.

C. The State Water Board and Regional Water Boards are responsible for the quality of all waters of the state, irrespective of the cause of the impairment. In addition, a TMDL must be calculated for impairments caused by certain EPA designated pollutants.

D. Whether or not a TMDL calculation is required as described above, impaired waters will be corrected (and implementation plans crafted) using existing regulatory tools.

D1. If the solution to an impairment will require multiple actions of the Regional Water Board that affect multiple persons, the solution must be implemented through a Basin Plan Amendment or other regulation.

D2. If the solution to an impairment can be implemented with a single vote of the Regional Water Board, it may be implemented by that vote.

D3. If a solution to an impairment is being implemented by a regulatory action of another state, regional, local, or federal agency, and the Regional Water Board finds that the solution will actually correct the impairment, the Regional Water Board may certify that the regulatory action will correct the impairment and if applicable, implement the assumptions of the TMDL, in lieu of adopting a redundant program.

D4. If a solution to an impairment is being implemented by a non-regulatory action of another entity, and the Regional Water Board finds that the solution will actually correct the impairment, the Regional Water Board may certify that the non-regulatory action will correct the impairment and if applicable, implement the assumptions of the TMDL, in lieu of adopting a redundant program."

The proposed Basin Plan Amendments do not affect the process to identify impaired water bodies or the need to address the impairment. However, the proposed Basin Plan Amendments do allow for a temporary variance from meeting water quality based effluent limitations and temporary exceptions from meeting water quality objectives. These tools may be used in programs that implement TMDLs. Therefore, the proposed Basin Plan Amendments are consistent with this policy.

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

- Resolution 2008-0025

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

The proposed Basin Plan Amendments do not change the Central Valley Water Board's authority to include compliance schedules in NPDES permits. For surface water permittees subject to new or revised NPDES permit limitations, the Central Valley Water Board will determine reasonable potential in a manner that is consistent with 40 CFR § 122.44(d), and determine if a compliance schedule is appropriate based on current applicable laws and policies, including consideration of meeting the Salt and Nitrate Control Program goals. The proposed Basin Plan Amendments recognize that compliance schedules are not appropriate in all cases and establish policy and procedures for situations that are not subject to compliance schedules.

6.2.15 Onsite Wastewater Treatment Systems Policy (OWTS)

- Resolution 2012-0032

This Policy establishes a statewide, risk-based, tiered approach for the regulation and management of OWTS installations and replacements and sets the level of performance and protection expected from OWTS. In the Central Valley region, most counties have developed Local Area Management Plans (LAMPs), consistent with the OWTS Policy. Those plans subject OWTS within the counties to additional monitoring requirements required by county ordinances, which may trigger tougher standards if monitoring reveals that OWTS are causing or contributing to a condition of pollution or nuisance (including with respect to nitrates and/or salts in the discharges from OWTS). OWTS regulated under the LAMPs could become elements of Management Zone Implementation Plans or Offsets. Nothing in the Salt and Nitrate Control Program is inconsistent with the regulatory provision of the OWTS Policy. The Central Valley Water Board will consider compliance and consistency with the Salt and Nitrate Control Program as data collected by agencies implementing LAMPs are submitted to the Central Valley Water Board, and will consider adding conditions pertinent to the control of salts and nitrates in future LAMP approvals as appropriate.

6.2.16 Policy for Water Quality Control for Recycled Water

- Resolution 2009-0011
- Resolution 2013-0003

This Policy is intended to establish consistent and predictable requirements in order to increase the use of recycled water in California. One of the overarching goals of the Recycled Water Policy is to develop salt and nutrient management plans (for groundwater basins or subbasins) that are sustainable on a long-term basis and to provide California with clean, abundant, local water.

The objective of the Salt and Nitrate Control Program is to address salinity and nitrate concerns in a consistent and sustainable manner and are based in part on recommendations of CV-SALTS in their Central Valley Salt and Nitrate Management Plan (CV-SALTS, 2016). In order to address the requirements of the Recycled Water Policy, as well as legacy and ongoing salt and nitrate accumulation concerns, these amendments are based on achieving the following prioritized Central Valley Region management goals for salt and nitrate: 1) ensuring safe drinking water supplies, and; 2) achieving balanced salt and nitrate loadings; and, 3) implementing a managed aquifer restoration program. Portions of the proposed Salt and Nitrate Control Program provide increased flexibility for permittees to conserve and recycle water to meet program goals. Therefore, these amendments are consistent of this policy.

6.2.17 Human Right to Water as a Core Value and Directing its Implementation in Water Board Programs and Activities

- State Water Board Resolution. 2016-0010
- Central Valley Water Board Resolution R5-2016-0018

See Section 3.7.2 for an evaluation of the proposed Basin Plan Amendments' consistency with Water Code section 106.3 and the Resolutions adopted to direct State and Central Valley Water Board staff to implement Water Code section 106.3.

6.3 CONSISTENCY WITH CENTRAL VALLEY REGIONAL WATER QUALITY BOARD POLICIES

The following are the Central Valley Water Board policies:

- Urban Runoff Policy
- Controllable Factors Policy
- Water Quality Limited Segment Policy
- Antidegradation Implementation Policy
- Application of Water Quality Objectives Policy
- Watershed Policy
- Drinking Water Policy

6.3.1 Urban Runoff Policy

On page IV-14.00 of the Basin Plan, the Central Valley Water Board's Urban Runoff Policy states:

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

b. Effluent limitations for storm water runoff are to be included in NPDES permits where it results in water quality problems."

The proposed Basin Plan Amendments do not change the need to assess the water quality impacts of urban runoff or to address identified water quality impacts. Urban stormwater runoff is not considered to be a significant source of salinity or nitrates. However, the proposed Basin Plan Amendments provide a procedure to allow a variance from meeting water quality based salinity effluent limitations in NPDES permits should urban runoff be found to contribute to salinity impairments. The proposed Basin Plan Amendments are consistent with this Policy.

6.3.2 Controllable Factors Policy

On page IV-15.00 of the Basin Plan, the Controllable Factors Policy says,

> "Controllable water quality factors are not allowed to cause further degradation of water quality in instances where other factors have already resulted in water quality objectives being exceeded. Controllable water quality factors are those actions, conditions, or circumstances resulting from human activities that may influence the quality of the waters of the State, that are subject to the authority of the State Water Board or Regional Water Board, and that may be reasonably controlled."

The Controllable Factors is applicable when non-human sources of pollution or natural background conditions interfere with beneficial uses. Where water quality pollution is caused by

human factors subject to the authority of the Board and where those activities may be reasonably controlled through the issuance of permits, the Controllable Factors Policy does not apply. The proposed Basin Plan Amendments make reasonable allowances for naturally-occurring sources that may render beneficial uses unattainable, and would allow for the consideration of Basin Plan Amendments to revise those uses, where appropriate. The proposed Basin Plan Amendments are therefore consistent with the Controllable Factors Policy.

6.3.3 Water Quality Limited Segment Policy

On page IV-15.00 of the Basin Plan, the Central Valley Water Board's Water Quality Limited Segment Policy states:

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

The proposed Basin Plan Amendments allow the Central Valley Water Board to grant a variance from meeting water quality based effluent limitations if the permittee demonstrates that a variance is appropriate. Under the Salinity Variance Policy, the permit will include interim effluent limitations based on the current achievable effluent quality and development and implementation of a pollution prevention plan to reduce the effluent concentrations of the pollutant. Variances may be used when TMDLs to address water quality limited segments are under development to provide a permittee a short-term exception from meeting water quality based effluent limitations that may be inconsistent with final waste load allocations.

Similarly, for non-NPDES permittees, collaborative participation in the P&O Study during Phase I of the Salt Control Program allows a short-term exception from meeting water quality objectives and/or load allocations as long as the permittee maintains current best efforts to maintain or reduce salt in its discharge.

The proposed Basin Plan Amendments are consistent with this Policy.

6.3.4 Antidegradation Implementation Policy

Consistency of the proposed Basin Plan Amendments with the federal and state Antidegradation policies is discussed in Section 5.

6.3.5 Application of Water Quality Objectives Policy

Excerpts from Policy for Application of Water Quality Objectives are presented below. The full text can be found on page IV-16.00 of the Basin Plan.

> "Water quality objectives are defined as 'the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water, or the prevention of nuisance within a specific area.' … Water quality objectives may be stated in either numerical or narrative form. Water quality objectives apply to all waters within a surface or ground water resource for which beneficial uses have been designated…"

> "The numerical and narrative water quality objectives define the least stringent standards that the Regional Water Boards will apply to regional waters in order to protect beneficial uses."

The Proposed Basin Plan Amendments clarify but do not substantively revise the water quality objectives related to Secondary MCLs. The Secondary MCL Policy proposes to incorporate text from Title 22 of the California Code of Regulations section 64449 and section 64449.2 into the Basin Plans that provides guidance on the application of "Recommended", "Upper", and "Short Term" consumer acceptance levels for TDS, EC, chloride, and sulfate in WDRs and NPDES permits. These modifications maintain the reasonable protection of designated MUN beneficial uses, so therefore these amendments are consistent with this policy.

6.3.6 Watershed Policy

On page IV-21.00 of the Sacramento River and San Joaquin River Basin Plan, the Central Valley Water Board's Watershed Policy states:

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

The proposed Basin Plan Amendments were developed with the assistance of the CV-SALTS stakeholder initiative and are consistent with taking a watershed-based approach to addressing water quality issues and concerns. The Nitrate Control Program's Management Zone Permitting Approach and the Salt Control Program's Alternative Permitting Approach rely on stakeholder input, participation and collaboration to focus efforts on the most significant salt and nitrate problems in the Central Valley region and the sources contributing to those problems. Permittees will be expected to work towards achieving the water quality standards for the water body as a whole. As such, these amendments are consistent with this policy.

6.3.7 Drinking Water Policy for Surface Waters of the Delta and its Upstream Tributaries

This Policy includes a narrative water quality objective for *Cryptosporidium* and *Giardia*, along with implementation provisions to maintain existing conditions for public water systems. Applicable provisions from this Policy include the requirements to upstream permittees when implementation actions for *Cryptosporidium* and *Giardia* are triggered by monitoring at a public water system. In addition, the Policy recommends that the Central Valley Water Board consider the necessity of including monitoring of organic carbon, salinity and nutrients when WDRs are renewed.

The proposed Basin Plan Amendments do not change the implementation of the Drinking Water Policy and include salinity and nitrate monitoring as part of the proposed Monitoring and Surveillance Program. Therefore, these amendments are consistent with this policy.

7 ENVIRONMENTAL ANALYSIS

7.1 ENVIRONMENTAL REVIEW

7.1.1 Background

The Central Valley Water Board, as a Lead Agency under CEQA (Pub. Res. Code, § 21000 et seq.), is responsible for evaluating all the potential environmental impacts that may occur due to changes made to the Basin Plans. The Secretary of Resources has determined that the Central Valley Water Board's basin planning process qualifies as a certified regulatory program pursuant to Public Resources Code section 21080.5 and California Code of Regulations, title 14, section 15251(g). This determination means that the Central Valley Water Board is exempt from the requirement to prepare an environmental impact report for basin planning activities. Instead, this Staff Report and the Environmental Checklist (Appendix K) satisfy the applicable CEQA requirements.

This section and the Environmental Checklist evaluate the proposed amendment to the Basin Plan discussed in this Staff Report. The proposed amendment would incorporate a Salt and Nitrate Control Program, along with additional supporting clarifications, policies and authorities, to the Basin Plans for the Sacramento River and San Joaquin River Basins and Tulare Lake Basin. The proposed amendments also include Monitoring and Surveillance programs to ensure that water bodies will be in compliance with all applicable WQOs.

7.1.2 CEQA Scoping Meeting and Comments

Pursuant to Public Resources Code section 21083.9, CEQA Scoping Meetings and Public Workshops were held to discuss and solicit comments and suggestions from the public regarding the development of the CV-SALTS SNMP and the incorporation of components of the SNMP into the Basin Plans as the Central Valley Salt and Nitrate Control Program. The CEQA Scoping Meetings and Public Workshops for the program were held on October 10, 2013, in Modesto, October 16, 2013, in Rancho Cordova, October 21, 2013, in Colusa, and October 28, 2013 in Fresno, California. At these meetings/workshops, Central Valley Water Board staff from the CV-SALTS Program gave presentations describing the regulatory background and need for the SNMP, project proposal, and potential alternatives. As the lead agency for the CEQA process, the Central Valley Water Board prepared and issued the Notification of the CEQA Scoping Meeting and Public Workshop to all interested parties and was designated as the entity to receive all public comments regarding the proposed SNMP scope and content. Comments were to be submitted by December 31, 2013. Documents associated with the CEQA Scoping Meeting, including the meeting Notification, presentations, and Information Document, can be downloaded from the Central Valley Water Board website: http://www.waterboards.ca.gov/centralvalley/water_issues/salinity/.

The following list summarizes the key requests made in the comments pertinent to the CEQA assessment. The commenters requested:

- Assessment of how implementation of the SNMP would impact compliance with Sacramento-San Joaquin Delta (Delta) salinity objectives and water supplies of water rights holders responsible for compliance with Delta salinity objectives.
- Assessment of direct, indirect, and cumulative effects on the agricultural

environment from implementation of the SNMP.

- Assessment of a reasonable range of alternatives for the SNMP.
- Assessment of environmental impacts that may result from social and economic impacts of the SNMP.
- Assessment of impacts on vulnerable communities and populations.

7.1.3 Setting/Baseline

The setting is the existing physical condition (or baseline) within the affected environment against which the environmental conditions with a proposed project are assessed for determining environmental impacts. The affected environment for the proposed Basin Plan Amendments is the Central Valley Water Board's jurisdictional area. The Basin Plan Amendments address both surface water bodies and groundwater in the Central Valley region. Thus, the environmental setting against which the proposed Basin Plan Amendments are assessed includes the following characteristics:

- Existing water body quality, hydrology and operations of surface water bodies and groundwater basins in the Central Valley (described in Section 2)
- Existing quality and quantity of discharges to surface water bodies and groundwater in the Central Valley (described in Section 2)
- Existing regulatory programs and policies applicable to the regulation of water quality in the Central Valley Region (described in Section 3).

Two major alternatives are provided for this environmental assessment, the Proposed Project and a No Project Alternative, which are described in Section 4. Assessment of the alternatives for the Proposed Project and the No Project Alternative are provided in Section 4.

7.1.4 Proposed Project Analysis

The proposed Basin Plan Amendments would incorporate a Salt and Nitrate Control program, along with additional supporting clarifications, policies and authorities, to the Basin Plans for the Sacramento River and San Joaquin Rivers Basins and the Tulare Lake Basin.

The analysis in this Staff Report and the Environmental Checklist (Appendix K) concludes that the proposed Basin Plan Amendments would have **no impact** on the following environmental resources:

- Mineral Resources
- Public Services

The analysis in this Staff Report and the Environmental Checklist concludes that the proposed Basin Plan Amendments would have **less-than-significant impacts** on the following environmental resources:

- Air Quality
- Biological Resources

- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Land Use and Planning
- Noise
- Population and Housing
- Recreation
- Transportation/Traffic
- Utilities and Service Systems

The analysis in this Staff Report and the Environmental Checklist concludes that the proposed Basin Plan Amendments would have **potentially significant impacts** on the following environmental resources:

- Aesthetics
- Agricultural and Forestry Resources
- Hydrology and Water Quality

The Environmental Checklist (Appendix K**)** provides a detailed analysis of the direct and indirect potential environmental impacts of the Proposed Project for each of these resource categories.

7.1.5 Cumulative Impact Analysis

Cumulative impacts refer to one or more individual effects which, when taken together, are considerable or which compound or increase other environmental impacts. Cumulative impacts are the result of the incremental impact of a project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

Implementation of the Proposed Project is expected to indirectly result in the need for surface and groundwater dischargers to construct specific projects for salt and nitrate management to achieve compliance with WDRs or other provisions that may result from the Board's implementation of the Proposed Project. This assessment does not speculate on whether the Proposed Project would indirectly contribute considerably to a cumulative condition for these resources, because the location and scope of the future projects is unspecified or uncertain. (Cal. Code Regs., tit. 14, § 15145). However, decision makers should recognize that an Implementation Project may be located in a non-attainment area for air quality or where cumulative traffic conditions are forecasted to be impacted, for example, and may contribute considerably to an adverse cumulative condition for one or more resources.

The Environmental Checklist analysis concluded that the Proposed Project's cumulative impacts to water quality degradation would be "no impact," "less than significant," or "potentially significant," depending on the particular Salt and Nitrate Control Program strategy, policy, or guidance document considered. The constituents of concern to water quality degradation with the Proposed Project include salts (EC, TDS, chloride, sulfate and sodium), nitrate, and additional parameters with secondary MCLs (aluminum, color, copper, iron, manganese, silver, turbidity, and zinc). Thus, this cumulative assessment is focused on cumulative water quality conditions for these constituents of concern in surface waters and groundwaters within the Central Valley Region.

7.1.5.1 Cumulative Surface Water Quality Conditions

Past and present projects or actions affecting surface water bodies within the Central Valley Region have resulted in the existing water quality conditions for these water bodies. Aside from the Proposed Project, reasonably foreseeable future actions that could affect surface water quality for the constituents of concern to this assessment in the Central Valley Region include the Lower San Joaquin River salt and boron TMDL, ILRP, storm water management programs, continued implementation of the NPDES program, CVP and SWP operations in compliance with regulatory requirements, and California Water Action Plan. The salt and boron TMDL, ILRP, and storm water management programs are all aimed at making improvements to water quality in the Central Valley Region. The California Water Plan lays out actions to improve water management in the state and CVP and SWP operations in compliance with regulatory requirements including compliance with Bay-Delta Water Quality Control Plan objectives for the salinity parameters EC and chloride.

7.1.5.1.1 Salinity Parameters

Salinity (as measured by EC and/or TDS) conditions within surface waters of the Central Valley Region are variable, with some areas of the region having concentrations of these constituents that adversely affect the ability to use the water for AGR and/or MUN purposes. Portions of the Sacramento, San Joaquin River and Delta hydrologic regions have water bodies on the state's CWA section 303(d) list of impaired water bodies due to salinity, EC, and/or TDS relative to the protection of AGR and MUN beneficial uses. In the future, the concentrations of salts in surface waters of the Central Valley Region are not expected to be substantially worse and, in fact, are expected to remain at similar levels or improve somewhat, relative to existing conditions, due to implementation of the Central Valley Salt and Nitrate Control Program and other Central Valley Water Board actions.

A component of the Salt and Nitrate Control Program is the Salinity Variance Policy, which proposes to amend the existing Salinity Variance Program to allow the authorization of variances up to 15 years following the effective date of the Basin Plan amendments that revise the program, and extend application of variances to salinity parameters for protection of the MUN and AGR beneficial uses. During this period, municipal wastewater dischargers could be granted variances from meeting WQBELs for salinity constituents, provided that the situations that these dischargers face are comparable to the case studies evaluated for the current Salinity Variance Program. An additional condition for obtaining the variance is that the discharger would participate in the Salinity Management Strategy Prioritization and Optimization Study. Modeling of the effects of granting variances to specific municipal wastewater discharges concluded that the effects on ambient salinity levels both near the point of discharge and at downstream locations would be imperceptible (Central Valley Water Board, 2014). Further, these variances would be limited to the period during which the Salinity Management Strategy is

implemented. Consequently, implementation of the Proposed Project would not have a considerable contribution to any adverse cumulative condition with respect to salinity parameters in surface waters.

7.1.5.1.2 Nitrate

Within surface waters of the Sacramento River, Tulare Lake, and Delta hydrologic regions, concentrations generally fall below the primary drinking water MCL of 10 mg/L-N (see Section 2.1, Environmental Setting). No beneficial uses, other than the MUN beneficial use, have numeric objectives or MCLs established for nitrate. Nitrate concentrations are variable across the San Joaquin River Hydrologic Region. Median concentrations in tributaries and the San Joaquin River are below 10 mg/L-N. Mud Slough and Salt Slough have historical concentrations above the 10 mg/L-N (Section 2.1, Environmental Setting); however, MUN is not a designated beneficial use of these water bodies. Within primary tributaries that are direct source waters for drinking water supplies (e.g., Merced River, Cosumnes River, Tuolumne River, Stanislaus River, San Joaquin River), nitrate concentrations are below 10 mg/L-N based on recent historical concentrations (Larry Walker Associates, 2016b).

Implementation of the Central Valley Salt and Nitrate Control Program, as well as continued implementation of other regulatory programs, including NPDES program and ILRP, are expected to continue to prevent any nitrate impairments in surface waters. Consequently, implementation of the Proposed Project would not have a considerable contribution to any adverse cumulative condition with respect to nitrate in surface waters.

7.1.5.1.3 Additional Secondary MCL Parameters

The Proposed Project will clarify how the Board will interpret compliance with Secondary MCL parameters for aluminum, copper, iron, manganese, silver, zinc, color, and turbidity. There are no CWA section 303(d) listings for these constituents due to impairment of the MUN beneficial use, with the exception of two ephemeral creeks in the foothills above Sacramento for aluminum, iron, and manganese. Total concentrations of aluminum, iron, and manganese have been frequently measured above the respective secondary MCL levels. Elevated levels of these metals are associated with particulates (i.e., suspended sediments) in surface waters and the dissolved concentrations for these constituents are typically less than the secondary MCLs and levels of these parameters are not identified as being of concern in watershed sanitary surveys (Larry Walker Associates, 2016b)). Color is a parameter typically not evaluated on surface drinking water sources, thus, data to characterize surface water conditions in the Central Valley Region is not available for this assessment; however, color is generally not recognized as a parameter of concern. All surface water bodies within the Central Valley Region have variable turbidity and high turbidity in surface waters does not preclude their use as a drinking water supply.

The secondary MCL revisions, to be implemented as part of the Salt and Nitrate Control Program, would clarify how secondary MCL-related water quality objectives for aluminum, copper, iron, manganese, silver, zinc, color and turbidity would be implemented in WDRs for surface water discharges. This clarification is more restrictive than existing Board practice. As discussed for the secondary MCL revisions in Appendix K Section IX, for copper, silver, and zinc, there are more stringent aquatic life criteria that apply to surface waters, therefore, the limitations in WDRs for these metals would be unaffected by the secondary MCL revisions. Also, as discussed in Appendix K, Section IX, turbidity and color water quality objectives would be unchanged by the secondary MCL revisions, thus, implementation of the Secondary MCL

revisions is not expected to result in substantial cumulative increases in turbidity or color relative to existing conditions. Aluminum, iron, and manganese are associated with particulates, and because interpretation provisions related to objectives to control of particulates (e.g., turbidity and suspended sediment objectives) would be unchanged, the secondary MCL revisions are not expected to result in substantial cumulative increases in these metals concentrations in surface waters as they relate to agricultural and storm water discharges (see Appendix K, Section IX). Similarly, increases in aluminum, iron, and manganese concentrations in surface water as related to municipal wastewater discharges are not expected to result in substantial cumulative increases in these metals, because the discharge quality is a function of the treatment processes in place, which will continue to be utilized into the future unaffected by this process. Therefore, future aluminum, copper, iron, manganese, silver, zinc, color, and turbidity conditions within Central Valley surface waters are expected to remain at similar levels to those that occur under existing conditions. Consequently, implementation of the Proposed Project would not have a considerable contribution to any adverse cumulative conditions with respect to aluminum, copper, iron, manganese, silver, zinc, color, or turbidity conditions.

7.1.5.2 Cumulative Groundwater Quality Conditions

7.1.5.2.1 Salinity Parameters

Salinity (as measured by EC and/or TDS) conditions within groundwaters of the Central Valley Region are variable, with some areas of the region having concentrations of these constituents that adversely affect the ability to use the water for AGR and/or MUN purposes (see Section 2.1, Environmental Setting). Hence, existing conditions for salts in groundwaters are considered to be sub-optimal in some basins or sub-basins.

In the long-term future, the concentrations of salts in the groundwaters of the Central Valley Region are expected to be at similar levels or be improved, relative to existing conditions, largely due to implementation of the Central Valley Salt and Nitrate Control Program. Through implementation of the Salt and Nitrate Control Program, dischargers in the Central Valley Region will have implemented treatment and control measures and projects to reduce loading of salts to groundwaters. There may be localized areas within the region where salts may still be above levels necessary for protection of AGR and MUN uses and stabilized at levels similar to those under existing conditions or at future levels. Finally, there may be localized areas within the region where groundwater salt degradation continues to occur into the future, and remediation back to existing conditions is not feasible. This may occur, for example, where an offset project has been used to address degradation. However, on a basin/sub-basin volume-weighted average basis, which is the proposed management structure for controlling and restoring salt, groundwater quality is expected to improve. Consequently, implementation of the Proposed Project is not expected to have a considerable contribution to any adverse cumulative conditions with respect to salt conditions at the basin or sub-basin level. Because the Proposed Project would allow localized areas of groundwater basins/sub-basins that are near or over the applicable water quality objective to be further degraded in the future, and because it will not be feasible to remediate all such localized areas of groundwater back to existing conditions or conditions better than existing conditions, the Proposed Project would contribute to adverse conditions of salts in some areas. This is considered to be a potentially significant cumulative impact. This impact is considered potentially significant and unavoidable.

7.1.5.2.2 Nitrate

Nitrate conditions within groundwaters of the Central Valley Region are variable, with some areas of the region having concentrations of these constituents that adversely affect the ability to use the water for MUN purposes (see Section 2.1, Environmental Setting). Hence, existing conditions for nitrate in groundwaters are considered to be sub-optimal in some basins or sub-basins.

The concentrations of nitrate in the groundwaters of the Central Valley Region are expected to be at similar levels or be improved, relative to existing conditions, due to implementation of the Central Valley Salt and Nitrate Control Program. Through implementation of the Salt and Nitrate Control Program, dischargers in the Central Valley Region will be required to implement treatment and control measures to reduce nitrate loading to groundwaters. However, even at full implementation, there may be localized areas within the region where nitrate may still be above levels necessary for protection of the MUN beneficial use. Finally, there may be localized areas within the region where groundwater nitrate degradation continues to occur. This may occur, for example, where an offset project has been used to address degradation. However, on a basin/sub-basin volume-weighted average basis, which is the proposed management structure for controlling and restoring nitrate, an improvement in nitrate concentrations in groundwater is expected. Consequently, implementation of the Proposed Project is not expected to have a considerable contribution to any adverse cumulative conditions with respect to nitrate. Because the Proposed Project would allow localized areas of groundwater basins/sub-basins that are near or over the applicable water quality objective to be further degraded in the future, the Proposed Project would contribute considerably to adverse conditions of nitrate in some localized areas. This is considered to be a potentially significant cumulative impact. This impact is considered potentially significant and unavoidable.

7.1.5.2.3 Additional Secondary MCL Parameters

Groundwater is generally not considered to be impacted with respect to the additional secondary MCL parameters addressed by the Proposed Project – aluminum, copper, iron, manganese, silver, zinc, color, and turbidity. While there are localized areas where concentrations of some of these parameters have been measured above secondary MCLs, on a region-wide basis, the quality relative to these parameters, which address consumer acceptance (i.e., non-health) concerns, is considered generally suitable for MUN and AGR uses (California Department of Water Resources, 2003). The trace metals of concern relative to secondary MCLs are natural elements and their presence in groundwater is largely a function of the hydrogeological conditions of the aquifers in the region. Similarly, turbidity in groundwater is caused by natural factors and typically less than 1 NTU (State Water Board, 2004). Color of groundwater is affected by the presence of other constituents that have MCLs that may be present. The natural hydrogeological processes that are occurring under existing conditions that contribute to the existing levels of trace metals, color and turbidity also would occur for the future as well. Therefore, conditions for these parameters within the groundwaters of the Central Valley Region are expected to be similar to existing conditions. Consequently, implementation of the Proposed Project would not have a considerable contribution to any adverse cumulative groundwater conditions with respect to the secondary MCL parameters of aluminum, copper, iron, manganese, silver, zinc, color, and turbidity.

7.1.6 No Action Alternative Analysis

This analysis of the No Project Alternative addresses whether the No Project Alternative would: 1) lessen or eliminate any of the potentially significant impacts identified for the Proposed

Project, 2) cause new or more severe potentially significant impacts compared to those identified for the Proposed Project, and 3) achieve the goals of the Proposed Project.

Under the No Project Alternative, there would be no adoption of the proposed Salt and Nitrate Control Program and associated permitting strategies, policies, and guidance documents. Thus, WDRs for agriculture, wastewater, and storm water dischargers in the Central Valley region would be based on existing water quality objectives, beneficial use designations, and programs of implementation, consistent with existing State Water Board and Central Valley Water Board plans and policies.

For agriculture, actions to achieve compliance with WDRs based on the existing regulatory framework could mean implementation of additional BMPs, such as irrigation water management and tailwater recovery systems, or a construction of drainage water collection, treatment, and disposal systems. However, it is unlikely that the implementation of additional BMPs by agriculture under the current approach could achieve compliance with existing regulations for salts and nitrate. Where discharges to surface water or groundwater cause exceedance of water quality objectives, dischargers would be required to address those exceedances within a ten-year time schedule that is established in current WDRs. If the water quality objective exceedances could not be addressed by the end of the time schedule, then those permittees could potentially be required to cease discharging. Degradation of groundwater salt and nitrate levels that is occurring under existing conditions would continue to occur in some areas of the Central Valley Region for a period of time before necessary actions to stop degradation could be implemented. The ultimate result of such actions, if feasible, would be water quality similar to existing conditions in some areas and somewhat more degraded in other areas, because restoration back to existing conditions is not anticipated to occur in all areas. However, a requirement for many agricultural dischargers to cease discharging entirely (i.e., cease irrigating crops, cease all growing activities) would be expected create widespread economic devastation in broad areas of the Central Valley, and the economic resources available to mitigate results of any historical practices would be lost.

For wastewater discharges to surface waters and groundwater, implementation of the No Project Alternative would mean the implementation of new treatment processes to remove constituents that have the potential to exceed water quality objectives for salinity constituents, nitrate, or certain metals. The result of such actions would be water quality at least equivalent to, if not improved, relative to existing conditions. However, the treatment technology to achieve these regulatory endpoints is beyond the financial capabilities of many communities in the Central Valley, and the rigid imposition of the No Project Alternative could leave such communities without a viable means of disposing their wastewater.

Storm water discharges that cause exceedance of water quality objectives in the receiving water would be required to address exceedances through modification and implementation of the permittee's storm water management program. No substantial degradation of water quality would be expected to occur, relative to existing conditions, because BMPs contribute to reduction in pollutant loadings and current BMPs are expected to be implemented into the future.

Based on considerations discussed above for agriculture, wastewater, and storm water dischargers, implementation of the No Project Alternative could somewhat lessen the potentially significant impacts identified for the Proposed Project for salt and nitrate levels in areas of groundwater basins/sub-basins where levels are currently approaching or exceeding applicable objectives and discharges would cause further degradation in the future. However, because

further degradation of such groundwater areas also would occur over a multi-year period into the future before corrective actions would be implemented under the No Project Alternative, this would be considered a **potentially significant impact**. As such, the No Project Alternative may somewhat lesson the potentially significant salt and nitrate water quality degradation impacts identified for the Proposed Project, but is not expected to reduce these impacts to a less-than-significant level.

In addition, implementation of the No Project Alternative would not result in the ultimate improvements in groundwater quality that are anticipated to occur with full implementation of the Salt and Nitrate Control Program. As such, the No Project Alternative would not achieve the three goals identified for the Proposed Project.

For the No Project Alternative, potential resulting actions of having to cease agricultural discharges could result in a **potentially significant impact** on agricultural resources, such as the conversion of farmland to a non-agricultural use (e.g., land fallowing). The loss of agriculture could, in turn, result in the displacement of people that support the agricultural industry (those working directly on farms and those that work for businesses that provide agricultural products and services), which would result in the need for housing elsewhere. This would be a **potentially significant impact** to population and housing. Further, there would be significant economic impacts from conversion of agriculture to non-agriculture use, as described in the SNMP Economic Analysis (Larry Walker Associates, 2016a).

The wastewater treatment plant upgrade projects that would be required for wastewater dischargers to achieve compliance with salt, nitrate, and secondary MCL-based objectives under the No Project Alternative would undergo project-specific CEQA evaluations. Environmental impacts that could occur during wastewater facility improvement projects include temporary impacts to air quality, noise, water quality, biological resources, traffic, and cultural resources associated with construction activities, though these can generally be mitigated to less-than-significant levels. Significant long-term impacts to environmental resources would generally not be expected because these projects typically involve reduction in pollutant loadings, and the new construction is typically within the existing site footprint. There may be increases in impervious areas, but because these areas would be small relative to the watersheds as a whole, this would not be expected to reduce groundwater recharge or adversely increase storm water runoff amounts or quality. Finally, modifications to wastewater facilities to achieve compliance with WDRs may notably increase power use at such facilities, relative to existing power usage, depending on the type and magnitude of treatment modifications required.

Finally, additional BMP actions that may be required for storm water discharges are not themselves expected to result in any new or more severe environmental impacts compared to those identified for the Proposed Project. Any BMP actions that would be implemented by storm water permittees that have the potential for environmental impacts would undergo separate, project-specific CEQA analyses prior to implementation.

7.1.6.1 Cumulative Impacts Assessment of the No Project Alternative

Like the Proposed Project, the No Project Alternative could indirectly cause impacts at the local level to air quality, greenhouse gas emissions, noise, transportation, and utilities and service systems from construction and operation of projects/facilities necessary to achieve current regulatory requirements. Because such projects are not adequately defined for environmental review at the time this assessment was prepared, and because separate project-specific

environmental review will be performed prior to project construction and operation, no cumulative impact determination is made here. Nevertheless, decisions makers should recognize the potential for indirect, cumulative effects to air quality, greenhouse gas emissions, noise, transportation, and utilities and service systems from implementation of the No Project Alternative exists, just as it does for the Proposed Project. These impacts will be further addressed, and cumulative impact determinations made, in separate project-specific environmental reviews prior to constructing the projects/facilities necessary to achieve current regulations under the No Project Alternative. Consequently, the concerns with regard to cumulative impacts to air quality, greenhouse gas emissions, noise, transportation, and utilities and service systems under the Proposed Project also would be of concern under the No Project Alternative; however, the specific projects that would be the drivers of such effects would differ between the Proposed Project and the No Project Alternative.

Under the No Project Alternative, costly projects to collect agricultural drainage for centralized treatment and disposal or other actions would be needed to comply with current regulations. Some farmers would not be able to afford such projects/actions on their farms and thus may be forced to stop farming and possibly sell their property. For farmers that are able to participate in these projects/actions, there might still be a need to fallow land in support of the projects. If such efforts were not made to comply with existing regulations, and the Central Valley Water Board did not allow agriculture to use surface water bodies to drain salts from agricultural soils to the extent that may be needed (due to impacts to surface water quality), the salt levels in agricultural soils in the San Joaquin Valley and possibly elsewhere would eventually increase to a point where agriculture lands could no longer support current crop production, or even alternative crop production. The selling or fallowing of farmlands in an effort to comply with existing water quality regulations under the No Project Alternative and/or increasing soil salt levels over time would contribute considerably to a **potentially significant cumulative impact to agriculture**. This is a new potentially significant cumulative impact that would not occur under the Proposed Project.

The remainder of this assessment focuses on cumulative impacts to water quality from implementing the No Project Alternative. This cumulative assessment is focused on cumulative water quality conditions for the same constituents of concern in surface waters and groundwaters within the Central Valley Region that were assessed for the Proposed Project.

7.1.6.2 Cumulative Surface Water Quality Conditions under the No Project Alternative

Under future conditions for the No Project Alternative, the concentrations of salts, nitrate, and secondary MCL parameters (i.e., aluminum, copper, iron, manganese, silver, zinc, color, and turbidity) in surface waters of the Central Valley Region are expected to be at similar levels, relative to existing conditions, due to implementation of Central Valley Water Board TMDLs for impaired water bodies and other actions driven by current regulations. Under this alternative, the Salt and Nitrate Control Program would not be implemented. In the future, dischargers in the Central Valley Region would have implemented treatment and control measures and projects to reduce loading of salts, nitrate, and secondary MCL parameters to surface waters, as needed, to achieve compliance with current regulations. Consequently, implementation of the No Project Alternative would not have a considerable contribution to any adverse cumulative condition with respect to salinity, nitrate, or secondary MCL parameters in surface waters.

7.1.6.3 Cumulative Groundwater Quality Conditions under the No Project Alternative

7.1.6.3.1 Salinity Parameters and Nitrate

Groundwaters are currently considered to be impacted for salts and nitrate in some areas of certain basins or sub-basins. In the future, under the No Project Alternative, the concentrations of salts and nitrate in the groundwaters of the Central Valley Region are expected to be similar or possibly improved, relative to existing conditions, due to implementation of treatment and control measures and projects to reduce loading of salts and nitrate to groundwaters, as needed, to achieve compliance with current regulations. However, because the No Project Alternative would allow localized areas of groundwater basins/sub-basins that are near or over the applicable water quality objective to be further degraded in the future until corrective actions are taken, and because it will not be feasible to remediate all such localized areas of groundwater back to existing conditions or conditions better than existing conditions, the No Project Alternative (like the Proposed Project) would contribute considerably to adverse future cumulative conditions of salts and nitrate in some localized areas of basins/sub-basins within the Central Valley Region. This is considered to be **potentially significant**. Because it is expected that some areas will remain degraded, on a localized basis, relative to existing conditions, this impact would be potentially significant and unavoidable. Consequently, implementation of the No Project Alternative would not eliminate this potentially significant impact identified for the Proposed Project for salts and nitrate in groundwater.

7.1.6.3.2 Additional Secondary MCL Parameters

Groundwater conditions for the additional secondary MCL parameters – aluminum, copper, iron, manganese, silver, zinc, color, and turbidity – are considered to not be impacted in the Central Valley Region under existing conditions. Future cumulative conditions under the No Project Alternative for these parameters within the groundwaters of the Central Valley Region are expected to be similar to existing conditions. Consequently, implementation of the No Project Alternative would not have a considerable contribution to any adverse cumulative groundwater conditions with respect to the secondary MCL parameters of aluminum, copper, iron, manganese, silver, zinc, color, and turbidity. The No Project Alternative would not be expected to result in any new impacts with regard to these parameters that were not identified for the Proposed Project.

7.1.7 Statement of Overriding Considerations

The Basin Plan Amendments have been developed to establish a regulatory framework to achieve long-term improvements in ambient water quality conditions in surface waters and groundwater in the Central Valley. However, achieving the goals will not be immediate; water quality degradation will occur while long-term management practices are being developed and implemented. Therefore, the environmental resources that may be significantly impacted as an indirect result of Implementation Projects undertaken to implement the proposed Basin Plan Amendments include:

- Aesthetics
- Agricultural and Forestry Resources
- Hydrology and Water Quality

California's Central Valley is one of the most productive agricultural regions in the world and is home to almost 20% of California's population (estimated at over 38 million in 2015). By 2030, the state population is expected to increase by more than 13% to over 44 million people and by 2050 the population is expected to be close to 50 million people. Elevated salt and nitrate concentrations in portions of the Central Valley impair or threaten to impair the region's water and soil quality which, in turn, adversely affects agricultural productivity and/or drinking water supplies. An economic study completed in 2009, projected that if salt management did not change, direct economic costs would exceed $1.5-billion/year within the Central Valley by 2030 (Howitt et al. 2009).

The proposed Basin Plan Amendments were developed in cooperation with the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative and form the core of a regulatory program designed to effectuate an environmentally and economically sustainable Salt and Nitrate Management Plan (SNMP) for the entirety of the Central Valley Water Board's jurisdiction. The proposed Basin Plan Amendments build on a range of water quality management policies and mechanisms already in existence and propose additional policies and tools needed to provide the Central Valley Water Board with flexibility in addressing legacy and ongoing loading of salt and nitrate in the diverse region. In order to comprehensively address legacy and ongoing salt and nitrate accumulation concerns, the proposed Basin Plan Amendments aim to achieve the following goals:

Goal 1: Ensure a safe drinking water supply.

Goal 2: Achieve balanced salt and nitrate loadings, where reasonable, feasible and practicable.

Goal 3: Implement managed aquifer restoration program, where reasonable, feasible, and practicable.

These management goals recognize the need to focus limited resources first on health risks associated with unsafe drinking water. Subsequent, but important, goals that will require longer implementation timelines include balancing salt and nitrate loading and restoring water quality, where reasonable and feasible.

The Central Valley Water Board finds the substantial and significant benefits of adopting the proposed Basin Plan Amendments outweigh the unavoidable potentially significant adverse environmental impacts to that could occur as a result of the adoption of the proposed Basin Plan Amendments.

8 ECONOMIC ANALYSIS

8.1 ECONOMIC ANALYSES FOR TOTAL PROJECT COSTS

This section provides an overview of the economics analysis conducted on the preferred and no project alternatives as part of the Central Valley-wide Salt and Nitrate Management Plan (SNMP) prepared under the CV-SALTS initiative (CV-SALTS, 2016) as well as an estimated cost to agriculture for the proposed Salt and Nitrate Control Program. Section 8.1 is an excerpt from Section 6.6 of the CV-SALTS SNMP (CV-SALTS, 2016), with the complete economic analysis provided in Attachment C-2 of the CV-SALTS SNMP (Larry Walker Associates, 2016a). Section 8.2 discusses potential costs to agriculture for the first 10-years of the proposed Salt and Nitrate Control Program.

8.1.1 Introduction

The CV-SALTS SNMP recommended the adoption of new policies, strategies, and guidance to address legacy and ongoing loading of salt and nitrate to the receiving waters in the Central Valley. To varying degrees, these new policies, strategies, and guidance require a suite of actions to be taken by various parties, including the Central Valley Water Board and the regulated entities that currently discharge salt and nitrate to Central Valley receiving waters, as well as those that propose to discharge in the future. The Central Valley SNMP recommends a comprehensive regulatory and programmatic approach for the sustainable management of salt and nitrate; this approach sets the stage for a host of future compliance strategies and associated projects to be implemented by individuals, as well as groups of individuals operating together in newly defined management zones. Given the future unknown nature of such individual and group actions, the ability to precisely define these actions and therefore, estimate the economic costs of such individual and group actions is challenging.

In the absence of details regarding specific salt and nitrate management actions that will take place in the future, the economics analysis offers planning level cost estimates for short- and long-term actions to address nitrate contamination of groundwater and long-term actions to address salinity management.

The Central Valley Water Board must consider four legal requirements related to economics when adopting a Basin Plan Amendment:

Water Code section 13141 - requires that prior to implementation of any agricultural water quality control program, the Central Valley Water Board must include an estimated cost of such a program, together with an identification of potential sources of funding, in the Basin Plans.

Water Code section 13241(d) - requires that the Central Valley Water Board consider economics when establishing water quality objectives.

Water Code section 13242 - requires the Central Valley Water Board to develop a program of implementation for achieving water quality objectives which includes (a) a description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate action by any entity, public or private; (b) a time schedule for the actions to be taken; and (c) a description of surveillance to be undertaken to determine compliance with objectives.

Public Resources Code section 21159 - requires the Central Valley Water Board, when adopting an amendment that will require the installation of pollution control equipment or is a performance standard or treatment requirement, to include an environmental analysis of the reasonably foreseeable methods of compliance. This environmental analysis is required to take into account a reasonable range of environmental, economic, and technical factors, population and geographic areas, and specific sites.

The following sections provide a summary of the planning level cost estimates associated with the No Project Alternative and the Preferred Alternative. These have been developed with consideration of various cost estimates already developed under earlier CV-SALTS efforts.

8.1.2 Analysis of the No Project Alternative

8.1.2.1 Economic Impacts to Dischargers

Municipal and industrial wastewater dischargers that currently have an interim effluent limitation for EC, TDS, chloride, sulfate, and/or sodium based on a variance issued under the Salinity Variance Program or exception issued under the Salinity Exception Program would not be able to have that variance/exception renewed after June 30, 2019, via the program. The Central Valley Water Board can still grant new variances applicable to surface water discharges for EC, TDS, chloride, sulfate, and/or sodium before June 30, 2019, subject to USEPA approval. Once existing variances and exceptions expire, dischargers will be faced with meeting water quality objectives for salts that likely will require the implementation of additional treatment or control of their discharges, or other actions (e.g., new source water supply) that result in reduced loads for salinity. The current inclusion of performance-based effluent limitations in existing NPDES permits or WDRs tied to participation in CV-SALTS that are higher than AGR or MUN-based water quality objectives would no longer be allowed. In the absence of the Central Valley SNMP, these NPDES permits and WDRs would be amended to include final water-quality based effluent limitations.

Municipal and industrial wastewater discharges to groundwater would also be required to comply with EC and nitrate limitations based on applying EC and nitrate water quality objectives at the first encountered groundwater. The future compliance costs for these dischargers cannot be quantified because these costs will be case-specific and information supporting such an analysis has not been developed by CV-SALTS and is not otherwise available.

Discharges from irrigated agriculture to surface waters and groundwater would need to come into compliance with water quality objectives for EC, TDS, and nitrate in receiving water within 10 years from the triggering of a surface water or groundwater quality management plan for these constituents. Further, discharges to groundwater would be required to comply with EC and nitrate limitations based on applying EC and nitrate water quality objectives at the first encountered groundwater. Irrigated agriculture would have 10 years to reduce its loads of salt and nitrate to the point that discharges were compliant with water quality objectives for these parameters. Because existing WDRs and Conditional Waivers for irrigated agriculture have been written to describe CV-SALTS as providing future guidance on how and to what degree salt and nitrate loads will be controlled by agriculture, growers in the Central Valley have focused their attention on preventing the discharge of pesticides to surface waters. Salt and nitrate management for agricultural discharges are in the initial stages of development. The future compliance costs for these dischargers cannot be quantified because these costs will be case-specific and information supporting such an analysis has not been developed by CV-SALTS and is not otherwise available. It is unknown if future compliance costs will drive

growers to fallow or retire land as a means to balance the cost of compliance with maintaining viable agricultural operations.

Discharges from dairies that are determined to cause or contribute to an exceedance of a water quality objective, unreasonably affect beneficial uses, or cause a condition of pollution or nuisance require the discharger to bring its discharge in compliance with groundwater limitations no later than 10 years after the submittal date of a summary representative monitoring report, which must be submitted by July 1, 2020. Dairies are required to implement management practices/activities (BPTC for high quality waters or best efforts for waters that are not high quality) that will bring the facilities into compliance on a time schedule that is as short as practicable. Also, dairies would need to comply with EC and nitrate limits based on water quality objectives in first encountered groundwater. Similar to irrigated agriculture, existing WDRs for dairies have been written to include language that CV-SALTS will provide future guidance on how and to what degree salt and nitrate loads will be controlled. Without the regulatory flexibility afforded by the SNMP's policies, strategies, and guidance, dairies will be faced with meeting water quality objectives for salts that likely will require the implementation of additional treatment or control of their discharges. The future compliance costs for these dischargers are difficult to quantify because these costs will be case-specific and information supporting such an analysis has not been developed by CV-SALTS and is not otherwise available. However, a 2013 cost estimate for retrofitting existing and constructing new lagoons for select dairy sizes ranged from $180,000 (New single liner lagoon construction for a 300 cow dairy) to $1,400,000 (Retrofitting of existing lagoon with double liner for a 3,000 cow dairy per lagoon) (Provost & Pritchard Consulting Group, 2013). Where the expected compliance costs cannot be feasibly met, these dairy operators will likely have to cease operations, impacting local economies.

Stormwater dischargers would continue to be required to implement stormwater management plans and BMPs, as necessary, to achieve compliance with water quality objectives. Stormwater is not a large contributor of nitrate, but does observe seasonally high EC/TDS concentrations during storm runoff events. Increased costs to this discharge sector could occur as a result of being required to implement additional BMPs (e.g., education and outreach) to reduce TDS. Although future cost increases to stormwater programs would not be expected to be significant.

8.1.2.2 Projected Future Economic Impacts of Not Controlling Salinity

Howitt et al. (2009) released a report describing future economic impacts to 2030 that could occur in the Central Valley if salinity discharges to groundwater continue at their current pace in the absence of new regulation aimed to control the groundwater degradation caused by salts. The study assumed no changes to current policies or programs as of 2009 and, as such, represents the economic impacts associated with the No Project Alternative.

Projected increases in salinity in the Central Valley were based on two factors:

Growth of the areas of shallow saline groundwater based on 30 years of historical records; and

Increased levels of salts that result indirectly from imported water.

Based on increasing salinity from these factors, the research team measured the direct economic effects on industry, residential, food processing, confined animal operations, and irrigated agricultural production. The study assumed that economic and social impacts will

occur in the Central Valley as salinity levels increase, creating changes in water quality, water supply, production of goods and services, income, and employment. A major component of the study was to determine the direct (initial changes) and indirect (inter-business commerce) effects of increasing salinity on water demand and usage in various economic sectors in the Sacramento, San Joaquin, and Tulare basins, including municipal and industrial water treatment, food processing, confined animal feeding operations, and agriculture.

Direct impacts are usually measured as direct physical costs on water users including industry, urban users and agriculture. Examples of direct impacts from increased salinity include:

Changes to water taste for consumers and degradation of water appliances

Accelerated degradation of pipes and other water infrastructure.

Additional treatment costs for animal feeding operations and food processing facilities

Reduced crop yields for agriculture

The economic impacts of not implementing a salinity management program, similar to the Central Valley SNMP, were empirically estimated by assuming that salinity continues to accumulate at its current rate (in mg/L per year of TDS): 2.63 mg/L/year for the San Joaquin and Tulare basins, and a range of 0 – 1.53 mg/L per year for the Sacramento Basin. The analysis looked at three salinity accumulation scenarios: baseline, medium, and high. The 2.63 mg/L per year rate was used for the Tulare and San Joaquin basin in all three scenarios, while the rate was varied for the Sacramento Basin: 0 mg/L per year (baseline), 0.64 mg/L per year (medium), and 1.53 mg/L per year (high) (Howitt, et al., 2009).

Based on three salinity accumulation scenarios (baseline, medium and high) within hydrologic regions, the study projected economic activity and social conditions to 2030 using the Regional Economic Modeling, Inc. (REMI) model. The model estimated direct economic effects (loss of production in various sectors) and indirect effects (loss of income, output, employment, and population):

Direct Economic Effect –Across all three basins, the total direct loss ranged from $988 million to $1.543 billion for the year 2030, depending on the salinity scenario. The San Joaquin Basin was estimated to experience the greatest impacts for most sectors except for concentrated animal feeding operations and irrigated agriculture, whereas the Tulare Basin was estimated to experience the largest economic impacts.

Indirect Economic Effect – Effects were estimated for various scenarios and areas. Under the medium salinity accumulation scenario assumptions, annual California income was expected to decline by $2.251 billion, output by $6.485 billion, employment by 46,299, and population by 65,013 in the year 2030. Under the baseline salinity assumptions, impact estimates were reduced by approximately 25 percent and under the high assumptions, increased by approximately 35 percent.

Howitt et al. (2009) acknowledged that a detailed understanding of salinity levels, distribution, and rates of accumulation in the Central Valley was lacking at the time the modeling was conducted and therefore, the results of the study should not be used to develop regional policies for the control of salt. The researchers noted that the principal uncertainties associated with the results were caused by a lack of information on the physical parameters of

salinity accumulation rather than the economic parameters and future efforts should be targeted on improving the hydrological knowledge of salinity accumulation.

8.1.3 Analysis of the Preferred Alternative

The Preferred Alternative includes a number of recommendations for which planning level cost estimates may be derived, e.g., supply of replacement drinking water to affected communities, long-term actions to address salt and nitrate contamination of groundwater, and numerous studies and investigations required under the proposed policies and strategies. Proposed policies, strategies, and guidance collectively identify various discharge-specific studies, and in some cases monitoring and surveillance efforts, that would be needed as a means to characterize current impacts of a discharge on the receiving water, establish current ambient water quality, and monitor future ambient water quality resulting from the implementation of control measures. For other aspects of the Preferred Alternative, cost estimates are not possible because future actions or projects to control salt and nitrate are too speculative, e.g., future actions will be dependent upon the concentrations of these pollutants in the discharges and the available assimilative capacity of the receiving water or groundwater basin to which these discharges occur.

Using available information derived from existing analyses and cost estimates completed for other CV-SALTS studies, the economic analysis further developed planning level cost estimates. These cost estimates focused on short-term drinking water solutions, long-term drinking water solutions, long-term nitrate management, and long-term salinity management that support the three SNMP management goals (see Section 6 of Attachment C-2 in the CV-SALTS SNMP) (Larry Walker Associates, 2016a). Short-term is defined as the period prior to implementation of long-term salt or nitrate management actions (typically within 20 years). Long-term is defined as a greater than 20-year time period. Cost estimates based on site-specific conceptual projects are scaled to the regional level, where possible.

8.1.3.1 Drinking Water

The economics evaluation considered both short and long-term solutions for ensuring a safe supply of drinking water in areas with groundwater impacted by nitrate (see Section 6.3.2 and 6.3.3 in Attachment C-2 of the SNMP (Larry Walker Associates, 2016a) for additional details).

8.1.3.1.1 Short-term Drinking Water Solution

For areas where groundwater well nitrate concentrations are elevated, a short-term drinking water solution is to provide bottled water to individuals and households. This analysis considered areas where nitrate was either ≥ 7.5 mg/L (as N) or ≥ 10 mg/L (as N). The analysis was conducted first for the Alta Irrigation District (AID) area (Kings Subbasin; DWR B118 Code: 5-22.08) and then extrapolated to the Central Valley area. The following assumptions were used to calculate the annual cost to provide bottled water to individuals and households:

Drinking water consumption per household is 2.25 gallons per day (gpd).

Drinking water cost is $1.63 per gallon.

Cities with populations greater than 5,000 were assumed to currently provide their residents with drinking water in community systems that met the primary MCL for nitrate of 10 mg/L (as N) and therefore, were excluded from the analysis.

The estimated annual cost to provide bottled water to the AID area ranged from $3.9 million to $6.6 million where nitrate was ≥ 10 mg/L (as N) and ≥ 7.5 mg/L (as N), respectively. When

extrapolated to the Central Valley, the annual costs ranged from $80 million to $117 million, respectively.

8.1.3.1.2 Long-term Drinking Water Solution – Community Water Systems

Connecting households impacted by nitrate levels in groundwater to either existing community water systems or new community systems is a viable solution for providing drinking water that meets drinking water standards to affected households. Consistent with the CV-SALTS Nitrogen Implementation Measures Study (NIMS) Report (CDM Smith, 2016a), the economic analysis relied on the pump, treat and serve (PTS) model of a community water system to develop an approximate cost basis for the AID area and then extrapolated those findings to nitrate-impacted areas in the Central Valley. CDM Smith (2016a) developed costs for three different treatment processes to significantly reduce nitrate concentrations (1 mg/L as N or lower) in groundwater before providing as finished drinking water to consumers. The three nitrate removal processes evaluated by NIMS were reverse osmosis, ion-exchange, and biological denitrification.

For the AID area the economics analysis assumes two water treatment plants would be needed to provide treated groundwater to the smaller communities[109] in the District. Table 8-1 summarizes the estimated PTS costs for the three different types of treatment technologies.

[109] Cutler, Delft Colony, Dinuba, East Orosi, London, Monson, Orosi, Seville, Sultana, Traver, and Yettem.

Table 8 - 1. Community Water System Estimated Costs for the AID Area Using Different Treatment Technologies for Nitrate Removal (Adapted from CDM Smith 2016a)

Treatment Technologies for Nitrate Removal	Capital Costs (Millions)	Operations and Maintenance (Millions/Year)	Annualized Cost (Millions)[1]
Reverse Osmosis	$71.25	$6.92	$9.42
Ion Exchange	$47.28	$3.35	$6.08
Biological Denitrification	$42.97	$1.32	$3.80
Notes:[1] Annualized costs were based on annual operations and maintenance (O&M) costs plus annualized capital costs at a 4% annual interest rate			

8.1.3.1.3 Long-term Drinking Water Solution – Point of Use (POU) Treatment

Areas of dispersed population with elevated nitrate concentrations in groundwater that will not be serviced by a community water system will require installation of a POU treatment system in each household. POU treatment systems for nitrate consist of whole house nitrate ion exchange (IX) systems, whole house reverse osmosis (RO) systems, and under-the-sink (UTS) RO systems. For the economic analysis, UTS RO systems were assumed to be the most practical device for servicing nitrate-impacted households, given the drawbacks of the other two systems: (a) Whole house RO systems are cost prohibitive and would require in many households extensive plumbing modifications to ensure that the treated water does not leach metals from existing plumbing; and (b) Nitrate IX systems treat all of the household's water, but they do so by adding salt, which can cause taste issues in the drinking water as well as add salt load to the household's wastewater.

The cost basis for UTS RO systems assumes that they are leased (at a monthly rate) and will require RO membrane replacement every three to five years. Costs were developed for the AID area and then extrapolated to the Central Valley.

The number of households in the AID area that would not be connected to the community water system was estimated using GIS and census data (2010) and available nitrate data. Table 8-2 provides the estimated annual costs for leasing UTS RO systems within areas with different nitrate conditions

Table 8 - 2. Point-of-Use Treatment System Estimated Costs for the AID Area

Point-of-Use Treatment Area in AID	Population[1]	Number of Households[1]	Monthly Unit Cost[2]	Total Annual Cost[3]
Upper or Lower Zone - Nitrate ≥ 10 mg/L as N	6,483	1,752	$40	$0.9 million
Upper or Lower Zone Nitrate - ≥ 7.5 mg/L as N	12,103	3,162	$40	$1.6 million
Notes: [1] U.S. Census Bureau 2010 [2] Based on conservative quote for monthly lease of an RO system [3] Total Annual Cost includes the cost of membrane replacement for POU treatment system every 3 years				

8.1.3.2 Long-term Nitrate Management

The SNMP management goals applicable to the long term management of nitrate include:

- Ensuring a safe drinking water supply for all residents in the valley;
- Balancing salt and nitrate loading to eliminate further degradation where reasonable and feasible; and
- Implementing management restoration where reasonable and feasible

The first goal, ensure a safe drinking water supply, has been evaluated above in Section 8.1.3.1. For the purposes of developing cost estimates for management measures intended to address the second and third goals, the following general approach was followed:

- Cost estimates for aggressive restoration actions were developed for two subareas within the AID area (Dinuba and Cutler-Orosi) (Luhdorff & Scalmanini and Larry Walker Associates, 2016b).
- Local information for the Cutler-Orosi and Dinuba subareas was used to estimate costs for the entire AID study area; and
- AID area costs were extrapolated to estimate costs to meet the long-term nitrate management goals in the Central Valley in areas impacted by elevated nitrate levels in groundwater.

The sections below summarize cost estimates for the AID area and the Central Valley. SNMP Attachment C-2 (Larry Walker Associates, 2016a), Luhdorff & Scalmanini Consulting Engineers and Larry Walker Associates (Luhdorff & Scalmanini and Larry Walker Associates, 2016b) and CDM Smith (CDM Smith, 2016a) provide additional information regarding the costs developed for the Cutler-Orosi and Dinuba subareas.

8.1.3.2.1 Long Term Nitrate Management in the Alta Irrigation District

In order to change the ambient nitrate concentration in groundwater in the AID study area, aggressive measures were modeled. Removing nitrate mass is accomplished by pumping groundwater out of the aquifer system. That water can either be treated and served, treated and reinjected, or applied directly to agricultural lands. An additional aggressive measure to reduce nitrate concentrations in the groundwater basin is through artificial winter season recharge on agricultural fields (on-farm winter recharge), e.g., application of excess Kings River water during winter months (November through March) to areas where the potential for accepting recharge is high. These two concepts (pumping and recharge) were considered in the development of this cost estimate.

To develop a cost estimate for the entire AID area, which was then used to provide a Central Valley-wide cost estimate, two AID subareas, Dinuba and Cutler-Orosi, were prioritized for pump, treat, and reinject based on their status as economically disadvantaged communities, ambient nitrate levels, land uses, and mass loadings. A third area located north of Dinuba and east of Reedley was selected to evaluate the on-farm winter recharge scenario based on its high recharge potential (soil type, depth to water, etc.). Four different management scenarios (Plans A through D) were modeled for several different well pumping rates and based on assumed well field engineering designs, modeling was completed for each of the two subareas to estimate water quality benefits achieved under each scenario. This information was then extrapolated to the larger AID area (see Attachment C-2 of the SNMP for detailed information regarding the modeled management scenarios, well-field engineering designs, and development of costs for the Dinuba and Cutler-Orosi areas).

Using the costs developed for the two AID subareas costs were estimated for the entire AID area (see Attachment C-2 of the SNMP for subarea cost information). As before, it was assumed that regional treatment facilities with ion exchange technologies and evaporation ponds would be used to reduce nitrate prior to reinjection. The standard capacity of a treatment facility was assumed to be 25 MGD. Based on data for the AID area, it was estimated that seven treatment facilities of this size would be needed to handle extracted water from the upper zone, and eleven treatment facilities would be needed to meet the treatment needs for the lower zone. Evaporation ponds would be needed for residuals; it is estimated that an evaporation pond area of approximately 3.5 acres (assuming 5-ft depth) would be needed for each 25 MGD treatment facility. Based on these assumptions, Table 8-3 provides the estimated costs for long-term nitrate management in the AID area under Restoration Plan B. Plan C and D costs would be incrementally higher (see Attachment C-2 for information regarding characteristics of Plans B, C and D).

Table 8 - 3. Estimated Capital and O&M Costs for Long-Term Nitrate Management in Entire AID Area Based on Restoration Plan B

Aquifer Zones	Capital Costs ($ Millions)					Annual O&M Costs ($ Millions)				
	Wells	Treatment		Total		Wells	Treatment		Total	
		Low	High	Low	High		Low	High	Low	High
Upper	$867	$202	$427	$1,069	$1,294	$87	$25	$57	$112	$143
Lower	$1,373	$318	$670	$1,691	$2,043	$137	$39	$89	$176	$227
Project Total	$2,240	$520	$1,097	$2,760	$3,377	$224	$64	$146	$288	$370
Contingency (30%)				$828	$1,001				$86	$111
Total, with contingency				$3,588	$4,338				$374	$481
Annualized capital cost (20 yrs., 3% interest)				$241	$292					
Total annual cost (annualized capital & O&M)				Low	High					
				$615	$773					

8.1.3.2.2 Long-Term Nitrate Management in the Central Valley

The cost estimates for the AID area were scaled up to the Central Valley based on the AID modeling findings and the area of nitrate-impacted areas in the Central Valley. However, as noted by Luhdorff & Scalmanini Consulting Engineers and Larry Walker Associates (2016b) this approach has to be strongly qualified. Applying pump, treat, and reinject designs to large regional areas may not be practicable. Instead, localized management efforts in areas of high priority (based on proximity to communities and existing ambient conditions) may be a more feasible approach to achieving restoration. With that caveat, to obtain a planning-level understanding of the potential costs of a valley-wide restoration effort, the economic analysis estimated the required number of wells and treatment facilities needed for the Central Valley area and the total volumes to be treated daily. The planning level estimate assumed that areas with existing nitrate concentrations above 7.5 mg/L nitrate (as N) would be aggressively restored (note that this is an extrapolation and has not been modeled; it is unknown how long it would take to reach target concentration goals or whether they are attainable at all). Table 8-4 summarizes the area requiring treatment and required numbers of extraction/ injection wells for both the AID area and Central Valley.

To estimate costs, it was again assumed that regional treatment facilities with ion exchange technologies and evaporation ponds would be built for treating the pumped groundwater valley-wide. At a proposed 25 MGD capacity per facility and given estimated treatment volumes, 204 and 185 treatment facilities were projected for the upper and lower zones, respectively, under Plan B. Evaporation ponds of approximately 3.5 acres (assuming 5-ft depth) would be needed for each 25 MGD treatment facility. Table 8-5 provides the resulting estimated Central Valley costs in billions of dollars. These estimates are intended to only present a planning-level understanding of the financial effort involved in aggressively restoring such a large area. Because of all of the generalizations, estimations, and 'scaling up' factors involved, actual costs could easily be plus or minus 50% of estimated costs.

Table 8 - 4. Estimates of the Number of Wells and Area Requiring Treatment in the AID Area and Projections for the Central Valley

Area	Area Needing Treatment (square miles)	No. of Extraction Wells	No. of Injection Wells
Alta Irrigation District			
Upper Zone	208	238	381
Lower Zone	254	377	604
Total	462	615	985
Central Valley			
Upper Zone	6,154	7,053	11,291
Lower Zone	4,324	6,418	10,283
Total	10,478	13,471	21,574

Table 8 - 5. Estimated Capital and O&M Costs for Long-Term Nitrate Management in the Central Valley Based on Restoration Plan B

Aquifer Zones	Capital Costs ($ Billions)					Annual O&M Costs ($ Billions)				
	Wells	Treatment		Total		Wells	Treatment		Total	
		Low	High	Low	High		Low	High	Low	High
Upper	$26	$6	$12	$32	$38	$2.6	$0.7	$1.7	$3.3	$4.3
Lower	$23	$5	$11	$28	$34	$2.3	$0.7	$1.5	$3.0	$3.8
Project Total				$60	$72				$6.3	$8.1
Contingency (30%)				$18	$22				$1.9	$2.4
Total, with contingency				$78	$94				$8.2	$10.5
Annualized capital cost (20 yrs., 3% interest)				$5.2	$6.3					
Total annual cost (annualized capital & O&M)				Low	High					
				$13.4	$16.8					

8.1.3.3 Salt Management

The Central Valley SNMP proposes that the management of salt be addressed through the adoption and implementation of the Salinity Management Strategy (SNMP Attachment A-3). This three-phased strategy includes implementation of a Phase I Prioritization & Optimization Study for a period of about 10 years. This study, which is estimated to cost between $7 and $13 million, will identify recommended salt management projects for implementation by hydrologic region. Projects may range from those that would be implemented on a local or subregional basis to larger, regional projects such as a regulated brine line (CDM Smith 2016b). As part of the Prioritization & Optimization Study, costs for recommended local or subregional salt management projects will be developed. In addition, CDM Smith (2014) provides estimated planning level costs for various treatment technologies evaluated.

In addition, CV-SALTS developed costs for a regulated brine line (CDM Smith, 2014). Per this study, brine would be discharged via either the East Bay Municipal Utility District (EBMUD) outfall or an alternative outfall location in saline waters. The Bay Area disposal option potentially has the capacity to manage all of the current salt accumulation in the Central Valley. Table 8-6 provides the planning costs developed for this project in 2014 based on salt accumulation estimates in key IAZs (see SNMP Section 3.1) (CDM Smith, 2014).

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Table 8 - 6. Estimated Central Valley Regulated Brine Line Costs (Adapted from CDM Smith 2014)

Component	IAZs 9, 10, 14, 15, 19, 21, and 22				IAZ 6				Entire Project	
	Capital Cost			O&M Cost ($M)	Capital Cost			O&M Cost ($M)	Total Capital Cost ($B)	Total O&M Cost ($B)
	Number of Units	Unit Cost	Total ($M)		Number of Units	Unit Cost	Total ($M)			
Extraction wells	693	$1.4M	$970	$97	155	$1.4M	$217	$22		
Desalter facilities	33	$150M	$4,950	$495	7	$150M	$1,050	$105		
Post-RO brine treatment	37.25MGD	$4/gal	$149	$15						
Reinjection wells	624	$1.4M	$874	$87	16	$1.4M	$22	$2		
Brine line[1]	• 24” diam, 50mi • 36” diam, 22 mi • 48” diam, 63 mi • 2 x 48” diam, 90 mi • 2 x 48” diam, 56 mi	• $6/ LF diam in • $6/ LF diam in • $6/ LF diam in • $6/ LF diam in • $15/ LF diam in	$38 $25 $96 $239 $373							
Subtotal Brine Line			$771	$77						
Brine line pump stations	7	$36.85M	$258	$72						
Brine disposal at EBMUD	74.5MGD	$0.04/gal		$1,088						
Deep well brine disposal					35	$2.53M	$89	$9		
Total costs			$7,972	$1,938			$1,378	$138	$9.3	$2.1
Contingency (30%)									$2.8	$0.6
Total plus contingency									$12.1	$2.7
Estimated annual cost (over 30 years at 3% interest rate)									$0.6	$2.7
Total estimated annual cost									$3.3	
Notes: [1] A 1.75 multiplier (instead of 2) is applied for segments where two parallel pipes are used (to account for cost savings from using the same alignment).										

8.1.3.4 Economic Costs Attributable to Individual CV-SALTS Policies, Strategies, and Guidance

Different elements of the policies, strategies, and guidance recommended by the SNMP will require resources to implement. This will be true regardless of whether the work is performed by an individual discharger or by a group of dischargers within an approved management zone. In addition, the proposed SNMP does not specify the salt and nitrate control methods or projects that individual dischargers or groups of dischargers may implement in the future to meet water quality objectives and satisfy the requirements of the SNMP. As a consequence, dischargers may be required to complete studies or analyses to support the development of a management program. Given the expectation of these types of implementation costs, the economics analysis summarized the types of studies, plans, or analyses that may be required to support implementation of a particular policy, strategy or guidance. For example, for implementation of the Groundwater Management Zone Policy, the economics analysis includes estimated costs for development of the Preliminary Management Zone Proposal, Early Action Plan, Initial Assessment, Notice of Intent, Final Management Zone Proposal, and Management Zone Implementation Plan. See Section 6.3.6 in Attachment C-2 of the SNMP (Larry Walker Associates, 2016a) for more information.

8.1.3.5 SNMP Surveillance and Monitoring Program

The SAMP establishes a template for development of a groundwater surveillance and monitoring program to support implementation of the SNMP (see SNMP Section 5) (CV-SALTS, 2016). The monitoring program will be further developed while the Basin Plan amendment process is underway to incorporate the SNMP into the Basin Plans. The purpose of a surveillance and monitoring program is to provide the means for determining if the implementation program is achieving its goals to improve nitrate and salt conditions in groundwater. The program is intended to provide a means to periodically assess salt and nitrate to evaluate progress toward meeting those goals.

The surveillance and monitoring program domain is the Central Valley as a whole, but local monitoring programs associated with WDRs or the execution of Management Zone Implementation Plans established for newly defined management zones could be linked with the monitoring program. For example, local or management zone monitoring programs could serve the purposes of the SNMP surveillance and monitoring program within those local areas. The SAMP report identifies several tasks, both to start-up and implement the program (See SNMP Sections 5.4 and 5.5) (CV-SALTS, 2016). It is anticipated that a project budget between $3.0 and $5.5 million would be needed to fund the first 10 years of the monitoring program (includes start-up costs and reporting at 5 year intervals). With additional administration and contracting costs, estimated annual cost over the first 10-year period is between $300 and $550 thousand dollars (CDM Smith, 2016c). These costs are not necessarily new costs since to the extent practical, the surveillance and monitoring program will rely on existing monitoring programs.

8.2 Calculating Costs to Agriculture Under Proposed Salt and Nitrate Control Program

8.2.1 Overview

State law requires that basin plans indicate estimates of the total cost and identify potential sources of funding of any agricultural water quality control program prior to its implementation (Water Code Section 13141). The Central Valley Water Board intends on establishing a Central

Valley-wide Salt and Nitrate Control Program that has three main goals: 1) Ensure safe drinking water supplies; 2) Balance salt and nitrate loading; and 3) Restore impacted water bodies where reasonable feasible and practicable. While the overall program will be implemented in a phased approach to help distribute associated implementation costs, implementation of the program is anticipated to result in significant costs to dischargers. The following sections describe the methodology and rationale for this cost evaluation and present the estimated cost to agriculture for the first 10 years of the Salt and Nitrate Control Program. A summary of the overall program costs is also presented in Table 8-10. Additionally, a discussion regarding other entities that have a share of responsibility for costs associated with the Central Valley's salinity issues is included at the end.

Under the proposed phased Salt Control Program, the first 10 years represents the implementation of the Phase 1 - Priority and Optimization (P&O) Study, where the overall, long-term salinity management plan, it's governance and funding structure and the conceptual salinity management projects will be developed. Under the prioritized Nitrate Control Program, the time-period represents the first 10 years of implementation of the program within the Priority 1 and 2 groundwater basin/sub-basin areas and includes measures to supply safe drinking water on a short-term basis to nitrate impacted communities and domestic well users as well as develop the governance structure for Management Zones (collective discharger groups) and initiate the framework for long-term safe drinking water supplies. Central Valley floor area groundwater basins/sub-basins were prioritized for program implementation based on the average groundwater nitrate concentration within the Upper Zone of each basin/subbasin utilizing averaging of groundwater nitrate concentrations in 1 square mile grid cell sizes for each basin/sub-basin.

8.2.1.1 Excluded Costs

Goal 2 of the Program, balancing of salt and nitrate loading is being implemented under the Irrigated Lands Regulatory Program (ILRP) through ongoing source control requirements, therefore costs for continued source control activities are not included in this estimate. Cost identified with Goal 3, long-term groundwater restoration, is included within the Economic Analysis of the CV-SALTS - Salt and Nitrate Management Plan (SNMP) (CV-SALTS, 2016) and noted here as preliminary. The costs for the long-term restoration are conceptual and will be revised and incorporated into the overall program costs following completion of the P&O Study, since many of these salt and nitrate impacted areas overlap and restoration of both areas may be combined as part of the overall program. Phase 2 and 3 Salt Control Program costs are estimates for detailed design, permitting and implementation of future salt management projects. These costs would occur after the first 10-years of the proposed Salt Control Program.

8.2.1.2 Control Program Cost Estimation Methodology

Estimated costs associated with this program are based on conceptual projects and associated capital and operational costs described and contained in the following documents:

- Central Valley SNMP Economic Analysis (Larry Walker Associates, 2016a) – This document presents the results of the economic analysis of the SNMP and related policies;

- Strategic Salt Accumulation Land and Transportation Study (SSALTS) - Phase 3 Report – Evaluate Potential Salt Disposal Alternatives to Identify Acceptable Alternatives for Implementation (CDM Smith, 2016b) – This study identified the range of viable Central Valley alternatives for salt disposal to provide input for consideration during development of the SNMP for the region under the jurisdiction of the Central Valley Water Board. The findings were used to guide discussions regarding establishment of regional salt management policies and the need for changes to the existing Basin Plans to facilitate salt disposal in a manner that is most beneficial to the region and consistent with the Recycled Water Policy;

- Nitrate Implementation Measures Study (NIMS) (CDM Smith, 2016a) - NIMS describes and provides cost estimates for various management scenarios for reducing nitrate concentrations in groundwater and was used in the SNMP Economic Analysis (Larry Walker Associates, 2016a) to estimate cost to treat the groundwater under the Alta Irrigation Archetype study (See next bullet);

- CV-SALTS Management Zone Archetype Analysis: Alta Irrigation District (Luhdorff & Scalmanini and Larry Walker Associates, 2016b) – This study serves as an example and "proof of concept" to help test, on a spatially refined basis, the application of selected policies, data analysis methods, and salt and nitrate management approaches that were considered by CV-SALTS during SNMP development;

- Surveillance and Monitoring Program (SAMP) Final Report (CDM Smith, 2016c) - The SAMP Report is designed to help direct the monitoring requirements of the proposed Basin Plan Amendment and help support its adoption and approval; and

- Concept Level Tasks and Costs for the SAMP Implementation, Memorandum to CV-SALTS Executive Committee from Joe LeClaire (CDM Smith) and Richard Meyerhoff (CDM Smith). September 13, 2016 (CDM Smith, 2016c) – This memorandum provides cost estimates for implementation of the SAMP.

These studies identify implementation measures and associated costs for all phases of the Control Program.

The cost estimate for the Central Valley-wide Salt and Nitrate Control Program provided here accounts for the first 10-years of program administration (e.g., Board oversight and third-party activities), the first phase of the Salt Control Program throughout the Central Valley, the first ten years of the Nitrate Control Program throughout the Priority 1 and Priority 2 basins/sub-basins, and surveillance and monitoring program costs. All costs are expressed as 2016 dollars.

8.2.2 Salt Control Program

Estimated cost for the Salt Control Program is for the first 10-year phase of the three-phased program. This phase includes development and implementation of the P&O Study. As indicated previously, the P&O Study is designed to develop the overall salinity management plan, it's governance and funding structure and the conceptual design of the salinity management projects to be implemented. The P&O Study will become the main framework for the overall, long-term salinity management strategy for the Central Valley over the next 30 to 50 years or more. This cost estimate anticipates that the majority of agricultural dischargers will participating in the P&O Study. Estimated cost for the Salt Control Program for the first 10 years is

summarized in Table 8-7. The main P&O Study components along with the estimated cost for each component are also summarized below for the full 10-year period:

- Stakeholder Coordination - Stakeholder and Sustainable Groundwater Management Act (SGMA) Groundwater Sustainability Agency (GSA) Meetings ($0.53 to $1.06 million);
- Strategic Planning – Regulatory and Policy Evaluations and Phase II Planning ($1.04 to $2.80 million);
- Governance Structure Development – Governance Plan Formation and Structure Development, Implementation and Refinement ($0.42 to $1.06 million);
- Funding Development – Development and Implementation of Funding Plan and Finance Strategy ($0.63 to $1.06 million);
- Basin Prioritization and Salinity Management Analyses – Revisions to Groundwater Basin/Sub-basin Prioritization, Groundwater Modeling, Prioritization within Groundwater Basins/Sub-basins, Development of Salt Management Projects, Identification of Salt Storage Areas, Interim Truck or Rail Transportation of Brine Studies and Interim Phase I Report ($1.99 to $3.36 million);
- Conceptual Design of Salt Management Projects – Conceptual Design of Central Valley Subregional Salt Management Projects and Central Valley Regulated Brine Line Project ($1.06 to $1.83 million); and
- Special Studies – Groundwater Quality Characterization of Groundwater Basins/Sub-basins for Trace Constituents, Emerging Technology Reviews, Recycled Water Import Study and Stormwater Recharge Master Plan Development ($1.05 to $1.93 million).

Estimated costs for the Salt Control Program are presented in the CV-SALTS SNMP Economic Analysis (Larry Walker Associates, 2016a), which includes estimated Phase 2 and 3 costs for detailed design of salt management projects (in-valley salt disposal projects and the Central Valley Regulated Brine Line) and for permitting, construction and implementation of the capital projects. These Phase 2 and 3 costs are estimated to be approximately $3.3 billion per year over an approximate 30-year timeframe; however, as indicated earlier, these costs are conceptual and will be revised upon completion of the P&O Study.

8.2.2.1 Total Salt Control Program Estimated Costs - Phase 1

Total cost for the Salt Control Program for the first phase is estimated to range from approximately $6.7 million to $13 million or an average of $0.67 million to $1.3 million per year for 10 years and is based on the estimated costs to perform the Prioritization and Optimization Study (P&O Study) as presented in the SSALTS Phase 3 Report (CDM Smith, 2016b).

8.2.2.2 Agriculture Cost Share Methodology

The percentage share of the Salt Control Program costs attributable to agriculture is based on the percentage of irrigated agricultural land use within the Central Valley floor area versus total land area within the Central Valley floor area (7 million irrigated agricultural acres (NASA, 2015) versus 13.2 million total acres for the Central Valley floor area (California Department of Water Resources, 2003) = 53 %).

8.2.2.3 Salt Control Program Annual Costs to Agriculture

The estimated annual cost for agriculture to comply with the Salt Control Program ranges from $360,000 to $700,000 per year for the first phase of the control program (Table 8-7). The estimated cost for agriculture to comply with the Salt Control Program is a cumulative total that includes costs for the Sacramento River and San Joaquin River Basins, and the Tulare Lake Basin and represents a 53% agricultural share of the total Salt Control Program's Phase 1, P&O Study, annual cost range for the first 10 years of program implementation.

8.2.3 Nitrate Control Program

The first 10 years of implementation of the Nitrate Control Program will occur within the initially designated Priority 1 and 2 groundwater basin/sub-basin areas. Six (6) groundwater basins/sub-basins out of a total of 43 groundwater basins/sub-basins within the Central Valley floor area are considered Priority 1 Basins/Sub-basins. These six basins/sub-basins are located within the Southern San Joaquin Valley and cover approximately 20% of the overall Central Valley floor area (2.64 million acres out of a total of 13.2 million acres). Eight (8) additional groundwater basins/sub-basins within the Central Valley floor area are considered Priority 2 Basins/Sub-basins. These basins/sub-basins cover slightly over 38% of the Central Valley floor area (5.04 million acres out of 13.8 million acres total) and are predominantly located within the San Joaquin Valley, with exception of one, the Yolo sub-basin, located in the Sacramento Valley.

Total cost to comply with the Nitrate Control Program is based on anticipated regulation of nitrate by Management Zone, assuming agricultural coalitions will take the lead on Management Zone implementation. Ten agricultural coalitions cover the Priority 1 and 2 basin/sub-basin areas, so ten (10) Management Zone governance bodies were assumed for Management Zone formation costs. Estimated costs represent cost to Priority 1 Basin area dischargers during the first 10 years of program implementation and costs to Priority 2 Basin area dischargers for 8 years, as implementation of the program in Priority 2 areas occurs 2 years after Priority 1 Basin dischargers are required to implement the program.

Estimated costs include Management Zone formation costs and costs to supply safe drinking water on both a short and long-term basis to nitrate impacted communities and domestic well users. Short-term drinking water supply costs represent costs for supplying bottled water for a period of two years per Management Zone. Long-term supply costs include community water system treatment upgrades for impacted communities with water systems and point source treatment system installation and maintenance for impacted domestic well users. The CV-SALTS SNMP Economic Analysis (Larry Walker Associates, 2016b) estimated these short and long-term supply costs for the entire Central Valley floor area. To estimate costs applicable only to the Priority 1 and 2 Basins/Sub-basins, the Central Valley floor area costs were adjusted based on estimated nitrate loading. Based on the NIMS analysis (CV-SALTS, 2016c), the estimated percentage of nitrate loading (in tons) in the Central Valley floor area that occurs in the Priority 1 and Priority 2 Basins/Sub-basins is 65%.

8.2.3.1 Total Nitrate Control Program Estimated Costs – First 10 Years - Priority 1 and 2 Basin Areas

Total cost for the Nitrate Control Program for the first 10 years of program implementation is estimated to range from approximately $268 to $399 million or an average of $26.8 to $39.9 million per year and is based on implementation of Nitrate Control Program requirements to supply safe drinking water to impacted communities and domestic groundwater beneficial users

(on both a short-term and long-term basis) predominantly through Management Zones. Nitrate Control Program cost components for this estimate include:

- Management Zone Formation Costs for Priority 1 and 2 Basins/Sub-basins (10 Managements Zones total)

- Short-Term Drinking Water Supply - Bottled Water Supply for 2 Years for Management Zones in Priority 1 and 2 Basins/Sub-basins

Long-Term Drinking Water Supply – Point Source Treatment and Community Water System Upgrade Work for 8 Years for Management Zones in Priority 1 and 2 Basins/Sub-basins (Estimated cost for each component is presented in Table 8-8).

The Nitrate Control Program, similar to the Salt Control Program, includes requirements to implement long-term restoration of impacted water bodies (where reasonable, feasible and practicable) which will occur after the first 10-years of the proposed program. These costs have been identified in the CV-SALTS SNMP Economic Analysis (CV-SALTS, 2016a) to be approximately $13.4 to 16.8 billion per year over an approximate 20-year timeframe, but as indicated previously, these costs are conceptual and will be revised.

8.2.3.2 Agricultural Cost Share Methodology

A 2016 UC Davis study indicating that agricultural croplands and manure contribute 90% of the nitrate that impacts groundwater within California (Tomich, 2016). This percentage was used to estimate the cost to agriculture associated with compliance with the Nitrate Control Program for the first 10 years of implementation within the Priority 1 and 2 Basins/Sub-basins.

8.2.3.3 Nitrate Control Program Annual Costs to Agriculture – First 10 Years – Priority 1 and 2 Basin Areas

The estimated annual cost for agriculture to comply with the first 10 years of the Nitrate Control Program ranges from $24 to $36 million per year. This cost represents 90% of the cumulative total cost that includes costs to establish Management Zones in the Priority 1 and 2 areas and to provide short and long-term drinking water supplies within these same areas over the first 10 years of the program.

8.2.4 Surveillance and Monitoring Program

The overarching goals of the Salt and Nitrate Surveillance and Monitoring Program (SAMP) are to:

- Periodically assess the progress of the Salt and Nitrate Control Program and, if appropriate, support efforts to re-evaluate the requirements of the control program;

- Develop statistically representative ambient water quality determinations and trend analyses for Total Dissolved Solids (TDS)/Electrical Conductivity (EC) and Nitrate as Nitrogen; and

- Maximize the use of existing monitoring programs to provide needed data and avoid duplication of efforts.

The estimated Surveillance and Monitoring Program costs presented here are based on a program that will attain these goals, while minimizing overall program cost. It is anticipated that the majority of the salt and nitrate data will be collected under other efforts, therefore estimated costs represent average annual costs to:

- Develop a Surveillance and Monitoring Work Plan and Quality Assurance Project Plan;
- Compile existing water quality data;
- Collect monitoring data for data gap areas; and

Prepare summary reports presenting ambient water quality and trends for submittal to the Central Valley Water Board every five years (two (2) reports during the initial 10 years of program implementation).

8.2.4.1 Total Surveillance and Monitoring Program Estimated Costs – First 10 Years

Total estimated cost for the Surveillance and Monitoring Program for the entire Central Valley floor area ranges from $3.0 to $5.5 million over the first 10 years of the program or $300 to $550 thousand per year. Surveillance and Monitoring Program estimated costs used are from the "*Concept Level Tasks and Costs for the SAMP Implementation Memorandum to CV-SALTS Executive Committee*" (CDM Smith, 2016c) for total Central Valley floor area (13,182,630 acres).

8.2.4.2 Agriculture Cost Share Methodology

Annual cost share to agriculture represents the average between the nitrate program percentage of responsibility (90%) and the salt program percentage of responsibility (53%), which equates to an average 72%.

8.2.4.3 Surveillance and Monitoring Program Annual Costs to Agriculture – First 10 Years

The estimated cost for agriculture to comply with the Surveillance and Monitoring Program requirements ranges from $210 to $390 thousand per year for the first 10 years of program implementation (Table 8-9).

Table 8 - 7. Estimated Annual Costs for Agriculture to Comply with the Salt Control Program

SALT CONTROL PROGRAM		Estimated Total Cost ($ Millions)			Estimated Cost Per Year ($ Millions)			
Phase 1 - P & O Study (First 10 years)	Strategic Planning	1.04	to	2.8	Over 5 years	0.21	to	0.56
	Stakeholder Coordination Meetings	0.53	to	1.06	Over 10 Years	0.05	to	0.11
	Governance Structure Development	0.42	to	1.06	Over 10 Years	0.04	to	0.11
	Funding Development	0.63	to	1.06	Over 10 Years	0.06	to	0.11
	Basin Prioritization and Salinity Management Analyses	1.99	to	3.36	Over 5 Years	0.40	to	0.67
	Conceptual Design of Salt Management Projects	1.06	to	1.83	Over 4 Years	0.27	to	0.46
	Special Studies	1.05	to	1.93	Over 7 Years	0.15	to	0.28
	Salt Control Program Phase 1 Total Cost:	6.72	to	13.1	Over 10 Years	0.67	to	1.31
	Salt Control Program Cost to Agriculture:	**3.57**	**to**	**6.96**	**Over 10 Years**	**0.36**	**to**	**0.70**
	Based on 53.1% share of total Salt Control Program costs (The percentage of irrigated agricultural land to total land within the Central Valley floor area= 7,000,000 acres/13,182,630 acres = 53.1%)							
Phase 2 - Design and Permitting Conceptual Cost Estimate (Years 10 to 20)	**Phase 2 Total:**	**Not performed in the first 10 years**			**Included in Phase 3 Costs**			
Phase 3 - Construction and Operation Conceptual Cost Estimate (Years 20 to 40)	**Phase 3 Total:**	**Not performed in the first 10 years**				**3300**	**to**	**3300**

Table 8 - 8. Estimated Annual Costs for Agriculture to Comply with the Nitrate Control Program

NITRATE CONTROL PROGRAM		Estimated Total Cost ($ Millions)			Estimated Cost Per Year ($ Millions)			
First 10 Years for Priority 1&2 Basins	Management Zone (MZ) Formation Costs	4.80	to	12.5	n/a - one time cost			
	Short-Term Safe Drinking Water Supply Costs-Bottled Water	104	to	152	Over 2 Years	52.0	to	76.0
	Long-Term Safe Drinking Water Supply Costs (Priority 1 and Priority 2 Areas)	159	to	234	Over 8 Years	19.9	to	29.3
	Nitrate Control Program Priority 1&2 Total Cost:	268	to	399	Over 10 Years	26.8	to	39.9
	Nitrate Control Program Cost to Agriculture:	**241**	**to**	**359**	**Over 10 Years**	**24.1**	**to**	**35.9**
	Based on California Nitrogen Assessment (CNA) Report Percent of Nitrate in Groundwater Attributable to Ag = 90% of Program Cost							

Table 8 - 9. Estimated Annual Costs for Agriculture to Comply with the Surveillance and Monitoring Program

SURVEILLANCE AND MONITORING PROGRAM		Estimated Total Cost ($ Millions)			Estimated Cost Per Year ($ Millions)			
First 10 Years of Salt and Nitrate Control Program	*Estimated costs include cost for Surveillance and Monitoring Program Work Plan and Quality Assurance Project Plan development, compilation of existing water quality data, monitoring of data gap areas and preparation of summary reports for submittal to the Central Valley Water Board every 5 Years (2 reports in this estimate).*							
	Surveillance and Monitoring Costs for the first 10 years:	3.00	to	5.50	Over 10 Years	0.30	to	0.55
	Surveillance and Monitoring Cost to Agriculture:	**2.15**	**to**	**3.94**	**Over 10 Years**	**0.21**	**to**	**0.39**
	Based on an average of the percentage responsibility for Nitrate of 90% and the percentage of responsibility for salinity of 53.1% = 71.6%							

8.2.5 Overall Salt and Nitrate Control Program Estimated Costs

8.2.5.1 Total Overall Salt and Nitrate Control Program Estimated Cost

The total estimated cost for the Salt and Nitrate Control Program for the first 10 years ranges from $278 to $417 million or an average annual cost of $27.8 to $41.7 million per year.

8.2.5.2 Overall Salt and Nitrate Control Program Annual Cost to Agriculture – First 10 Years

The estimated annual capital and operational costs for agriculture to comply with the overall Salt and Nitrate Control Program for the first 10 years ranges from $24.7 to $37.0 million per year (See Table 8-10).

Table 8 - 10. Summary Totals and Costs to Agriculture

SUMMARY TOTALS	Estimated Total Cost ($ Millions)			Estimated Cost Per Year ($ Millions) over 10 years		
Salt Control Program Phase 1 Total Cost:	6.72	to	13.10	0.67	to	1.31
Salt Control Program Cost to Agriculture:	3.57	to	6.96	0.36	to	0.70
Nitrate Control Program Priority 1&2 Total Cost:	268	to	399	26.8	to	39.9
Nitrate Control Program Cost to Agriculture:	241	to	359	24.1	to	35.9
Surveillance and Monitoring Costs for the first 10 years:	3.00	to	5.50	0.30	to	0.55
Surveillance and Monitoring Cost to Agriculture:	2.15	to	3.94	0.21	to	0.39
Total Cost for First 10 Years of Salt and Nitrate Control Program:	**278**	to	**417**	**27.8**	to	**41.7**
Total Cost for First 10 Years of Salt and Nitrate Control Program to Agriculture:	**247**	to	**370**	**24.7**	to	**37.0**

8.2.6 Potential Funding Sources

Potential funding sources include:

1. Private financing by individual and/or group sources.
2. Bonded indebtedness or loans from governmental institutions.
3. Federal grants or low-interest loan programs.
4. Single-purpose appropriations from federal or State legislative bodies.
5. Grant and loan programs administered by the State Water Resources Control Board and Department of Water Resources, which are targeted for agricultural water quality improvement. These programs include:

a) Clean Water Act funds (State Water Resources Control Board)
b) Agricultural Water Quality Grant Program (State Water Resources Control Board)
c) Clean Water State Revolving Fund (State Water Resources Control Board) and
d) Integrated Regional Water Management grants (State Water Resources Control Board, Department of Water Resources)

8.2.6.1 Other Potential Funding Sources - Entities with Responsibility for Salt Loading or Loss of Assimilative Capacity of Groundwater Within the Central Valley

There are other entities, such as Central Valley Water Project and State Water Project Contractors, Water Districts and agencies responsible for water diversions that also share some responsibility for the salt issues in the Central Valley and therefore should share some of the program cost. These entities, through the importation of surface water to areas where the water cannot drain out of the basin system, such as the closed Tulare Lake Basin, cause groundwater salinity increases. Entities exporting high quality surface water out of the Central Valley, cause reductions in groundwater assimilative capacity by redirecting high quality (low salt concentration) surface water that would otherwise recharge groundwater basins. Due to the complexities of surface water import to and export from the Central Valley, calculation of a potential numerical percentage of responsibility for responsible entities is outside of the scope of this staff report. Further evaluation is recommended as part of the P&O Study during identification of potential funding sources.

8.2.7 Future Review and Evaluation of Costs

As noted throughout the Economic Analysis, developing a cost estimate for the long-term implementation of the Salt and Nitrate Control Program is difficult and estimated cost impacts to agriculture beyond the first 10 years is highly speculative. Accordingly, as the program is implemented over time, the Central Valley Water Board will update cost estimates during future Basin Plan Amendments concurrent with phased program reviews identified under the Salt Control Program.

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Appendix L – Exhibit 21 of the James Irrigation District Comment Letter

APPLICATION REQUIREMENTS FOR NPDES PERMITS
(see 40 CFR 122.21 for federal requirements for a complete NPDES Application)

Completed and signed NPDES Applications

Report of Waste Discharge (Form 200), plus
Form 1, plus
Form 2A, 2B, 2C, 2D, 2E or 2F
(http://www.waterboards.ca.gov/centralvalley/business_help/permit3.html)

Filing Fee for new discharges

http://www.waterboards.ca.gov/fees/docs/adoptedfeeschedule.pdf

Site map and schematic of facility

CEQA Documents (EIR, Negative Declaration, etc.), if available for project

Description of plans for growth or expansion of facilities, or other modifications planned for the next five years.

Recent Facility Upgrades and upgrades anticipated during the next NPDES permit cycle (five to seven years)

Anti-Degradation Analysis for new or expanding discharges.

- Infeasibility Study for Wastewater Disposal Alternatives
- Regionalization and Recycled Water Alternatives

California Toxic Rule/National Toxic Rule constituent analyses for effluent and receiving water

- Conducted within last permit cycle for permit renewals

Receiving Water Information

- Low flow data (7Q10 and 1Q10)
- Evaluation of background constituent concentrations to determine effluent constituents for which dilution may be needed
- Upstream and downstream receiving water hardness data (include effluent hardness data if ephemeral stream)
- Location of nearest downstream domestic, industrial and irrigation water diversions

Studies (as needed for the discharge)

- Dilution studies (if dilution is being requested)
- Mixing Zone Analysis for aquatic toxicity
- Water Effect Ratio Studies (if applicable)
- Thermal Plan exemption studies

Infeasibility Analysis (as potentially needed for future permit renewal; not applicable to new discharges)

- Evaluation of existing facilities' ability to comply with potential future permit requirements
- Description of proposed treatment upgrades or controls to be implement to comply with potential future permit requirements
- Timeline and milestone schedule for proposed upgrades and/or controls

Salinity

- Electrical conductivity of each water supply for community and annual volume supplied by each water source
- Summary and copies of regulations impacting wastewater salinity
- Plans and progress for salinity control for wastewater salinity

Sludge Management Plan

- Description of onsite and offsite solids and sludge treatment and disposal methods implemented
- Disposal method for all solids and sludge produced due to treatment of influent
- Monitoring required by entity receiving sludge or biosolids (i.e. landfill or sludge management contractor)
- Information on responsible parties for beneficial reuse per Part 503 Regulations
- Groundwater monitoring associated with potential impact to groundwater of stored or land-applied sludge to land.

Pretreatment

- Full description of pretreatment program implemented by Discharger for industrial flows into collection system

Groundwater

- Description of wastewater treatment, storage and/or disposal into ponds or wastewater applied to land
- Description of implemented BPTCs (i.e. pond liners) to minimize impact to groundwater
- Existing ground water monitoring requirements
- Existing groundwater data

Appendix L – Exhibit 22 of the James Irrigation District Comment Letter

STATE WATER RESOURCES CONTROL BOARD

RESOLUTION NO. 68-16

STATEMENT OF POLICY WITH RESPECT TO
MAINTAINING HIGH QUALITY OF WATERS IN CALIFORNIA

WHEREAS the California Legislature has declared that it is the policy of the State that the granting of permits and licenses for unappropriated water and the disposal of wastes into the waters of the State shall be so regulated as to achieve highest water quality consistent with maximum benefit to the people of the State and shall be controlled so as to promote the peace, health, safety and welfare of the people of the State; and

WHEREAS water quality control policies have been and are being adopted for waters of the State; and

WHEREAS the quality of some waters of the State is higher than that established by the adopted policies and it is the intent and purpose of this Board that such higher quality shall be maintained to the maximum extent possible consistent with the declaration of the Legislature;

NOW, THEREFORE, BE IT RESOLVED:

1. Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State 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.

2. Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet 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.

3. In implementing this policy, the Secretary of the Interior will be kept advised and will be provided with such information as he will need to discharge his responsibilities under the Federal Water Pollution Control Act.

BE IT FURTHER RESOLVED that a copy of this resolution be forwarded to the Secretary of the Interior as part of California's water quality control policy submission.

CERTIFICATION

The undersigned, Executive Officer of the State Water Resources Control Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on October 24, 1968.

Dated: October 28, 1968

Kerry W. Mulligan
Executive Officer
State Water Resources
Control Board

Appendix L – Exhibit 23 of the James Irrigation District Comment Letter

Amendments to the Water Quality Control Plan for the Tulare Lake Basin, Second Edition

The Second Edition of the Basin Plan was adopted by the Regional Water Board on 17 August 1995, approved by the State Water Board on 16 November 1995 and approved by the Office of Administrative Law on 27 February 1996. The Basin Plan is in a loose-leaf format to facilitate the addition of amendments. The Basin Plan can be kept up-to-date by inserting the pages that have been revised to include subsequent amendments. The date subsequent amendments are adopted by the Regional Water Board will appear at the bottom of the page. Otherwise, all pages will be dated 17 August 1995.

Basin plan amendments adopted by the Regional Water Board must be approved by the State Water Board, the Office of Administrative Law and, if appropriate, the United States Environmental Protection Agency before becoming effective.

The following are the amendments adopted by the Regional Water Board after 17 August 1995 and are now in effect:

	Subject	Date Adopted By Reg. Bd.	Regional Board Resolution No.	Date in Effect
1.	Clarify and Update Language	10/17/02	R5-2002-0177	1/27/04
2.	Non-Regulatory Amendments to Provide A Cost Estimate and Potential Sources of Financing for a Long-Term Irrigated Lands Program	10/13/2011	R5-2011-0075	12/14/12
3.	Amendments to the Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin Regarding Onsite Wastewater System Implementation Program	3/27/2014	R5-2014-0036	1/26/15
4.	Amendments to Edit and Update Language	3/27/2014	R5-2014-0038	1/26/15
5.	Amendments to the Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin to Add Policies for Variances from Surface Water Quality Standards for Point Source Dischargers, Variance Program for Salinity, and Exception from Implementation of Water Quality Objectives for Salinity	6/6/2014	R5-2014-0074	7/8/16

California Regional Water Quality Control Board
Central Valley Region

Water Quality Control Plan for the Tulare Lake Basin Second Edition

Revised July 2016 (with Approved Amendments)

Water Quality Control Plan for the Tulare Lake Basin

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FOREWORD TO THE SECOND EDITION

Water quality control plans, or basin plans, contain California's administrative policies and procedures for protecting state waters. Basin plans are required by the state Porter-Cologne Water Quality Control Act (California Water Code Section 13240). In addition, Section 303 of the federal Clean Water Act requires states to adopt water quality standards that "consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses."

Each of California's nine regional water quality control boards must formulate and adopt a basin plan for all areas within its region. The basin plans must conform with statewide policy set forth by the legislature and by the State Water Resources Control Board. Basin plans consist of designated beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives {California Water Code, Section 13050(j)}.

Beneficial uses, together with their corresponding water quality objectives, meet federal regulatory criteria for water quality standards. Hence, California's basin plans serve as regulatory references for meeting both State and federal requirements for water quality control {40 CFR Parts 130 and 131}. One significant difference between the state and federal programs is that California's basin plans establish standards for ground waters in addition to surface waters.

Basin plans are adopted and amended by regional water boards under a structured process involving full public participation and state environmental review.

Basin plans and amendments do not become effective until approved by the State Water Board. Regulatory provisions must be approved by the Office of Administrative Law. Adoption or revision of surface water standards are subject to the approval of the U. S. Environmental Protection Agency before they become accepted standards for the federal program.

Basin plans complement water quality control plans adopted by the State Water Board. It is the intent of the state and regional water boards to maintain basin plans in an updated and readily available edition that reflects all current water quality control programs.

The first edition of this *Water Quality Control Plan for the Tulare Lake Basin* (Basin Plan) was adopted by the California Regional Water Quality Control Board, Central Valley Region, on 25 July 1975, and became effective following approval by the State Water Board on 21 August 1975 and the U. S. Environmental Protection Agency (EPA) in June 1976. Although several revisions have been adopted and approved since 1975, this revision is the first complete rewrite of the text of the Basin Plan.

Regional Water Board resolutions adopted prior to 17 August 1995, that revise or supplement the first edition of the plan which are not expressly incorporated by reference into the second edition of the plan are superceded.

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

BASIN DESCRIPTION

The Central Valley Region includes about 40% of the land in California and stretches from the Oregon border to the Kern County/Los Angeles County line. It is bound by the Sierra Nevada Mountains on the east and the Coast Range on the west. The Region is divided into three basins: the Sacramento River Basin, the San Joaquin River Basin, and the Tulare Lake Basin. This basin plan covers only the Tulare Lake Basin. The Sacramento River Basin and the San Joaquin River Basin are covered in a separate basin plan.

The Tulare Lake Basin comprises the drainage area of the San Joaquin Valley south of the San Joaquin River (See Figure I-1).

> Note: In 1976, the U. S. Geologic Survey, the Department of Water Resources, and the State Water Resources Control Board agreed upon the hydrologic boundaries for basins within California. The agreed boundaries did not match the planning boundaries in certain cases such as between the San Joaquin River Basin and the Tulare Lake Basin. The planning boundary between the San Joaquin River Basin and the Tulare Lake Basin follows the southern watershed boundaries of the Little Panoche Creek, Moreno Gulch, and Capita Canyon to boundary of the Westlands Water District. From here, the boundary follows the northern edge of the Westlands Water District until its intersection with the Firebaugh Canal Company's Main Lift Canal. The basin boundary then follows the Main Lift Canal to the Mendota Pool and continues eastward along the channel of the San Joaquin River to the southern boundary of the Little Dry Creek watershed (Hydrologic Subareas No. 540.70 and 545.30) and then follows along the southern boundary of the San Joaquin River drainage basin.

Surface water from the Tulare Lake Basin only drains north into the San Joaquin River in years of extreme rainfall. This essentially closed basin is situated in the topographic horseshoe formed by the Diablo and Temblor Ranges on the west, by the San Emigdio and Tehachapi Mountains on the south, and by the Sierra Nevada Mountains on the east and southeast.

The Basin encompasses approximately 10.5 million acres, of which approximately 3.25 million acres are in federal ownership. Kings Canyon and Sequoia National Parks and substantial portions of Sierra, Sequoia, Inyo, and Los Padres National Forests are included in the Basin. Valley floor lands (i.e., those having a land slope of less than 200 feet per mile) make up slightly less than one-half of the total basin land area. The maximum length and width of the Basin are about 170 miles and 140 miles, respectively. The valley floor is approximately 40 miles in width near its southern end, widening to a maximum of 90 miles near the Kaweah River.

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Urban development is generally confined to the foothill and eastern valley floor areas. Major concentrations of population occur in or near the metropolitan areas of Bakersfield, Fresno, Porterville, Hanford, Tulare, and Visalia.

The Basin is one of the most important agricultural centers of the world. Industries related to agriculture, such as food processing and packaging (including canning, drying, and wine making), are prominent throughout the area. Producing and refining petroleum lead non-agricultural industries in economic importance.

Surface water supplies tributary to or imported for use within the Basin are inadequate to support the present level of agricultural and other development. Therefore, ground water resources within the valley are being mined to provide additional water to supply demands. Water produced in extraction of crude oil is used extensively to supplement agricultural irrigation supply in the Kern River sub-basin.

The Kings, Kaweah, Tule, and Kern Rivers, which drain the west face of the Sierra Nevada Mountains, are of excellent quality and provide the bulk of the surface water supply native to the Basin. Imported surface supplies, which are also of good quality, enter the Basin through the San Luis Canal/California Aqueduct System, Friant-Kern Canal, and the Delta-Mendota Canal. Adequate control to protect the quality of these resources is essential, as imported surface water supplies contribute nearly half the increase of salts occurring within the Basin.

Buena Vista Lake and Tulare Lake, natural depressions on the valley floor, receive flood water from the major rivers during times of heavy runoff. During extremely heavy runoff, flood flows in the Kings River reach the San Joaquin River as surface outflow through the Fresno Slough. These flood flows represent the only significant outflows from the Basin.

Besides the main rivers, the basin also contains numerous mountain streams. These streams have been administratively divided into eastside streams and westside streams using Highway 58 from Bakersfield to Tehachapi. Streams from the Tehachapi and San Emigdio Mountains are grouped with westside streams. In contrast to eastside streams, which are fed by Sierra snowmelt and springs from granitic bedrock, westside streams derive from marine sediments and

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are highly mineralized, and intermittent, with sustained flows only after extended wet periods.

Surface water hydrologic units within the Tulare Lake Basin have been defined and numbered by the Department of Water Resources, as shown on Figure II-1. Eastside streams are surface waters in hydrologic units 552, 553, 554, and 555. Westside streams are surface waters in hydrologic units 556 and 559 and portions of 541 and 542. Valley floor waters are surface waters in hydrologic units 551, 557, and 558. All natural surface waters within the Basin have designated beneficial uses (See Table II-1).

Normally all native surface water supplies, imported water supplies, and direct precipitation percolate into valley ground water if not lost through consumptive use, evapotranspiration, or evaporation.

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 sufficient water to sustain a well or spring, it can be defined as an aquifer {USGS, Water Supply Paper 1988, 1972}. A ground water basin is define as a hydrogeologic unit containing one large aquifer or several connected and interrelated aquifers {Todd, Groundwater Hydrology, 1980}.

Major ground water basins underlie the valley floor, and there are scattered smaller basins in the foothill areas and mountain valleys. In many parts of the Basin, usable ground waters occur outside of these identified basins. There are water-bearing geologic units within ground water basins in the Basin 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.

Generally, the quality and the beneficial uses of the deep ground waters remain the same as before man entered the valley. A few areas within the Basin have ground waters that are naturally unusable or of marginal quality for certain beneficial uses.

Because of the closed nature of the Tulare Lake Basin, there is little subsurface outflow. Thus, salts accumulate within the Basin due to importation and evaporative use of the water. The paramount water quality problem in the Basin is the accumulation of salts. This problem is compounded by the overdraft of ground water for municipal, agricultural, and industrial purposes, and the use of water from deeper formations and outside the basin which further concentrates salts within remaining ground water.

WASTE DISCHARGE TYPES

Discharges can be classified as point source or nonpoint source discharges. A point source discharge usually refers to waste emanating from a single, identifiable point. A nonpoint source discharge usually refers to waste emanating from diffused locations. Agricultural runoff may discharge to waters of the state from a pipe, but is treated as a nonpoint source.

Both sources may cause health hazards, contamination, and nuisance problems and both must be managed to reduce salt contributions. Point sources may be high in heavy metals and other toxic materials. Nonpoint source wastes traditionally contribute more dissolved minerals and sediments, but have also contaminated waters with pesticides. Nonpoint source discharges contribute the largest portion of the waste load to surface and ground water resources within the Tulare Lake Basin.

Effective water quality management requires more than control of point source discharges. It must respond to many factors such as water use, land use, social and economic needs, and various other activities within the Basin. Although only a few management actions involve facility construction of some kind, all involve some cost to society. The Regional Water Board has authority to control both categories of discharge, but the approach is less direct for nonpoint sources.

Not fitting either category are spills, leaks, above and under ground storage tanks, and other sites that discharge illegally and impact waters of the state. The Regional Water Board has authority to require investigation and cleanup of these sites.

Point Sources

Problems from point source wastes are highly identifiable and for several decades have been subject to regulation. However, they must still be actively managed to protect the state's waters. Regulated point sources include municipal wastewater, oil field wastewater, winery discharges, solid waste sites and other industrial discharges. These dischargers must apply for and obtain waste discharge requirements or a waiver.

Nonpoint Sources

Nonpoint sources include drainage and percolation from a variety of activities, such as agriculture, forestry, recreation, and storm runoff. Specific sources of nonpoint source pollution may be difficult to identify, treat, or regulate. The goal is to reduce the adverse impact of nonpoint source discharges on the Basin's water resources through better management of these activities.

Much of the nonpoint source pollutants originate from agriculture. The Basin's economy is dependent upon agriculture, which is dependent upon water. Water supplies are finite. Some ground water areas are being overdrafted and additional water is needed to sustain the present intensity of farming. When new lands are put under irrigation, or when cropping patterns are changed, the potential for eliminating overdraft may be lost. Efficient use and development of supplies within the Basin can provide some water to meet growth demands, but to alleviate the projected overdraft, imported water supplies will still be required. The imported water quality should be the highest quality possible to prolong and protect good quality ground water.

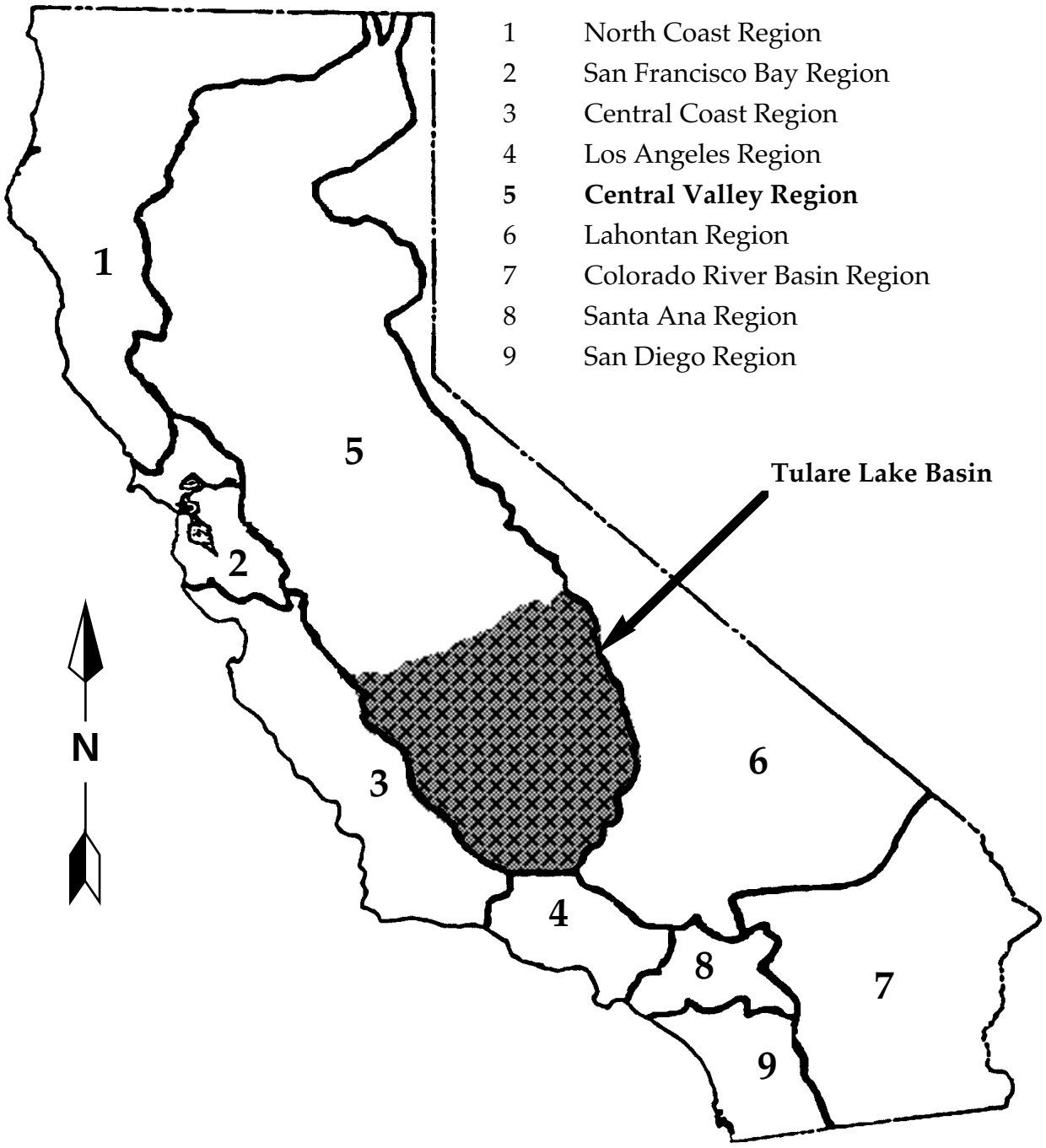
Adequate disposal of collected agricultural drainage water from subsurface drains is essential to sustain agriculture in some areas and provide water quality protection. The preferred and long deferred permanent solution of exporting drainage water to San Francisco Bay may not be feasible. In the interim, evaporation ponds are being used for disposal of these saline waters. However, the ponds have created an impact on wildlife that must be mitigated for this interim disposal option to remain viable.

Salinity increases in ground water can ultimately eliminate the beneficial use of the resource. This loss will not be immediate, but control of the increase is a major part of this plan. Salt loads reaching the ground water body must be reduced. Storage of salt in the soil through increased irrigation efficiency is being done, but is only a temporary solution. Current fertilization and soil amendment practices should be reviewed. Methods to control the leachate from newly developed lands should be studied.

Watersheds must be managed to protect water quality. This can be accomplished within the concept of multiple uses of resources. Esthetic, recreational, wildlife, and other uses should receive consideration. Two historical problems within the Tulare Lake Basin are poor sanitation associated with recreational use and erosion from construction, logging, grazing, and irrigated agriculture. Management of these activities has improved the situation and must continue to assure no significant adverse effect on pristine streams. Erodible material must be stabilized so that turbidity in streams will be of limited intensity and duration. Activities in stream protection zones must be regulated. Provisions should be made to protect fishery flow releases in designated reaches of streams.

Waste disposal from land developments and from animals in confinement must conform with the State Water Board's *Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems* (OWTS Policy). New developments must consider collection systems and should connect if within the sphere of influence of an established collection and treatment system. Septic tank pumpings must be treated and disposed of in a way that prevents impact to waters of the state.

FIGURE I-1
REGIONAL WATER QUALITY CONTROL BOARDS
TULARE LAKE BASIN LOCATION MAP



II. EXISTING AND POTENTIAL BENEFICIAL USES

Protection and enhancement of beneficial uses of water against quality degradation is a basic requirement of water quality planning under the Porter-Cologne Water Quality Control Act. In setting water quality objectives, the Regional Water Board must consider past, present, and probable future beneficial uses of water.

Significant points concerning beneficial uses are:

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

2. Fish, plants, and other wildlife, as well as humans, depend on and use water beneficially both directly or indirectly.

3. Defined beneficial uses do not include all possible uses of water. For example, use of waters for disposal of wastewaters is not included as a beneficial use. Similarly, the use of water for the dilution of salts in other waters is not a beneficial use. These may, in some cases, be reasonable and desirable uses of water, but they are not protected uses and are subject to regulation as activities that may harm protected uses.

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

5. Quality of water in upstream reaches and upper aquifers may impact the quality and beneficial uses of downstream reaches and lower aquifers.

Beneficial use designations (and water quality objectives, see Chapter III or variance of a water quality standard, see Chapter IV) must be reviewed at least once during each three-year period for potential modification as appropriate {40 CFR Part 131.20}.

The beneficial uses and abbreviations as defined and listed below are the standard designations used in all basin plans in California with the exception of the definition for Fish Spawning (SPWN) and Warm Freshwater Habitat (WARM). The standard statewide definition for SPWN includes spawning of both warm and cold water fish. In the Tulare Lake Basin, warm water spawning is considered to occur wherever a warm freshwater habitat exists while only select cold water habitats are suitable for spawning by cold water species. For example, certain cold water species require gravel beds in order to spawn. For this reason, for the Tulare Lake Basin, SPWN has been modified to limit the designation to suitable reaches of cold water streams and WARM has been modified to clarify that it includes sensitive fish propagation stages.

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

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

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

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

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

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

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

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

WARM includes support for reproduction and early development of warm water fish.

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

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

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

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

SPWN shall be limited to cold water fisheries.

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

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

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

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

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

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

The existing and probable future beneficial uses which currently apply to surface waters are presented in Figure II-1 and Table II-1. The beneficial uses of any specifically identified water body generally apply to its tributary streams. In some cases a beneficial use may not be applicable to the entire body of water. In these cases the Regional Water Board's judgement will be applied. It should be noted that it is impractical to list every surface water body in the Region. For unidentified water bodies, the beneficial uses will be evaluated on a case-by-case basis.

Upstream from the foothill reservoirs, the quality of surface waters remains good to excellent. The quality of the major streams is suitable for all beneficial uses. Beneficial uses below the dams, however, may be significantly impacted because of the reduced flows in the channels.

For ground water, the following beneficial uses have been identified and occur throughout the Basin: Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Service Supply (IND), Industrial Process Supply (PRO), Water Contact Recreation (REC-l), and Wildlife Habitat (WILD).

Figure II-2 and Table II-2 present the AGR, IND, PRO, REC-1, REC-2, and WILD beneficial uses of ground water that existed as of 1993. Due to the "Sources of Drinking Water Policy," all ground waters are designated MUN (the use may be existing or potential) unless specifically exempted by the Regional Water Board and approved for exemption by the State Water Board. Ground water areas exempted from MUN are footnoted in Table II-2. In addition, unless otherwise designated by the Regional Water Board, all ground waters in the Region are considered suitable or potentially suitable, at a minimum, for agricultural supply (AGR), industrial supply (IND), and industrial process supply (PRO).

Existing beneficial uses generally apply within the listed Detailed Analysis Unit (DAU). Due to the size of the DAUs, however, the listed uses may not exist throughout the DAU. For the purpose of assigning beneficial uses, the term ground water is defined in Chapter I.

In considering any exceptions to the beneficial use designation of MUN, the Regional Water Board employs the following criteria:

1. The TDS must exceed 3,000 mg/l (5,000 µmhos/cm EC) and the aquifer cannot be reasonably expected to supply a public water system, or

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

3. The water source cannot provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day, or

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

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

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

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

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

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

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

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

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

TABLE II-1
TULARE LAKE BASIN
SURFACE WATER BENEFICIAL USES

Stream	MUN	AGR	IND	PRO	POW	REC-1	REC-2	WARM	COLD	WILD	RARE	SPWN	GWR	FRSH
552, 551 Kings River														
North Fork, Upper					•	•	•	•	•	•	•	•		•
Main Fork, Above Kirch Flat	•					•	•	•	•	•	•	•		•
Kirch Flat to Pine Flat Dam (Pine Flat Reservoir)					•	•	•	•	•	•				•
Pine Flat Dam to Friant-Kern	•	•			•	•	•	•	•	•		•	•	•
Friant Kern to Peoples Weir	•	•		•		•	•	•		•			•	
Peoples Weir to Stinson Weir on North Fork and to Empire Weir No. 2 on South Fork		•				•	•	•		•			•	
553, 558 Kaweah River														
Above Lake Kaweah	•				•	•	•	•	•	•	•	•		•
Lake Kaweah					•	•	•	•		•				•
Below Lake Kaweah	•	•	•	•		•	•	•		•			•	
555, 558 Tule River														
Above Lake Success	•	•			•	•	•	•	•	•	•	•		•
Lake Success		•			•	•	•	•		•				•
Below Lake Success	•	•	•	•		•	•	•		•			•	
554, 557 Kern River														
Above Lake Isabella	•				•	•	•	•	•	•	•	•		•
Lake Isabella					•	•	•	•	•	•				•
Lake Isabella to KR-1‡					•	•	•	•	•	•	•			
Below KR-1‡	•	•	•	•	•	•	•	•		•	•		•	
555, 558 Poso Creek		•				•	•	•	•	•			•	•
552 Mill Creek, Source to Kings River	•					•	•	•		•			•	•
552, 553, 554, 555 Other East Side Streams	•	•				•	•	•	•	•			•	
556, 559 West Side Streams		•	•	•		•	•	•		•	•		•	
551, 557, 558 Valley Floor Waters		•	•	•		•	•	•		•	•		•	

‡ KR-1: Southern California Edison Kern River Powerhouse No. 1.

TABLE II-2
TULARE LAKE BASIN
GROUND WATER BENEFICIAL USES*

HYDROLOGIC UNIT	DAU	MUN	AGR	IND	PRO	REC-1	REC-2	WILD
Delta-Mendota Basin								
	216	•	•	•				
	235	•	•	•	•		•	•
	237	•	•	•				
Kings Basin								
	233	•	•	•	•	•	•	
	234	•	•	•				
	235	•	•	•	•			
	236	•	•	•	•			
	237	•	•	•				
	239	•	•	•	•			
	240	•	•					
Kaweah Basin	242	•	•	•	•	•	•	
Tulare Lake Basin								
	238	•	•	•	•			
	241	•	•	•				
	246	•	•	•				
Tule Basin								
	243	•	•	•	•			•
	257	•	•					
Pleasant Valley Basin	245	•	•	•				
Westside Basin	244	•	•	•				

* Table II-2 presents the AGR, IND, PRO, REC-1, REC-2, and WILD beneficial uses of ground water that existed as of 1993.

TABLE II-2
TULARE LAKE BASIN
GROUND WATER BENEFICIAL USES* (continued)

HYDROLOGIC UNIT	DAU	MUN	AGR	IND	PRO	REC-1	REC-2	WILD
Kern County Basin								
	245	•	•	•				
	254[a]	•	•	•	•	•	•	•
	255	•	•	•				•
	256	•	•	•	•			
	257	•	•	•		•		
	258	•	•	•	•			
	259[b]	•	•	•				
	260	•		•				
	261	•	•	•				
Satellite Basins								
Panoche Valley		•						
Squaw Valley		•	•	•				
Kern River Valley		•	•	•				
Walker Basin Creek Valley		•	•	•				
Cummings Valley		•	•	•		•	•	
Tehachapi Valley West		•	•	•		•	•	•
Castac Lake Valley		•	•	•				
Vallecitos Creek Valley		•						
Cedar Grove Area		•						
Three Rivers Area		•						
Springville Area		•		•				
Templeton Mountain Area		•						
Monache Meadows Area		•	•				•	
Secator Canyon Valley		•						
Rockhouse Meadow Valley		•				•		
Linns Valley		•		•				
Brite Valley		•	•	•		•	•	•
Bear Valley		•	•	•		•	•	•
Cuddy Canyon Valley		•		•			•	
Cuddy Ranch Area		•	•					
Cuddy Valley		•	•	•				
Mill Potrero Area		•		•			•	
All Other Ground Waters[c]		•						

TABLE II-2
TULARE LAKE BASIN
GROUND WATER BENEFICIAL USES (continued)
Beneficial Use Exceptions

[a] Ground water contained in the lower Transition Zone and Santa Margarita formation within 3,000 feet of the Kern Oil and Refining Company proposed injection wells in Section 25, T30S, R28E, MDB&M, is not suitable, or potentially suitable, for municipal or domestic supply (MUN).

Ground water contained in the basal Etchegoin formation, Chanac formation, and Santa Margarita formation within, and extending to one-quarter mile outside the administrative boundary of the Fruitvale Oil Field, as defined by the State of California, Department of Conservation, Division of Oil and Gas in *Application for Primacy in the Regulation of Class II Injection Wells Under Section 1425 of the Safe Drinking Water Act*, dated April 1981, is not suitable, or potentially suitable, for municipal or domestic supply (MUN). However, the upper ground water zone (ground water to a depth of 3,000 feet) retains the MUN beneficial use.

[b] Ground water and spring water within 1/2 mile radius of the McKittrick Waste Treatment (formerly Liquid Waste Management) site in Section 29, T30S, R22E, MDB&M, are not suitable, or potentially suitable, for municipal or domestic supply (MUN).

[c] Ground water in the San Joaquin, Etchegoin, and Jacalitos Formations within one-half mile of existing surface impoundments P-1, P-2, P-3, P-4, P-4 1/2, P-5, P-6, P-7, P-8, P-9, P-10, P-11, P-12/12A, P-13, P-14, P-15, P-16, P-17, P-18, P-19, and P-20, and proposed surface impoundments P-21, P-24, P-25, P-27, P-28, and P-29 at the Kettleman Hills Facility (Sections 33 and 34, T22S, R18E, and Section 3, T23S, R18E, MDB&M) of Chemical Waste Management is not a municipal or domestic supply (MUN).

Figures II-1 and II-2 will be included at 1:500,000 scale in map pockets in back of final plan.

III. WATER QUALITY OBJECTIVES

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

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

The federal Clean Water Act requires a state to submit for approval of the Administrator of the U. S. Environmental Protection Agency (USEPA) all new or revised water quality standards which are established for surface and ocean water. The ground water objectives contained in this plan are not required by the federal Clean Water Act. In California, water quality standards are either water body specific or are based on beneficial uses designated for a water body and the water quality objectives that protect those uses.

There are six important points about water quality objectives. The first point is that water quality objectives can be revised through the basin plan amendment process. Objectives may apply region-wide or specifically to individual water bodies or parts of water bodies. Site-specific objectives may be developed if the Regional Water Board believes they are appropriate. Federal regulations require the review of water quality standards at least every three years. These "Triennial Reviews" provide one opportunity to evaluate the effectiveness of existing water quality objectives because the reviews begin with an identification of potential and actual water quality problems. The results of the Triennial Review are used to identify and prioritize Regional Water Board actions to achieve objectives and protect beneficial uses. Actions include assessment, remediation, monitoring, or whatever else may be appropriate, to address water quality problems. For example, a beneficial use may be impacted because the existing water quality objective is inadequate. This water quality objective should be re-evaluated and a proper objective should be amended into the Basin Plan, along with a plan and schedule for attainment. In other cases, the existing water quality objective may be adequate and it may be necessary to develop new implementation strategies to address the problem.

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

The second point is that achievement of water quality objectives depends on applying them to regulate controllable water quality factors, although regulating controllable water quality factors may not necessarily cause water quality objectives to be achieved. Controllable water quality factors are those actions, conditions, or circumstances resulting from human activities that may influence the quality of the waters of the State, that are subject to the authority of the State Water Board or the Regional Water Board, and that may be reasonably controlled. These factors are subject to the authority of the State Water Board or the Regional Water Board. Controllable factors are not allowed to degrade water quality unless it is demonstrated that degradation is consistent with maximum benefit to the people of the State. In no cases may controllable water quality factors unreasonably affect present and anticipated beneficial uses of water nor result in water quality less than that prescribed in water quality control plans and policies. In instances where uncontrollable factors have already resulted in

water quality objectives being exceeded, controllable factors are not allowed to cause further degradation of water quality. The Regional Water Board recognizes that manmade changes that alter flow regimes can affect water quality and impact beneficial uses.

The third point is that water quality objectives are achieved primarily through the adoption of waste discharge requirements (including federal NPDES permits) and enforcement orders. When adopting requirements and ordering actions, the Regional Water Board considers the beneficial uses within the area of influence of the discharge, the existing quality of receiving waters, and water quality objectives that apply to the reach or uses of the receiving water. Effluent limits may be established to reflect what is necessary to achieve water quality objectives, or, if more stringent, will reflect the technology-based standard for the type of discharge being regulated. The objectives in this plan do not require improvement over naturally occurring background concentrations. Water quality objectives contained in this plan, and any State or Federally promulgated objectives applicable to the Tulare Lake Basin, apply to the main water mass. They may apply at or in the immediate vicinity of effluent discharges, or may apply at the edge of an approved mixing zone. A mixing zone is an area of dilution or criteria for diffusion or dispersion defined in the waste discharge requirements. The Regional Water Board recognizes that immediate compliance with water quality objectives adopted by the Regional Water Board or the State Water Board, or with water quality criteria adopted by the federal Environmental Protection Agency, may not be feasible in all circumstances. Where the Regional Water Board determines it is infeasible for a discharger to comply immediately with such objectives or criteria, compliance shall be achieved in the shortest practicable period of time (determined by the Regional Water Board), not to exceed ten years after the adoption of applicable objectives or criteria. This policy shall apply to water quality objectives and water quality criteria adopted after the effective date of this Basin Plan update. The Regional Water Board will establish compliance schedules in NPDES permits consistent with the provisions of the State Water Board's Compliance Schedule Policy (Resolution 2008-0025). Time schedules in waste discharge requirements are established consistent with Water Code Section 13263.

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

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

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

WATER QUALITY OBJECTIVES FOR INLAND SURFACE WATERS

Surface water quality in the Basin is generally good, with excellent quality exhibited by most eastside streams. The Regional Water Board intends to maintain this quality. The water quality objectives below are presented by categories which, like the beneficial uses of Chapter II, were standardized for uniformity among the regional water boards. Designated beneficial uses of the waters of the Tulare Lake Basin for which provisions should be made are identified in Chapter II; this chapter gives the water quality objectives to protect those beneficial uses. As new information becomes available, the Regional Water Board will review the appropriateness of these objectives, and may modify them accordingly.

Ammonia

Waters shall not contain un-ionized ammonia in amounts which adversely affect beneficial uses. In no case shall the discharge of wastes cause concentrations of un-ionized ammonia (NH_3) to exceed 0.025 mg/l (as N) in receiving waters.

Bacteria

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

Biostimulatory Substances

Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the

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extent that such growths cause nuisance or adversely affect beneficial uses.

Chemical Constituents

Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. The Regional Water Board will consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for detrimental levels of chemical constituents developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the State Water Board Division of Drinking Water Programs, the U.S. Food and Drug Administration, the National Academy of Sciences, the U. S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective.

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 Table 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. At a minimum, water designated MUN shall not contain lead in excess of 0.015 mg/l. The Regional Water Board acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations on the consumption of surface waters under specific circumstances. To ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses, the Regional Water Board may apply limits more stringent than MCLs

Color

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

Dissolved Oxygen

Waste discharges shall not cause the monthly median dissolved oxygen concentrations (DO) in the main water mass (at centroid of flow) of streams and above the thermocline in lakes to fall below 85 percent of saturation concentration, and the 95 percentile concentration to fall below 75 percent of saturation concentration.

The DO in surface waters shall always meet or exceed the concentrations in Table III–1 for the listed specific water bodies and the following minimum levels for all aquatic life:

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

Where ambient DO is less than these objectives, discharges shall not cause a further decrease in DO concentrations.

Floating Material

Waters shall not contain floating material, including but not limited to solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.

Oil and Grease

Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.

pH

The pH of water shall not be depressed below 6.5, raised above 8.3, or changed at any time more than 0.3 units from normal ambient pH.

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

Pesticides

Waters shall not contain pesticides in concentrations that adversely affect beneficial uses. There shall be no increase in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses. (For the purposes of this objective, the term pesticide is defined as any substance or mixture of substances used to control objectionable insects, weeds, rodents, fungi, or other forms of plant or animal life.) The Regional Water Board will consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for detrimental levels of chemical constituents developed by the State Water

TABLE III-1
TULARE LAKE BASIN
SPECIFIC DISSOLVED OXYGEN WATER QUALITY OBJECTIVES

Stream	Location	Min DO (mg/l)
Kings River		
Reach I	Above Kirch Flat	9
Reach II	Kirch Flat to Pine Flat Dam	9
Reach III	Pine Flat Dam to Friant-Kern	9
Reach IV	Friant-Kern to Peoples Weir	7
Reach V	Peoples Weir to Island Weir	7
Kaweah River	Lake Kaweah	7
Tule River	Lake Success	7
Kern River		
Reach I	Above Lake Isabella	8
Reach III	Lake Isabella to Southern California Edison Powerhouse (KR-1)	8

Board, the California Office of Environmental Health Hazard Assessment, the State Water Board Division of Drinking Water Programs, the U.S. Food and Drug Administration, the National Academy of Sciences, the U. S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective.

At a minimum, waters designated MUN shall not contain concentrations of pesticide constituents in excess of the maximum contaminant levels (MCLs) specified in Table 64444-A (Organic Chemicals) of Section 64444 of Title 22 of the California Code of Regulations, which is incorporated by reference into this plan. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. 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 ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

In waters designated COLD, total identifiable chlorinated hydrocarbon pesticides shall not be present at concentrations detectable within the accuracy of analytical methods prescribed in *Standard Methods for the Examination of Water and Wastewater, 18th Edition*, or other equivalent methods approved by the Executive Officer.

Radioactivity

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

At a minimum, waters designated MUN shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 64442 of Section 64442 and Table 64443 of Section 64443 of Title 22, California Code of Regulations, which are incorporated by reference into this plan. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect.

Salinity

Waters shall be maintained as close to natural concentrations of dissolved matter as is reasonable considering careful use of the water resources.

"The only reliable way to determine the true or absolute salinity of a natural water is to make a complete chemical analysis. However, this method is time-consuming and cannot yield the precision necessary for accurate work" {*Standard Methods for the Examination of Water and Wastewater*, 18th Edition}. Conductivity is one of the recommended methods to determine salinity.

The objectives for electrical conductivity in Table III-2 apply to the water bodies specified. Table III-3 specifies objectives for electrical conductivity at selected streamflow stations.

Sediment

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

Settleable Material

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

TABLE III-2
TULARE LAKE BASIN
MAXIMUM ELECTRICAL CONDUCTIVITY LEVELS

Stream	Location	Max. Electrical Conductivity (µmhos/cm)
Kings River		
Reach I	Above Kirch Flat	100
Reach II	Kirch Flat to Pine Flat Dam	100 [a]
Reach III	Pine Flat Dam to Friant-Kern	100
Reach IV	Friant-Kern to Peoples Weir	200
Reach V	Peoples Weir to Island Weir	300 [b]
Reach VI	Island Weir to Stinson Weir on North Fork and Empire Weir No. 2 on South Fork	300 [b]
Kaweah River		
Reach I	Above Lake Kaweah	175
Reach II	Lake Kaweah	175 [c]
Reach III	Below Lake Kaweah	[d]
Tule River		
Reach I	Above Lake Success	450
Reach II	Lake Success	450 [e]
Reach III	Below Lake Success	[d]
Kern River		
Reach I	Above Lake Isabella	200
Reach II	Lake Isabella	300
Reach III	Lake Isabella to Southern California Edison Powerhouse (KR-1)	300
Reach IV	KR-1 to Bakersfield	300 [f]
Reach V	Below Bakersfield	[d]

[a] Maximum 10-year average - 50 µmhos/cm

[b] During the period of irrigation deliveries. Providing, further, that for 10 percent of the time (period of low flow) the following shall apply to the following reaches of the Kings River:

Reach V	400 µmhos/cm
Reach VI	600 µmhos/cm

[c] Maximum 10-year average - 100 µmhos/cm

[d] During the irrigation season releases should meet the levels shown in the preceding reach. At other times the channel will be dry or controlled by storm flows.

[e] Maximum 10-year average - 250 µmhos/cm

[f] Maximum 10-year average - 175 µmhos/cm

TABLE III-3
TULARE LAKE BASIN
ELECTRICAL CONDUCTIVITY OBJECTIVES AT SELECTED STREAMFLOW STATIONS

Streamflow Station Number		Location	Electrical Conductivity (µmhos/cm)		
USGS	DWR		90-Percentile	Median	Mean
--	C01140.00	Kings River below Peoples Weir	198	81	102
11-2185	C11460.00	Kings River below North Fork	68	48	47
11-2215	C11140.00	Kings River below Pine Flat Dam	54	36	42
11-2105	C21250.00	Kaweah River near Three Rivers	154	95	94
11-2032	C31150.00	Tule River near Springville	429	278	367
11-2049	C03195.00	Tule River below Success Dam	368	244	235
11-1870	C51500.00	Kern River at Kernville	177	116	118
11-1910	C5135.00	Kern River below Isabella Dam	278	141	165
11-1940	C05150.00	Kern River near Bakersfield	233	158	167

Suspended Material

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

Tastes and Odors

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

Temperature

Natural temperatures of waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.

Temperature objectives for COLD interstate waters, WARM interstate waters, and Enclosed Bays and Estuaries are as specified in the *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California*, including any revisions. (See Appendix 10.)

Elevated temperature wastes shall not cause the temperature of waters designated COLD or WARM to increase by more than 5°F above natural receiving water temperature.

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

Toxicity

All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, biotoxicity tests of appropriate duration, or other methods as specified by the Regional Water Board. The Regional Water Board will also consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for toxic substances developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the State Water Board Division of Drinking Water Programs the U.S. Food and Drug Administration, the National Academy of Sciences, the U. S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective.

The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality factors shall not be less than that for the same water body in areas unaffected by the waste discharge, or, when necessary, for other control water that is

consistent with the requirements for "dilution water" as described in *Standard Methods for the Examination of Water and Wastewater, 18th Edition*. As a minimum, compliance shall be evaluated with a 96-hour bioassay.

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

Turbidity

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

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

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

WATER QUALITY OBJECTIVES FOR GROUND WATERS

The following objectives apply to all ground waters in the Tulare Lake Basin.

Bacteria

In ground waters designated MUN, the concentration of total coliform organisms over any 7-day period shall be less than 2.2/100 ml.

Chemical Constituents

Ground waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. The Regional Water Board will consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for detrimental levels of chemical constituents developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the State Water Board Division of Drinking Water Programs, the U.S. Food and Drug Administration, the National Academy of Sciences, the U. S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective.

At a minimum, waters 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 Table 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. At a minimum, water designated MUN shall not contain lead in excess of 0.015 mg/l. To ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

Pesticides

No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses.

At a minimum, waters designated MUN shall not contain concentrations of pesticide constituents in excess of the maximum contaminant levels (MCLs) specified in Table 64444-A (Organic Chemicals) of Section 64444 of Title 22 of the California Code of Regulations, which is incorporated by reference into this plan. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. 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. More stringent objectives may apply if necessary to protect other beneficial uses.

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Radioactivity

Radionuclides shall not be present in ground waters in concentrations that are deleterious to human, plant,

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animal, or aquatic life, or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life.

At a minimum, ground waters designated MUN shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 64442 of Section 64442 and Table 64443 of Section 64443 of Title 22, California Code of Regulations, which are incorporated by reference into this plan. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect.

Salinity

All ground waters shall be maintained as close to natural concentrations of dissolved matter as is reasonable considering careful use and management of water resources.

No proven means exist at present that will allow ongoing human activity in the Basin and maintain ground water salinity at current levels throughout the Basin. Accordingly, the water quality objectives for ground water salinity control the rate of increase.

The maximum average annual increase in salinity measured as electrical conductivity shall not exceed the values specified in Table III-4 for each hydrographic unit shown on Figure III-1.

The average annual increase in electrical conductivity will be determined from monitoring data by calculation of a cumulative average annual increase over a 5-year period.

Tastes and Odors

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

Toxicity

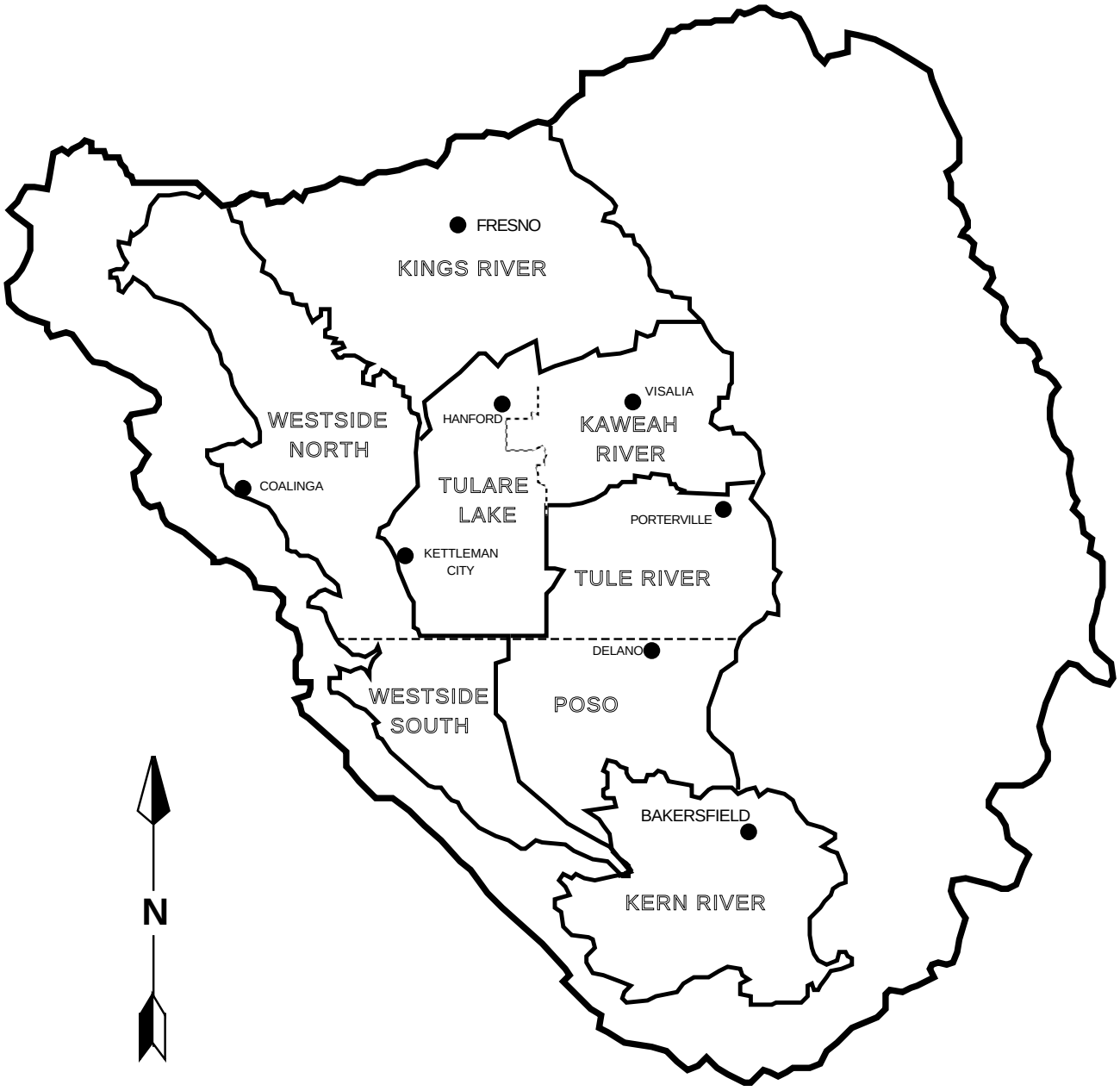
Ground waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial use(s). The Regional Water Board will also consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for toxic substances developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the State Water Board Division of Drinking Water Programs, the U.S. Food and Drug Administration, the National Academy of Sciences, the U. S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances.

TABLE III-4
TULARE LAKE BASIN
GROUND WATER QUALITY OBJECTIVES FOR SALINITY

Hydrographic Unit	Maximum Average Annual Increase in Electrical Conductivity (µmhos/cm)
Westside (North and South)	1
Kings River	4
Tulare Lake and Kaweah River	3
Tule River and Poso	6
Kern River	5

FIGURE III-1

TULARE LAKE BASIN
GROUND WATER HYDROGRAPHIC UNITS



IV. IMPLEMENTATION PLAN

The Porter-Cologne Water Quality Control Act requires that every basin plan consist of beneficial uses, water quality objectives, and a program of implementation for achieving water quality objectives {California Water Code Section 13050(j)}. This Basin Plan covers the first two components in earlier chapters. According to the Act, the implementation program must at least include:

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

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

3. A description of surveillance to be undertaken to determine compliance with the objectives. {California Water Code Section 13242}

In addition, state law requires that every new water quality control program for agriculture estimate the total cost and identify potential sources of funding as part of its implementation {California Water Code Section 13141}. This chapter of the Basin Plan contains all but the surveillance component of the implementation program. That is described in Chapter VI.

The "Water Quality Concerns" section of this chapter describes water quality concerns and how the Regional Water Board addresses them. This section is organized by discharge type (agriculture, silviculture, mines, etc.). The "Nature of Control Actions Implemented by the Regional Water Board", section lists Regional Water Board programs, and plans and policies which will result in the achievement of most of the water quality objectives in this plan. This section includes a list of Regional Water Board prohibition areas. The "Actions Recommended for Implementation by Other Agencies", section contains recommendations for appropriate action by entities other than the Regional Water Board to protect water quality. The "Continuous Planning for Water Quality Control", section describes how the Regional Water Board integrates water quality control activities into a continuous planning process.

WATER QUALITY CONCERNS

Impairment of beneficial uses or degradation of water quality generally reflect the intensity of activities of key discharge sources. The impact a discharge may have is relative to the volume, quality, and uses of the receiving waters.

Our knowledge of the number and types of problems associated with discharge activities changes over time. Early federal and state control efforts focussed on the most understood and visible problems, such as discharge of raw sewage to rivers and streams. As these problems were controlled, focus shifted to prevention of nuisance and protection of ground water. As data became available on toxics in the environment and their harmful effects at low concentrations, and as toxic pollutant detection and measurement methods improved, regulatory emphasis shifted further. Control of toxic discharges now receives major emphasis. Small amounts of pesticides in drinking water wells within the Tulare Lake Basin have caused the closure of some wells.

The greatest long-term problem facing the entire Tulare Lake Basin is the increase of salinity in ground water. Even though an increase in the salinity of ground water in a closed basin is a natural phenomenon, salinity increases in the Basin have been accelerated by man's activity, with the major impact coming from intensive use of soil and water resources by irrigated agriculture. Salinity increases in ground water could ultimately eliminate the beneficial uses of this resource. Controlled ground water degradation by salinity is the most feasible and practical short-term management alternative for the Tulare Lake Basin.

The following briefly describes the water quality impacts associated with specific discharge activities and the policies and programs developed to protect beneficial uses and achieve water quality objectives.

Agriculture

In 1987, agriculturally induced employment in the Basin ranged from 20 percent to more than 50 percent ["A Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley", September 1990]. Most of the agricultural activity occurs on the valley floor. However, the natural precipitation on the Valley portion of the Basin averages less than 10 inches per year. Most precipitation occurs in the Sierras and the Coast Ranges. In order to supply the water needs of agriculture, water from the mountain areas is held in reservoirs and released during irrigation periods. The released water is transported to crops through a complex distribution system crisscrossing the Valley. Irrigated agriculture, agricultural support activities, and animal confinement operations create their own unique problems.

Irrigated Agriculture

Irrigated agriculture accounts for most water used in the Tulare Lake Basin. Local surface water, mainly stored in foothill reservoirs, is controlled for agricultural use. Historically, ground water made up the rest of agricultural needs. However, heavy ground water extractions after the 1930s, when improvements in pump technology led to the development of large turbine pumps, caused severe overdraft and accompanying land subsidence. This led to development of water projects (i.e., the California Aqueduct, the Delta-Mendota Canal, the Friant-Kern Canal, and the Cross City Canal) in the 1950's, 1960's and 1970's to import additional water into the Basin to relieve the demands on ground water. Even with the imported water, municipal, agricultural, and industrial water users continue to pump ground water to meet demands. Ground water pumping continues to contribute to overdraft of ground water aquifers.

Another problem from irrigated agriculture is drainage, excess water not used by crops which runs off or percolates. Agricultural drainage, depending on management and location, carries varying amounts of salts, nutrients, pesticides, trace elements, sediments, and other by-products to surface and ground waters.

The crucial problem in the Tulare Lake Basin is the salts brought in with irrigation water and leached out of soils. Evaporation and crop transpiration remove water from soils, which can result in an accumulation of salts in the root zone of the soils at levels that retard or inhibit plant growth. Additional amounts of water often are applied to leach the salts below the root zone. The leached salts eventually enter ground or surface water.

The amount of salts which are leached depends on the amounts in the soil profile and the applied waters. In 1970, the Department of Water Resources estimated that 481 million tons of salt were stored in the top 20 feet of soil (or the root zone) in the San Joaquin Valley {Department of Water Resources, "Land and Water Use Aspects of San Joaquin Valley Drainage Investigations", June 1970}. In 1971, the Department of Water Resources estimated that the four major rivers of the Tulare Lake Basin bring in 145,000 tons of salt per year. Another 63,000 tons are brought in by the Friant-Kern Canal, annually. The Delta-Mendota Canal brings in 336,000 tons per year {Department of Water Resources, "A General Survey of Electrical Conductivity in Ground Water, San Joaquin Valley", March through June 1971}.

The movement of the salts to surface waters can occur as shallow subsurface ground water flows or it can result from the surface water discharge of agricultural subsurface collection systems (or tile drains) which are employed in areas where farm lands have naturally poor drainage. Tile drains consist of pipe systems below the root zone of crops that drain water from soils that would otherwise stay saturated. TDS concentrations in tile drained water is many times greater than in the irrigation water that was applied to the crops. Tile drain water can also contain trace elements and nutrients. Removal and export, through a valleywide drain, of perched waters will offset, in part, the Basin's adverse salt accumulation.

Subsurface drainage will be a constant threat to surface water and usable ground water quality unless the disposal method is adequate. Disposal must be in a manner that isolates the salts in the drainage from the usable ground water body. In some areas of the Basin, evaporation basins are used to concentrate drainage water and contain salts. However, evaporation basins cannot be considered permanent solutions due to wildlife impacts, and the cost of ultimate salt disposal and basin closure. The California Department of Water Resources and other federal, state and local agencies continue to study alternative approaches for reuse and disposal of agricultural drainage waters.

The Central Valley provides critically important wetland habitat for wintering waterfowl of the Pacific Flyway. The Pacific Flyway covers the western portion of the North American Continent. Most Pacific Flyway waterfowl are from the prairies and parklands of western Canada and the river valleys and deltas of Alaska. The Central Valley supports approximately 60% of the Pacific Flyway wintering waterfowl population. Hundreds of thousands of shorebirds and other water or marsh birds annually winter or pass through the Central Valley {San Joaquin Valley Drainage Program, "Fish and Wildlife Resources and Agricultural Drainage in the San Joaquin Valley, California", Volume I, October 1990}.

Evaporation ponds constitute attractive oases for many species of wildlife. Aquatic migratory birds of the Pacific Flyway are drawn to the ponds, in part, because almost all of the native aquatic and wetland habitats in the San Joaquin Valley (especially in the Tulare Lake Basin) have been lost and because the ponds hold surface water in a vast, relatively sterile, agricultural landscape. The ponds also produce abundant aquatic invertebrates which feed large numbers of waterbirds {San Joaquin Valley Drainage

Program, "Fish and Wildlife Resources and Agricultural Drainage in the San Joaquin Valley, California", Volume I, October 1990}.

Evaporation basins have varying potentials to impact wildlife, specifically shorebirds. Various studies have been conducted on this impact. Technical reports addressing site-specific and cumulative impacts from the majority of operating basins were completed in 1993. These reports were certified as environmental impact reports (EIRs).

The EIRs focussed on impacts to wildlife and found all basins pose a risk to birds due to salinity and avian disease. To prevent and mitigate these impacts, waste discharge requirements for evaporation basins, adopted in 1993, include the following:

- Removal of attractive habitat, such as vegetation.
- A program for avian and waterfowl disease prevention, surveillance and control.
- Closure and financial assurance plans.
- Drainage operation plan to reduce drainage.

Basins with concentrations of selenium greater than 2.7 µg/l in the drainage water have potential for reduced hatchability and teratogenic impacts on waterfowl. To prevent and mitigate these impacts, waste discharge requirements for these basins, adopted in 1993, include those listed above and the following:

- Intensive hazing prior to the breeding season.
- Egg monitoring.
- Basin reconfiguration, if necessary, to minimize attractiveness to waterbirds.
- Wildlife enhancement program, alternative habitat and/or compensatory habitat.

Regional Water Board policy on agricultural subsurface drainage:

- A valleywide drain to carry salts out of the valley remains the best technical solution to the water quality problems of the Tulare Lake Basin.
- Evaporation basins are an acceptable interim disposal method for agricultural subsurface drainage and may be an acceptable permanent disposal method in the absence of a valley drain provided that water quality is protected and potential impacts to wildlife are adequately mitigated. For existing basins requiring substantial physical improvements and other mitigations, some of which are dependent upon empirically derived techniques, operators shall implement mitigations as early as feasible.
- Persons proposing new evaporation basins and expansion of evaporation basins shall submit technical reports that assure compliance with, or support exemption from, Title 27, California Code of Regulations, Section 20080, et seq., and that discuss alternatives to the basins and assess potential impacts of and identify appropriate mitigations for the proposed basins.
- Agricultural drainage may be discharged to surface waters provided it does not exceed 1,000 µmhos/cm EC, 175 mg/l chloride, nor 1 mg/l boron. Other requirements also apply. An exception from the EC and/or the chloride limit for agricultural drainage discharged to surface waters may be permitted consistent with the *Program for Exception from Implementation of Water Quality Objectives for Salinity*.

LOWER KINGS RIVER

The Lower Kings River from Peoples Weir to Stinson Weir on the North Fork and Empire Weir #2 on the South Fork is a Water Quality Limited Segment (see discussion regarding water quality limited segments later in this chapter) because of high salinity. Studies indicate that the source of the salinity is either surface or subsurface agricultural drainage. Levels of boron, molybdenum, sulfates, and chlorides in the Lower Kings River are high enough to impact agricultural uses and aquatic resources. Additional information is necessary to further characterize discharges to this section of the Kings River. A monitoring program is described in Chapter VI. In the meantime, drainage should be reduced by the use of at least the following management practices:

- Maximize distribution uniformity of irrigation systems.
- Minimize or eliminate pre-irrigation.
- Control the amount of water applied to each crop so it does not exceed the evapotranspiration needs of the crop and a reasonable leaching factor.

- Minimize seepage losses from ditches and canals to the extent feasible by lining them or replacing them with pipe.

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- During periods of extreme dry conditions when dilution flows in the River are very low, farmers in the area should temporarily remove poorly drained land from production.

AGRICULTURAL CHEMICALS

Pesticides and nutrients in agricultural drainage have found their way to ground waters in many areas of the basin. Nitrate and pesticide levels exceeding the State drinking water standards occur in some ground waters in the basin, and have caused closure of domestic supply wells in several locations. One of the biggest problems facing municipal water providers is the presence of the chemical dibromochloropropane (DBCP) in their wells. The fumigant was widely used in the 1960's to control nematodes in vineyards and can now be found in wells down gradient of the use areas. Providers sued the manufacturers to recover damages and, as of 1995, most providers within the Valley have settled. State and local agencies are searching for methods to mitigate this problem.

The Department of Pesticide Regulation investigates reported cases of pesticide residues in ground water. Where contamination is confirmed to be through legal use of a pesticide, the Department designates a pest management zone after holding a public hearing. Use of the pesticide of concern is modified within the management zone created for it. Responsibility for water quality, however, remains with the State and Regional Water Boards. There is a Memorandum of Understanding between the State Water Board and the Department of Pesticide Regulation describing the role of each agency with regard to pesticide regulation.

Agricultural chemical applicators have been a source of pollution from spills, and improper containment and disposal of waters used to clean equipment or work areas. The application facilities fall under Regional Water Board regulatory programs. When appropriate management practices are implemented, waste discharge requirements may be waived (see Appendices 27 and 28, which are incorporated by reference into this plan). Regional Water Board staff also inspect high risk sites to evaluate compliance. Enforcement strategies are implemented as warranted.

Confined Animal Activities

The Tulare Lake Basin is a fast-growing animal and milk production area. With urban pressures increasing in other parts of the State, dairymen and poultry operators are moving into the Basin. In 1994, Tulare County had the largest number of cows in the United States. Tulare County was also the top milk producing county in the United States.

Where not controlled, surface runoff from such operations can impair both surface and ground water beneficial uses. Uncontrolled runoff can also cause nuisance conditions. Disposal of washwater and manure must occur in a manner that protects both surface and ground waters.

Animal wastes may produce significant bacteria, organic, nitrate, and TDS contamination. The greatest potential for water quality problems has historically stemmed from the overloading of the facilities' waste containment and treatment ponds during the rainy season and inappropriate application of waste water and manure. Overloading sometimes results in discharge of manure waste to canals and drainageways. Most animal confinement facilities have some crop land available for wastewater and spreading manure; the lands assimilative capacity will depend upon area, crop, crop yield, soil, and season of the year. When land and capacity is exceeded, the excessive salts and nutrients are leached to the underlying ground water. Where land is not available, agreements between the operator and other landowners can increase area available for disposal.

Title 27, California Code of Regulations contains minimum standards to protect both surface and ground waters from discharges of animal waste at confined animal facilities.

In addition to the standards in Title 27, the following is required:

- Lands that receive dry manure shall be managed to minimize erosion and runoff, and applied manure shall be incorporated into surface soils soon after manure application.

- Animal confinement areas, manure storage areas, lagoons, disposal fields, and crop lands that receive manure shall not create a nuisance.

- Salt in animal rations should be limited to the amount required to maintain animal health and optimum production.

- Animal confinement facilities, including retention ponds, shall be protected from overflow from stream channels during 20-year peak stream flows for facilities that existed as of 25 July 1975 and protected from 100-year peak stream flows for facilities constructed after 25 July 1975. Facilities

constructed after 8 December 1984 must comply with the specifications in Chapter 15.

- Facilities shall be designed and constructed to retain all facility wastewater generated, together with all precipitation on, and drainage through, manured areas during a 25-year, 24-hour storm. Facilities with operation capacities equal to or greater than the capacities described in 40 CFR 412 (Feedlots Point Source Category) must obtain an National Pollutant Discharge Elimination System (NPDES) permit prior to discharge for events greater than a 25 year, 24 hour storm. (See "Storm Water" section for additional information regarding stormwater regulation.)

- New manure retention ponds shall be sited, designed, constructed, and operated to ensure that the invert of the pond will be at least 5 feet above the highest anticipated elevation of underlying ground water.

Waste discharge requirements for the land application of wastewater may be conditionally waived for animal confinement facilities that can demonstrate compliance with the above. This waiver does not waive responsibility of the facility owner or operator to apply for and comply with a storm water permit. Facilities for which waste discharge requirements are waived shall provide an annual report to the Regional Water Board describing land and waste management practices for the past year. The annual report should summarize the following:

1. Inventory of total head of milking cows, dry cows, heifers, calves, and comparable number of animal units at the dairy during the year.

2. Crops and acreage used for wastewater disposal (irrigation application).

3. Estimates of the quantity of dry manure (tons) spread on site and exported off site, including the location of the fields where the manure is applied, and the names of buyers, and/or locations of application (disposal) areas, if applicable.

Unconfined Animals

Grazing animals can contribute bacteria and pathogens to surface waters, just as wildlife do. The greatest potential problem, though, is erosion resulting from overgrazing. Grazing impacts are generally considered nonpoint source pollution. Due to the diffuse nature of this type of pollution, the State Water Board's Nonpoint Source Management Plan recommends that land use entities in an affected area develop a coordinated resource management plan with Regional Water Board assistance. Good grazing management will prevent pollution and impairment of water quality.

Overdraft

The elimination of overdraft is an important step in managing the rate of salinity increase in the ground water. Continued overdraft will deplete good quality water supplies and introduce salts from poorer quality aquifers.

Continued overdraft has other effects, such as increased costs to overlying landowners from greater pumping lifts, depletion of local ground water, and possible deep subsidence in certain soils with permanent loss of ground water storage capacity.

Various measures can reduce overdraft. Measures include improving efficiency of water use by domestic, industrial, and agricultural users; expanded ground water recharge; watershed management; and development of new sources of supply. The solution to the overdraft problem requires a combination of management programs.

The Regional Water Board goal is to alleviate overdraft and the water quality problems associated with overdraft, and extend the beneficial uses of the ground water resource for the longest period economically feasible. Water used to recharge ground water and imported water supplies must be of the highest quality possible. Banking of water in the ground is encouraged. Construction of storage facilities to store surplus wet-weather basin outflows is also recommended where such facilities do not adversely impact other waters of the state.

Salinity

Degradation of ground water in the Tulare Lake Basin by salts is unavoidable without a plan for removing salts from the Basin. A valleywide drain to carry salts out of the valley remains the best technical solution to the water quality problems of the Tulare Lake Basin. The drain would carry wastewater generated by municipal, industrial, and agricultural activities, high in salt and unfit for reuse. The only other solution is to manage the rate of degradation by minimizing the salt loads to the ground water body.

Some of the salt load to the ground water resource is primarily the result of natural processes within the

Basin. This includes salt loads leached from the soils by precipitation, valley floor runoff, and native surface waters.

Salts that are not indigenous to the Basin water resources result from man's activity. Salts come from imported water, soil leached by irrigation, animal wastes, fertilizers and other soil amendments, municipal use, industrial wastewaters, and oil field wastewaters. These salt sources, all contributors to salinity increases, should be managed to the extent practicable to reduce the rate of ground water degradation.

The Regional Water Board supports construction of a valleywide drain to remove salt-laden wastewater from the Basin under the following conditions:

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

The Regional Water Board also encourages proactive management of waste streams to control and manage salts that remain in the Basin. Application or disposal of consolidated treated effluents should be to the west, toward the drainage trough of the valley. If feasible, salts in waste streams should be processed for reuse to reduce the need to import salt. Salt import should be reduced by assuring that imported water is of the highest quality possible. Water conveyance systems used to import water into the Basin should not be used to transport inferior quality water.

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

Pursuant to Water Code sections 13050 and 13240 et seq., the Regional Water Board has adopted beneficial use designations and water quality objectives that apply to surface and ground waters in the basins covered by this Basin Plan as well as programs of implementation. The Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) is a stakeholder effort to develop comprehensive salt and nitrate management plans (SNMPs) by May 2016 that is expected to result in basin plan amendments that will be considered by the Regional Water Board by May 2017. CV-SALTS is undertaking technical work to analyze salt and nitrate conditions in surface and ground water in the Central Valley, identify implementation measures, and develop monitoring strategies to ensure environmental and economic sustainability. The technical work under development includes developing the models for loading and transport of salt, development and evaluation of effective management practices, and implementing activities to ensure beneficial uses are protected. Participation by all stakeholders is necessary to ensure that the work is scientifically justified, supported by broad stakeholder representation, and completed in a timely fashion. The Regional Water Board has indicated its support for the comprehensive effort through CV-SALTS in Resolutions R5-2006-0024, R5-2010-0024, and R5-2013-0149 and the March 2010 Memorandum of Agreement between the Regional Water Board, the Central Valley Salinity Coalition and the State Water Board. The Regional Water Board finds that it is reasonable to grant exceptions to the discharge requirements related to the implementation of water quality objectives for salinity for non-NPDES dischargers to surface water, and for discharges to groundwater in order to allow for development and implementation of the SNMPs.

EXCEPTION TO DISCHARGE REQUIREMENTS RELATED TO THE IMPLEMENTATION OF WATER QUALITY OBJECTIVES FOR SALINITY

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

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

such an exception(s) shall be submitted in accordance with the requirements specified in paragraph 8, below

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

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

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

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

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

A salinity-based watershed management plan shall at a minimum include the following[2]:

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

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

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

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

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

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

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

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

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

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

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Silviculture

Forest management activities, principally timber harvesting and application of herbicides, have the potential to impact beneficial uses.

Timber harvest activities occur annually on tens of thousands of acres of private and federal land in the Basin and they may affect water quality throughout the area being harvested. Logging debris may be deposited in streams. Landslides and other mass soil movements can also occur as a result of timber operations. The amount of sediment washed from a logged area is directly proportional to the density of roads and skid trails in the area. Thus, the area used for roads, skid trails, and landings should be minimized.

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Proper drainage should be provided. Crossings of streams and other natural channels must be kept to a minimum. Activities (particularly, use of mechanical equipment) in wet meadow areas should be minimized. Disturbed areas should be reseeded or should recieive erosion control treatment. The U. S. Forest Service and the California Department of Forestry and Fire Protection designates zones in each harvest area where the activities are closely controlled to protect the quality of water in streams and lakes. These water protection zones reflect the degree of erosion hazard in the tributary areas and apply in all areas where man's activities threaten to degrade the quality of waters in the streams.

Herbicides are sometimes used in silviculture to reduce commercial timber competition from weeds, grasses, and other plants or to prepare a site for planting of commerical species by eliminating existing vegetation. Problems associated with use of herbicides in forests in the Tulare Lake Basin are not well documented, although there is concern that there may be transport from target sites to streams by wind and water runoff. The U. S. Forest Service and the California Department of Forestry and Fire Protection should keep records of all pesticides, herbicides, or fertilizers used for forest and range management, for insect and disease protection, or for fire control, listing time, place, reason for use, and amounts used. To the extent feasible, such materials shall be precluded from entering streams.

The State and Regional Water Boards entered into agreements with both the U. S. Forest Service and the California Department of Forestry and Fire Protection. These agreements require these agencies to control nonpoint source discharges by implementing control actions certified by the State Water Board as best management practices. The Regional Water Board enforces compliance with best management practices and may impose control actions above and beyond what is specified in the agreements, such as adoption of waste discharge requirements, if the practices are not applied correctly or do not adequately protect water quality.

Mineral Exploration and Extraction

Drainage and runoff from mines and various operations associated with mining can result in serious impacts to ground and surface water beneficial uses, if not properly managed. Efforts to control drainage have gradually expanded over the years. A staff assessment of mine water quality problems, done in 1979, identified an approach to the problems (see

Appendix 29, which is incorporated by reference into this plan). Sedimentation caused by mining can be addressed by discharge requirements for existing mines, but the Regional Water Board does not have a specific program for controlling erosion from abandoned mines.

Title 23, California Code of Regulations (CCR), Division2, Chapter 15 and Title 27, CCR, Division 2, Subdivision 1 contains standards to protect both surface and ground waters from discharge of mining wastes. Surface and subsurface drainage systems should be installed to prevent or minimize contact between water and any minerals that will impair the quality of water draining from the mine. Mine tailing piles must be prevented from eroding.

Additional environmental protection regulations are found in Title 14, California Code of Regulations, Division 2, Chapter 8, Subchapter 1.

Discharges of dredge spoils and process discharges from sand and gravel operations to surface waters shall be regulated by a National Pollutant Discharge Elimination System (NPDES) permit. In addition, these operations are also subject to storm water regulations. Operators must submit a Notice of Intent to comply with the General Industrial Activities Storm Water Permit or obtain an individual NPDES permit.

Requirements for small, short-term discharges confined to land from sand and gravel operations may be waived.

Erosion

Erosion is one of the greatest problems in the watershed area. Erosion is a natural occurrence, but most activities of man accelerate the process. Erosion causes discoloration of streams, and the suspended matter settles to form a smothering blanket on the stream bed. Erosion is accelerated by poor drainage and soil stabilization associated with the following activities: road building, clearing land, leveling land, construction, logging, brush clearing, off-road vehicle use, agriculture, overgrazing, and fires.

Disturbance of soil, vegetation, organic debris, and other materials that control runoff should be minimized. The Regional Water Board's policies on soil disturbance activities are as follows:

- Operations and activities should be planned and conducted in a manner that will not disturb extensive areas of soil or that will disrupt local drainage.
- Areas where soil is disturbed should be promptly reseeded or stabilized to prevent erosion.
- Strict regulation of activities in water protection zones, as described above in the "Silviculture" section, should be established.
- The stream flow regimen should be stabilized and maintained, and soil control measures should be applied in a timely manner.
- Neither organic nor earthen material should be discharged into any streams nor should such materials be placed at locations where they can pass into streams in quantities that could impair any beneficial use of the water.
- Operations and activities that cause increased turbidity levels in local streams must be regulated so that streams are not affected for extended periods or for more than ten percent of the time and operations and activities shall not violate water quality objectives.

Erosion control guidelines are included in the erosion/sedimentation action plan which is Appendix 30 and is incorporated by reference into this plan.

Recreation

Recreational activity can cause water quality problems. Boating can cause waves which increase lake bank erosion. Other potential water quality impacts may result from boat exhausts and oils entering the water, human secretions and excretions, various waste disposal activities, or cleaning fish and other activities. In certain intensive use areas without sufficient toilet facilities, a reach of stream bank or section of trail may be marked with closely interspersed fecal deposits, a direct threat both from contact and from ready transport into surface stream channels. Another problem is the disposal of material from vault privies or chemical toilets. Most installations are far removed from conventional waste treatment plants; thus, the use of such facilities for disposal is impractical. Climate, geology, and other factors become critical when considering local disposal as a part of routine maintenance. Some installations are considering use of flush toilets and a package, biological treatment system. Such systems must meet the requirements of a domestic wastewater treatment facility (See the "Discharges to Land" subsection of the "Municipal and Domestic Wastewater" section).

Attractive, convenient, and adequate toilet facilities, fish cleaning sinks, and disposal containers should be provided to prevent disposal in or near surface waters. Measures should be implemented to reduce lake bank erosion, such as reducing boat speeds near banks. Programs and procedures, developed from studies where necessary, must be adopted for processing and disposal of solid wastes and vault toilet pumpings from recreational areas. Educational programs on proper handling and disposal of wastes must be made available to classes and groups who would apply the techniques.

Well Standards

Improper well construction, maintenance, abandonment, or destruction can lead to contamination of ground water. California Water Code, Section 13801, requires all counties to adopt water well standards in accordance with Department of Water Resources Bulletin No. 74-81: "Water Well Standards: State of California," and Bulletin No. 74-90: "California Well Standards". Counties in the Tulare Lake Basin have established well standards equal to or more stringent than those in the bulletin.

Controlled Burning

Controlled burning is a method to regulate growth of some chaparral species and encourage the growth of preferable trees and grasses. Controlled burning helps prevent wildfire and uncontrolled burns. Burning changes the character of eroded matter from organic to mineral and may increase the contribution of material to streams. Burned areas, whether from controlled or uncontrolled burns, should be managed to minimize erosion of materials into streams.

Municipal and Domestic Wastewater

Increasing population and a higher standard of living require continuing expansion of wastewater treatment facilities. Advances in technology, normal equipment deterioration, and higher performance expectations require continuing replacement of these facilities. Expansion and replacement of municipal wastewater treatment facilities are integral components of the wastewater management program. Wastewater facilities should be evaluated periodically to determine if they adequately meet long-term needs, i.e., 20 years in the future. Financial programs must include a capital replacement fund to provide for these future needs. New land developments should include collection and treatment facilities as part of the initial plans.

The Regional Water Board regulates all municipal wastewater discharges to protect the quality and beneficial uses of ground water and surface water resources, to maximize reclamation and reuse, and to eliminate waste associated health hazards.

Municipal and industrial point source discharges to surface waters are generally controlled through National Pollutant Discharge Elimination System (NPDES) permits. Although the NPDES program is established by the federal Clean Water Act, the permits are prepared and enforced by the regional water boards through program delegation to California and implementing authority in the California Water Code.

The Regional Water Board will issue NPDES permits and waste discharge requirements for municipal waste discharges to protect water quality. Dischargers will be required to reclaim and reuse wastewater whenever reclamation is feasible.

To prevent nuisance, dischargers are required to manage vegetation on their respective facilities. However, birds may utilize this same vegetation during nesting season, creating a potential conflict between the Health and Water Codes and the Fish and Game Code. In accordance with a Memorandum of Understanding between the Department of Fish and Game (now the California Department of Fish and Wildlife) and Mosquito Abatement Districts in the Tulare Lake Basin (copy is Appendix 25), vegetation management operations should be conducted so that weed removal operations are not necessary when nesting takes place, which is between April 1 and June 30.

Individual Waste Systems

Control of individual waste treatment and disposal systems can best be accomplished by local county environmental health departments if these departments are strictly enforcing an ordinance that is designed to provide complete protection to ground and surface waters as well as public health. Consistent with this approach, the Regional Water Board implements the State Water Board's *Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems* (OWTS Policy).

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The Regional Water Board will consider adoption of a ban on new septic tank systems and elimination of existing systems in areas where the systems contaminate underlying ground water or where a substantial percentage of existing systems fail annually. In making this determination, the Regional Water Board must consider the factors listed in Section 13281 of the

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California Water Code. (See the "Prohibitions" section of this chapter for a listing of communities with septic tank system moratoria.) The Regional Water Board will also review alternatives to protect water quality standards and beneficial uses; and prevent nuisance, pollution and contamination. Alternatives may include any combination of individual disposal systems, community collection and disposal systems with subsurface disposal, and conventional treatment systems.

A problem may develop in some agricultural areas of the Basin owing to saturation of the soil when irrigation water along the valley trough is restricted from percolating through the soil profile. As the areal extent of this condition expands, individual waste disposal systems in areas where community sewers are not an option may create surfacing waste and a public health problem.

Septage

Every three years, septage should be pumped from the average septic tank. Commercial liquid waste haulers provide this service. Small sewage treatment plants that may be in a rural area of septic tank users are reluctant to accept pumpings from individual waste disposal systems and vault toilets because of the extremely variable nature of the waste and its potential adverse affect on the plant's operation. Where regional wastewater plants have been funded with federal or state grants, one condition of the award typically requires provision for septage. Where this variability can be accommodated, haulers may find the hauling distance too great and fees too large. As a result, illegal dumps of this waste sometimes occur and cause aesthetic and public health problems.

County authorities presently license septic tank pumpers through their environmental health departments. Thus, county and municipal agencies provide effective control, treatment, and disposal of septic tank pumpings. Upon approval of the County Health Officer, septic tank pumpings may be disposed to qualified waste disposal sites, as defined in Chapter 15, or to disposal facilities specifically approved to receive these wastes.

The Regional Water Board recommends construction of facilities for septic tank pumpings at municipal sewage treatment plants where the waste will not interfere with treatment or cause nuisances.

Effluent Limits

Discharges must meet effluent and receiving water limits set forth in adopted waste discharge requirements. Point source discharges to navigable waters must comply with Section 301 of the Clean Water Act. Point source discharges to land must comply with waste discharge requirements developed according to California Water Code Section 13377 and Section 13263, respectively. NPDES permits must be renewed every 5 years. Other waste discharge requirements must be reviewed every 5, 10, or 15 years depending upon the threat to water quality of the discharge.

The effluent limits presented in the following sections of this chapter are the minimum treatment level which must be provided.

Discharges to Navigable Waters

40 CFR 125 requires publicly owned treatment works to provide secondary treatment and best practicable waste treatment technology, or provide adequate treatment to meet the water quality standards, whichever is more stringent. (40 CFR 133 defines secondary treatment as removal of 85 percent or reduction to 30 mg/l, whichever is more stringent, of both 5-day BOD and suspended solids.) Effluent limitations for other point sources are also described in 40 CFR 125. Special limitations for certain types of industrial discharges are defined in the 40 CFR 400 series. These sources must provide best practicable control technology currently available.

The following policy shall govern waste discharges to navigable waters in the Tulare Lake Basin:

- Discharges to surface waters will not be considered a permanent solution when the potential exists for wastewater reclamation.

- Discharge to ephemeral streams or to streams that have limited dilution capacity will not be considered a permanent solution unless it is accomplished in such a manner as to safeguard the public health and prevent nuisances, and the wastewater is of such a quality that it benefits streamflow augmentation.

- Dischargers in mountain areas must evaluate land disposal as an alternative. Where studies show that year-round land disposal is not practicable, dischargers must evaluate dry season land disposal as an alternative.

As a minimum, dischargers to surface waters, including stream channels, shall comply with the following effluent limits:

- All domestic discharges shall be adequately treated and disinfected to reliably meet wastewater reclamation criteria (Title 22, California Code of Regulations, Division 4, Section 60301, et. seq.).

- The maximum electrical conductivity (EC) of a discharge shall not exceed the quality of the source water plus 500 micromhos per centimeter (µmhos/cm) or 1,000 µmhos/cm, whichever is more stringent. When the water is from more than one source, the EC shall be a weighted average of all sources.

- Discharges shall not exceed an EC of 1,000 µmhos/cm, a chloride content of 175 mg/l, or a boron content of 1.0 mg/l.

- An exception from the EC and/or the chloride limitations identified here may be granted for municipal and domestic wastewater discharges to navigable waters if a variance is granted pursuant to the *Variance Policy for Surface Water*.

In addition to the above, discharges to waters having an EC or water quality objective of less than 150 µmhos/cm shall comply with the following:

- Complete removal of settleable and floatable solids

- Nutrient removal as necessary to control biostimulation

- Removal of dissolved solids to levels consistent with those of the receiving waters

- Ammonia removed as necessary to protect aquatic life.

- Substantially complete removal of any substance known to be toxic to plant and/or animal life.

Discharges to Land

Wastewater treatment facilities that discharge to land in a manner that waste may infiltrate below the ground surface and degrade ground water must also comply with effluent limits. The excellent quality of ground waters along the easterly edge of the Basin should be protected by encouraging the application or disposal of consolidated treated effluents to the west, toward the drainage trough of the valley.

The levels of treatment required of all domestic wastewater facilities with land disposal are as follows:

1. Primary: Primary treatment is acceptable only under exceptional circumstances, typically a relatively minor discharge in an isolated location where there is little risk of nuisance or water

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quality degradation. Treatment and disposal in some instances could be provided by septic tanks and a leach field. Increased amounts of wastewater or nuisance conditions would require an upgrade in level of treatment.

2. Advanced Primary: This treatment may be satisfactory for smaller facilities in outlying or remote areas where the potential for odors and other nuisances is low. Advanced primary shall provide removal of 60 to 70 percent or reduction to 70 mg/l, whichever is more restrictive, of both 5-day BOD and suspended solids.

3. Secondary Treatment: Secondary treatment should remove 85 percent or reduce to 30 mg/l, whichever is more restrictive, of both 5-day BOD and suspended solids. Secondary treatment may be required where public access to wastewater is not precluded.

   Most wastewater discharges will be adequately precluded from public access and secondary treatment will not be necessary. Facilities which discharge or are designed to discharge in excess of 1 million gallons per day must provide removal of 80 percent or reduction to 40 mg/l, whichever is more restrictive, of both 5-day BOD and suspended solids. Smaller facilities (less than 1 million gallons per day) in close proximity to an urbanized area or using particular methods of effluent disposal (e.g., irrigation of certain types of crops) will also be required to provide 80 percent removal or reduction to 40 mg/l, whichever is more restrictive, of both 5 day BOD and suspended solids.

4. Advanced Wastewater Treatment: Reclaimed water used for the spray irrigation of food crops must also be coagulated and filtered. Coagulated wastewater means oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated by the addition of suitable floc-forming chemicals or by an equally effective method. Filtered wastewater means an oxidized, coagulated, clarified wastewater which has been passed through natural undisturbed soils or filter media, such as sand or diatomaceous earth, so that the turbidity does not exceed an average operating turbidity of 2 NTUs and does not exceed 5 NTUs more than 5 percent of the time during any 24-hour period {Title 22, California Code of Regulations, Section 60301, et seq.}.

Additional effluent limits follow:

- The incremental increase in salts from use and treatment must be controlled to the extent possible. In most circumstances, the maximum EC shall not exceed the EC of the source water plus 500 µmhos/cm. When the source water is from more than one source, the EC shall be a weighted average of all sources. However, under certain circumstances, the Regional Board, upon request of the discharger, may adopt an effluent limit for EC that allows EC in the effluent to exceed the source water by more than 500 µmhos/cm. This request will be granted consistent with the Policy for Exception from Implementation of Water Quality Objectives for Salinity.

- Concentration of total coliform organisms in reclaimed wastewater must be in accordance with limits established in the following provisions of Title 22, California Code of Regulations: Sections 60303 (Spray Irrigation of Food Crops), 60305 (Surface Irrigation of Food Crops), 60311 (Pasture for Milking Animals), 60313 (Landscape Irrigation), 60315 (Nonrestricted Recreational Impoundment), 60317 (Restricted Recreational Impoundment), and 60319 (Landscape Impoundment).

- In the Poso Creek Subarea, discharges shall not exceed 1,000 µmhos/cm EC, 200 mg/l chlorides, and 1.0 mg/l boron. The Poso Creek subarea consists of about 35,000 acres of land between State Highways 99 and 65 about six miles north of Bakersfield, and is defined more specifically in Regional Water Board Resolution No. 71-122, which is incorporated by reference into this plan.

- In the White Wolf Subarea, for areas overlying Class I irrigation water, discharges shall not exceed 1,000 µmhos/cm EC, 175 mg/l chlorides; 60 percent sodium, and 1.0 mg/l boron. For areas overlying Class II or poorer irrigation water, discharges shall not exceed 2,000 µmhos/cm EC, 350 mg/l chlorides, 75 percent sodium, and 2 mg/l boron. In areas where ground water would be Class I except for the concentration of a specific constituent, only that constituent will be allowed to exceed the specified limits for Class I water. In no case shall any constituent be greater than those limits specified for areas overlying Class II irrigation water. The White Wolf subarea consists of 64,000 acres within the valley floor, at the southern tip of the Tulare Lake Basin, about 20 miles south of Bakersfield. The subarea is bounded on the west by the San Emigdio Mountains, on the south and east by the Tehachapi Mountains, and on the north by the White Wolf Fault.

  Criteria for mineral quality of irrigation water is described below:

Constituent	Class I	Class II	Class III
TDS (mg/l)	<700	700 - 2,000	>2,000
EC (µmhos/cm)	<1,000	1,000 - 3,000	>3,000
Chlorides (mg/l)	<175	175 - 350	>350
Sodium (percent base constituents)	<60	60 - 75	>75
Boron (mg/l)	<0.5	0.5 - 2	>2

- Discharges to areas that may recharge to good quality ground waters shall not exceed an EC of 1,000 µmhos/cm, a chloride content of 175 mg/l, or a boron content of 1.0 mg/l.

- An exception from the EC and/or the chloride limit for discharges to land may be permitted consistent with the *Program for Exception from Implementation of Water Quality Objectives for Salinity*.

Wastewater Reclamation

Reclaimed water provides a substitute source of water and provides nutrients that nourish crops. When properly managed, reclamation consumes nitrates and effluent that would normally percolate to local ground waters underlying a community and can free up potable water for growth or other uses. Extensive reclamation is a practical necessity simply to maintain present levels of development and activity in the Basin.

Wastewater reclamation shall be maximized by controlling or limiting salt pickup and evaporation during use, treatment, or disposal. Integration of final disposal into existing surface distribution systems appears to be advantageous. Wherever feasible, eventual wastewater reclamation will be requested.

Title 22, California Code of Regulations, establishes reclamation criteria for direct use of reclaimed water but has no criteria for wastewater distributed with irrigation supplies. Therefore, municipal treatment facilities producing effluent for introduction to irrigation canals for unrestricted irrigation will be required, as a minimum, to disinfect to 23 MPN coliform per 100 ml. The State Water Board Division of Drinking Water Programs will be consulted for all cases.

To facilitate the use of treated wastewater with short notice, wastewater reclamation requirements may be waived for up to one year provided that the following conditions are met:

1. The reclaimed water will comply with any applicable criteria provided by Title 22, Division 4, California Code of Regulations;

2. The proposed uses receive prior approval from the state and local health departments and the Executive Officer; and

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3. The reclamation project is consistent with the "Guidelines for Use of Reclaimed Water" developed by the Department of Health Services (now the State Water Board Division of Drinking Water Programs). The "Guidelines for Use of Reclaimed Water" is incorporated by reference into this plan. (See Appendix 34.)

Reclamation projects more than one year in duration may be allowed to proceed prior to final approval of reclamation requirements provided that the use complies with reclamation criteria.

Waste discharge requirements will be revised and wastewater reclamation requirements adopted as soon as possible to allow reuse. No enforcement actions will be taken against a community allowing wastewater reuse prior to revision of waste discharge requirements provided that the use complies with reclamation criteria.

Reclamation policies are as follows:

- Discharges to surface water and evaporation of reclaimable wastewater will not be acceptable permanent disposal methods where opportunity exists to replace an existing use or proposed use of fresh water with reclaimed water; a timetable for reclamation or reuse may be set by the Regional Water Board.

- The quality of waste discharges shall be regulated to promote reclamation and reuse wherever feasible.

- Rates of wastewater application that exceed reasonable agronomic rates will not be considered as reclamation or reuse.

- Project reports for new or expanded wastewater facilities shall include plans for wastewater reclamation or the reasons why this is not possible.

- Where studies show that year-round or continuous reuse of all of the wastewater is not practicable, consideration shall be given to partial reuse of the flow and seasonal reuse.

The irrigation season in the Tulare Lake Basin area typically extends 9 to 10 months, but monthly water usage varies widely. To maximize reuse, users should provide water storage and regulating reservoirs, or percolation ponds that could be used for ground water recharge of surplus waters when there is no irrigation demand.

State Water Board policy, described in Resolution No. 77-1, Appendix 4, encourages and provides funds for reclamation projects that protect beneficial uses of existing water supplies, encourage water conservation, and encourage other agencies to assist in implementation.

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Consolidations

Proliferation of small treatment plants in developed areas is undesirable. Most small communities do not have adequate resources to properly manage, treat and dispose of wastewater in an urban environment. Typical problems involve nuisance and ground water pollution. Small communities and development close to other small communities may be able to construct and operate a joint wastewater treatment facility with greater treatment ability, opportunity for reclamation, and for lower cost. Policies on consolidation are as follows:

- Adjoining small communities should combine resources to construct and operate a joint or regional wastewater treatment plant.

- Consolidation, whether one or more regional facilities operated by a single sewering authority, should be cost-effective, and consider benefits to the ecology, treatment efficiencies, and effective reuse of the waters.

- Unsewered areas and new developments adjacent to or within existing wastewater collection system service areas should be connected to the system. Developments not within a service area but within the projected sphere of influence of a regional system should be developed in a manner that provides for future connection to the system when the regional sewer system becomes available. One condition of approval of individual sewage disposal systems in certain areas and of certain densities may be that developments be dry sewered in a manner that provides cost-effective sewerage infrastructure to be placed during initial construction.

- Each municipal facility should act as a regional facility and provide sewerage services within its sphere of influence. The municipality must be equitably compensated for these services.

- Areas recommended for consolidation of wastewater systems are the Parlier area, the Bakersfield area, and the City of Delano. The Selma-Kingsburg-Fowler (Tri-Cities) and Fresno-Clovis regions have been consolidated. Consolidations of other wastewater treatment plants may be justified at some future time.

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The intent of this policy is to make consolidation the rule rather than the exception. Consolidation should be compared to other approaches. If such a comparison yields clear technical, environmental, or economic advantages for consolidating, then consolidation should be implemented.

Pretreatment

Many municipal facilities in the Basin treat significant volumes of industrial wastewater. Most of this wastewater is from agriculture-related industries that fluctuate seasonally. Requirements for industrial users that discharge directly to surface water or to land are in the "Industrial Wastewater" Section of this chapter. Indirect industrial users discharge to a municipal wastewater treatment system and are regulated by the municipal discharger. Policies on pretreatment are as follows:

- All publicly owned treatment works (POTWs) with a design flow greater than 5.0 million gallons per day must comply with 40 CFR 403, the federal pretreatment program requirements.

- Smaller POTWs with industrial flows which may cause pass-through or interference may also be required to develop pretreatment programs.

- All industrial users that discharge to POTWs must comply with the National Pretreatment Standards regardless of whether the POTW has an approved pretreatment program.

Industrial Wastewater

The number of known cases of ground water pollution or public nuisance attributable to industrial sources has increased steadily over the last decade. Much of the increase is due to sources such as underground tanks that were never intended to discharge but which leaked undetected for years. The Region's inventory of underground storage tanks indicates a high number of leaking tanks. Ground water contamination from other industrial sources generally occurs from the illegal discharge of fluids or other materials used in production processes. Waste compounds have been discharged directly to unlined sumps, pits, or depressions and spread on soils. In some cases, these disposal practices went on for many years before they were discovered or discontinued.

There are two types of industrial dischargers: direct and indirect. Indirect dischargers are those who discharge into community wastewater systems. The federal regulations require that all indirect users abide by general National Pretreatment Standards and that certain categories of indirect users comply with specific discharge standards. (See Pretreatment Section, above.)

Direct dischargers discharge to either surface water or land. Surface water dischargers are subject to federal and state regulations. Federal regulations require dischargers to comply with best conventional pollutant control technology (BCT), best practicable control technology currently available (BPT), or best available technology economically achievable (BAT). Effluent limitations for specific industrial waste discharges to surface waters, together with standards of performance and pretreatment standards for new sources, are found in 40 CFR 400. Waste source categories of particular interest in the Tulare Lake Basin include dairy product processing, meat product and rendering processing, canned and preserved fruit and vegetable processing, beet sugar processing, and petroleum production and refining. When treatment technology is not defined, regulations specify use of best practicable judgement (BPJ).

Generally, the effluent limits established for municipal waste discharges will apply to industrial wastes. Industrial dischargers shall be required to:

1. Comply with water quality objectives established in Chapter III.

2. Comply with Chapter 15 for discharges of designated or hazardous waste unless the discharger demonstrates that site conditions and/or treatment and disposal methods enable the discharge to comply with this Basin Plan and otherwise qualify for exemption from Chapter 15.

3. Comply with effluent limitations set forth in 40 CFR 400 when discharge is to surface water.

4. Comply with, or justify a departure from, effluent limitations set forth in 40 CFR 400 if discharge is to land.

5. Limit the increase in EC of a point source discharge to surface water or land to to a maximum of 500 μmhos/cm. A lower limit may be required to assure compliance with water quality objectives.

   An exception to this EC limit may be permitted for industrial sources when the discharger technically demonstrates that allowing a greater net incre-

mental increase in EC will result in lower mass emissions of salt and in conservation of water, provided that beneficial uses are protected.

An exception may also be permitted for food processing industries that discharge to land and exhibit a disproportionate increase in EC of the discharge over the EC of the source water due to unavoidable concentrations of organic dissolved solids from the raw food product, provided that beneficial uses are protected. Exceptions shall be based on demonstration of best available technology and best management practices that control inorganic dissolved solids to the maximum extent feasible.

Cull fruits and wastes from food processing generally are voluminous and may have a high water content like winery wastes. Provision should be made for thin spreading of such materials on the fields, followed promptly by disking into the soil.

An exception from the EC limit may also be permitted consistent with the *Program for Exception from Implementation of Water Quality Objectives for Salinity.*

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

7. Unless an exception is technically justified, segregate domestic waste from industrial waste, and treat and dispose of domestic waste according to the policy for municipal and domestic wastewater.

Additional specific requirements have been adopted for wastewater from oil fields and wineries.

Oil Field Wastewater

Hydrocarbon production in the San Joaquin Valley's 74 oil fields generates significant volumes of wastewater. Oil field producers continue to use hundreds of sumps as oil/wastewater separators and as wastewater disposal sumps. Some oil field wastewaters contain salts, oil and grease, metals, and organics which can present a threat to the beneficial uses of underlying good quality ground water. However, in some areas, wastewater may be of a quality which allows its reuse for reclamation or discharge to surface waters. In these instances, waste discharge requirements or NPDES permits, as appropriate, are issued. In addition, some ground water in the Basin is naturally of such poor quality that oil field wastewater will not impact its beneficial uses. Due to historical practices, degradation of ground water from oil field wastewater disposal occurred in some areas. The petroleum industry has been eliminating oilfield wastewater disposal sumps.

With the gradual elimination of the use of sumps for disposal, increased amounts of produced wastewater are being discharged to Class II injection wells. Title 14, California Code of Regulations, Section 1724.6, et seq., defines environmental protection regulations relating to oil and gas operations administered by the California Department of Conservation, Division of Oil, Gas & Geothermal Resources in cooperation with other state regulatory agencies. The Department of Conservation administers the federal underground well injection program for Class II injection wells within the state. The Regional Water Board reviews and may comment on the permit application regarding water quality concerns. The review process is in accordance with a Memorandum of Agreement between the State Water Board and the Department of Conservation. The purpose of the agreement is to ensure that the construction or operation of Class II injection disposal wells and the land disposal of wastewaters from oil, gas, and geothermal production facilities does not cause degradation of waters of the state. The Memorandum of Agreement provides a coordinated approach that results in a single permit satisfying the statutory obligations of both agencies.

The Memorandum of Agreement also requires the Department of Conservation to notify the Board of all pollution problems, including spills associated with operators and/or new proposed oil field discharges. The agencies must work together, within certain timelines, to review and prepare permits and coordinate enforcement actions.

Policies regarding the disposal of oil field wastewater are:

- Maximum salinity limits for wastewaters in unlined sumps overlying ground water with existing and future probable beneficial uses are 1,000 µmhos/cm EC, 200 mg/l chlorides, and 1 mg/l boron, except in the White Wolf subarea where more or less restrictive limits apply. The limits for the White Wolf subarea are discussed in the "Discharges to Land" subsection of the "Municipal and Domestic Wastewater" section.

- Discharges of oil field wastewater that exceed the above maximum salinity limits may be permitted to unlined sumps, stream channels, or surface waters if the discharger successfully demonstrates to the Regional Water Board in a public hearing that the proposed discharge will not substantially affect water quality nor cause a violation of water quality objectives.

- An exception from the EC and/or the chloride limit may be permitted consistent with the *Program for Exception from Implementation of Water Quality Objectives for Salinity*.

- Disposal sumps shall either be free of oil or effectively covered or screened to preclude entry of birds or animals. Compliance monitoring for wildlife problems shall continue to be deferred to the Department of Conservation and the California Department of Fish and Wildlife. The Regional Water Board will respond to complaints, spot check for compliance, and enforce conditions as necessary.

- Sumps adjacent to natural drainage courses shall be protected from inundation or washout, or properly closed.

- Regulation of oil field dischargers shall be coordinated with all other state and federal agencies having jurisdiction and interest in the oil field.

- The discharge of produced wastewater to land, where the concentration of constituents may cause ground water to exceed water quality objectives, shall be subject to the requirements contained in the California Code of Regulations, Title 27, Section 20005, et seq. (Title 27).

Wineries

A substantial number of wineries operate throughout the Central Valley. Many of these wineries produce substantial quantities of stillage waste which is high in concentrations of BOD, EC, TDS, and nitrogen. As stillage is normally discharged directly to land without any prior treatment, there is significant potential for the waste to affect water quality and to create nuisance conditions if not managed properly.

A study conducted in 1980 developed recommendations for minimizing water quality effects and nuisance conditions resulting from land application of stillage waste {Metcalf and Eddy, "Land Application of Stillage Waste: Odor Control and Environmental Effects"}. Based on the study, the Regional Water Board adopted guidelines for the land disposal of stillage waste from wineries. These guidelines may not be sufficient where local soil, ground water, weather, or other conditions are not compatible with the stillage to be disposed. These guidelines prescribe the minimum requirements for disposal of stillage waste from wineries and do not preclude the establishment of more stringent requirements as necessary to comply with water quality objectives. The policy for land disposal of stillage waste is presented below.

Storm Water

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

EPA has promulgated regulations for municipal and industrial stormwater permits in 40 CFR 122. The State Water Board implemented these regulations by adopting a General Industrial Activities Storm Water Permit (excluding construction activity) and a General Construction Activity Storm Water Permit. Storm water dischargers indicate intention to follow the specifications in the appropriate permit by filing a Notice of Intent with the State Water Board.

The Regional Water Board will take all measures necessary to protect the quality of surface and ground waters from treatment or disposal of urban runoff.

- The Regional Water Board will issue waste discharge requirements on the discharge of urban runoff when a threat to water quality exists.

- The Regional Water Board will regulate large and medium municipal stormwater dischargers and, at its discretion, specific industrial dischargers through the issuance of individual NPDES permits. Industrial dischargers may also be

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Land Disposal of Stillage Waste from Wineries

Rapid Infiltration Method for Disposal of Stillage:

A. Disposal Site Requirements

1. Land for disposal should be as remote from habitation as possible.

2. Soils should be capable of infiltrating 3 to 4 inches of stillage in 24 hours or less.

3. Soil permeability should be greater than 2 inches per hour for the entire profile.

4. There should be no unripped hardpan within the top 10 feet of the soil profile.

5. Soil depth should be 10 feet or greater.

6. Depth to ground water should be 10 feet or greater.

B. Operational Procedures

1. Cooling water and any other wastewater with low COD concentrations should be separated from the stillage before land application.

2. Stillage waste should be spread on land between long, narrow, level checks. The surface should be leveled uniformly within 0.1 foot per 100 feet, without potholes.

3. At the inlet of the checks, the flow should be distributed using splash plates or other devices to prevent deep holes from forming.

4. The depth of each stillage application should not exceed the following:

Period of Year	Depth of Stillage Application (inches)
Aug 1 to Oct 1	3.7
Oct 1 to Dec 1	3
Dec 1 to May 1	2.5

5. Standing stillage should not be present 24 hours after application has ceased.

6. After stillage waste has been applied to an area, the area should be allowed to dry for at least the following period before re-application of waste:

Period of Year	Drying Time (days)
Aug 1 to Oct 1	6
Oct 1 to Dec 1	9
Dec 1 to May 1	13

7. After stillage has been applied to an area, if leathers have not been removed, the area should be raked, rototilled, or an equivalent method should be used before re-application of stillage.

8. Loading rates and drying times for stillage waste from raisins or pomace should follow the criteria for December 1 to May 1 operations.

9. Land area used for disposal should equal or exceed the following:

Period of Year	Land Area † (acres per 100,000 gpd of stillage waste)
Aug 1 to Oct 1	7
Oct 1 to Dec 1	12.3
Dec 1 to May 1	20.6

† These land areas are directly related to the drying time stated in No. 6 above. Complete infiltration recovery to the original values may not be obtained by these relatively short resting cycles. At some application sites, the infiltration rate constantly decreases as the application season progresses. A decrease in infiltration of about 75% can be expected with only three applications. Therefore, the number of stillage applications at a specific site should be kept to a minimum. Repeated applications of stillage allowing only minimum drying times may require larger land areas.

10. During periods when it is not used for stillage disposal, the disposal area should be planted with crops to assist in the removal of residual nitrogen concentrations from the soil if necessary.

Slow Rate Irrigation Method:

Most existing stillage disposal sites are located on relatively permeable soils. Where the available land for application of stillage is such that the limiting permeability is slow to moderately slow, the use of slow rate irrigation may be used as an alternative to rapid infiltration. The application depends on the expected evaporation and infiltration and can range from less than 0.5 to 1.5 inches (13,600 to 40,000 gal/acre). Resting periods should range from 18 to 20 days or more. The resultant average loading rates and land areas are shown in Table IV-1. All other disposal site requirements and operational procedures for the rapid infiltration method also apply to the slow rate irrigation method.

Table IV-1
Slow Rate Irrigation Area Requirements

	Soil Permeability Rate	
	Slow	Moderately Slow
Limiting soil permeability, in/hr	0.06-0.2 (clay loam)	0.2-0.6 (clay loam or silt loam)
Infiltration capacity, in/day	0.5	1.0
Resting period, days	20	13
Average loading rate, gal/acre/day	670	1,940
Area required per 100,000 gal/day of stillage, acres	150	52

regulated with individual, site-specific NPDES permits. The Regional Water Board will issue waste discharge requirements on the discharge of urban runoff to land when a threat to water quality exists.

- Combined sewer systems will not be allowed without satisfactory justification.

- The Regional Water Board will require source control programs by local agencies when water quality benefits will be realized.

- Governing agencies should provide facilities for the treatment (if necessary), storage and percolation of runoff.

Hazardous and Non-Hazardous Waste Disposal

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

Landfills for disposal of municipal or industrial solid waste (solid waste disposal sites) are the major categories of waste management units in the region, but there are also surface impoundments used for storage or evaporative treatment of liquid wastes, waste piles for the storage of solid wastes, and land treatment units for the biological treatment of semi-solid sludges from wastewater treatment facilities and liquid wastes from cannery and other industrial operations. Sumps, trenches, and soil depressions have been used in the past for liquid waste disposal. Mining waste management units (tailings ponds, surface impoundments, and waste piles) also represent a significant portion of the waste management units in the Region. The Regional Water Board issues waste discharge requirements to ensure that these discharges are properly contained to protect the Region's water resources from degradation, and to ensure that dischargers undertake effective monitoring to verify continued compliance with requirements. In addition, the Toxic Pits Cleanup Act of 1984 precludes the storage or disposal of liquid hazardous wastes or hazardous wastes containing free liquid. The Regional Water Board is responsible for enforcing this Act under the authority of the Health and Safety Code, Section 25208 et seq.

These discharges, and the waste management units at which the wastes are discharged, are subject to concurrent regulation by other state and local agencies responsible for land use planning, solid waste management, and hazardous waste management. "Local Enforcement Agencies" (mainly cities and counties) implement the state's solid waste management laws and local ordinances governing the siting, design, and operation of solid waste disposal facilities (usually landfills) with the concurrence of the California Department of Resources Recycling and Recovery (CalRecycle) (formerly the California Integrated Waste Management Board (Waste Management Board)). CalRecycle also has direct responsibility for review and approval of plans for closure and post-closure maintenance of solid waste landfills. The Department of Toxic Substances Control issues permits for all hazardous waste treatment, storage, and disposal facilities (which include hazardous waste incinerators, tanks, and warehouses where hazardous wastes are stored in drums as well as landfills, waste piles, surface impoundments, and land treatment units). The State Water Board, regional water boards, Waste Management Board (now CalRecycle), and Department of Toxic Substances Control have entered into Memoranda of Understanding to coordinate their respective roles in the concurrent regulation of these discharges.

The statutes and regulations governing the discharges of both hazardous and non-hazardous wastes have been revised and strengthened in the last few years. The discharge of municipal solid wastes to land are closely regulated and monitored; however, some water quality problems have been detected and are being addressed. Solid waste water quality assessment tests and recent monitoring efforts under the State and regional water boards' Title 23, CCR, Division 2, Chapter 15 and Title 27, CCR, Division 2,

Subdivision 1 have revealed that discharges of municipal solid wastes to unlined landfills have resulted in

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ground water degradation and pollution by volatile organic constituents and other waste constituents. Volatile organic constituents are components of many household hazardous wastes and certain industrial wastes that are present within municipal solid waste streams. Volatile organic constituents can easily migrate from landfills either in leachate or by vapor-phase transport. Clay liners and natural clay formations between discharged wastes and ground waters are largely ineffective in preventing water quality impacts from municipal solid waste constituents. In a recently adopted policy for water quality control, the State Water Board found the "[r]esearch on liner systems for landfills indicates that (a) single clay liners will only delay, rather than preclude, the onset of leachate leakage, and (b) the use of composite liners represents the most effective approach for reliably containing leachate and landfill gas." {State Water Board Resolution No. 93-62, Policy for Regulation of discharges of Municipal Solid Waste}

As a result of similar information on a national scale, the U. S. Environmental Protection Agency (USEPA) adopted regulations under Subtitle D of the Resource Conservation and Recovery Act (RCRA) which require the containment of municipal solid wastes by composite liners and leachate collection systems. Composite liners consist of a flexible synthetic membrane component placed above and in intimate contact with a compacted low-permeability soil component. This liner system enhances the effectiveness of the leachate collection and removal system and provides a barrier to vapor-phase transport of volatile organic constituents from the unit. Regional water boards and CalRecycle are implementing these new regulations in California under a policy for water quality control from the State Water Board (Resolution No. 93-62) and regulations from CalRecycle. The State Water Board adopted revised regulations in 27 CCR, Division 2, Subdivision 1 to fully implement water quality-related portions of the RCRA, Subtitle D federal regulations.

Inert waste does not contain hazardous waste or soluble pollutants at concentrations in excess of applicable water quality objectives and does not contain significant quantities of decomposable waste. Some examples of inert wastes include: concrete rubble and excess clean earth fill. Inert wastes do not necessarily need to be disposed of at classified waste management units, but waste discharge requirements may be issued for their discharge at the discretion of the Regional Water Board.

Other Discharge Activities

Some remaining discharges of concern include small hydroelectric facility development, dredging and dredging spoils runoff.

The energy crisis of the 1970s resulted in a surge of small hydroelectric facility development in the mountains and foothills. Impairments to beneficial uses may occur from this type of stream development because of erosion from construction and changes in water temperature. The Regional Water Board has published guidelines for small hydroelectric facilities (see Appendix 31, which is included by reference into this plan) to help address some of the problems associated with small hydroelectric plants.

Dredging can result in turbidity and the reintroduction and resuspension of harmful metal or organic materials. This latter effect occurs directly as a result of the displacement of sediment at the dredging site and indirectly as a result of erosion of dredge spoil to surface waters at the deposition site. The Regional Water Board currently regulates dredging operations on a case-by-case basis. Operational criteria may result from permits or the water quality certification requirements stemming from Section 401(a) of the Clean Water Act. The opportunity may exist to regulate certain of the dredging operations under a general permit.

The Regional Water Board receives notice of spills, leaks, and overflows as they occur. These incidents are evaluated for water quality impacts and remedial actions are implemented when necessary.

THE NATURE OF CONTROL ACTIONS IMPLEMENTED BY THE REGIONAL WATER BOARD

The nature of actions to achieve water quality objectives are the following:

1. identifying potential water quality problems;

2. confirming and characterizing water quality problems through assessments of source, frequency, duration, extent, fate, and severity;

3. remedying water quality problems through imposing or enforcing appropriate measures;

4. monitoring problem areas to assess effectiveness of the remedial measures.

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

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

Problem remedy calls for the Regional Water Board to prevent or cleanup problems. A common means of prevention, as well as protection, of water quality is through the issuance of NPDES permits, waste discharge requirements, discharge prohibitions, or other discharge restrictions. The NPDES is a requirement of the Federal Clean Water Act (Section 402) and California has implementing responsibility. The national permit system only applies to certain surface water discharges. Waste discharge requirements, which encompass permits, are described in the Water Code Section 13260, et seq. The waste discharge requirements system is not as restricted as the federal NPDES.

Waste discharge requirements may be used to control any type of discharge to land, ground waters or surface waters that may affect water quality. The Regional Water Board considers existing quality of receiving waters; historical, present, and future beneficial uses and the rates of use; nature and character of the discharge and possible affect on beneficial uses and receiving water quality; particular impact on beneficial uses within the immediate area of the discharge; and water quality objectives. The Regional Water Board will make a finding as to all beneficial uses within the area of influence of the discharge, and will set waste discharge requirements to protect these uses while not allowing the discharge to violate receiving water quality objectives.

Cleanup is implemented through enforcement measures such as cease and desist and cleanup and abatement orders. Cease and desist orders and cleanup and abatement orders are two of the enforcement tools available to the Regional Water Board to correct actual or potential violations of waste discharge requirements, NPDES permits, prohibitions, and nuisance or pollution.

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

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

Antidegradation

The antidegradation directives of State Water Board Resolution No. 68-16 (Appendix 2) require that high quality waters of the State be maintained "consistent with the maximum benefit to the people of the State." The Regional Water Board applies these directives when issuing a permit, or in an equivalent process, regarding any discharge of waste which may affect the quality of surface or ground waters in the region.

No proven means exist at present that will allow ongoing human activity in the Basin and maintain ground water salinity at current levels throughout the Basin. Consistent with the above, the Regional Water Board has determined that controlled ground water degradation by salinity is the most feasible and practical short-term management alternative for the Tulare Lake Basin. The water quality objectives for ground water salinity control the rate of increase and maintain beneficial uses as long as possible. A valleywide drain to carry salts out of the valley remains the best technical solution to the water quality problems of the Tulare Lake Basin.

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

The Regional Water Board will apply the directives of Resolution No. 68-16 in considering whether to allow a certain degree of degradation to occur or remain. In conducting this type of analysis, the Regional Water Board will evaluate the nature of any proposed, existing, or materially changed discharge, that could affect the quality of waters within the region. Any discharge of waste to high quality waters must apply

best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

Pursuant to this policy, a Report of Waste Discharge, or any other similar technical report required by the Board pursuant to Water Code Section 13267, must include information regarding the nature and extent of the discharge and the potential for the discharge to affect surface or ground water quality in the region. This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives. The extent of information necessary will depend on the specific conditions of the discharge. For example, use of best professional judgement and limited available information may be sufficient to determine that ground or surface water will not be degraded. In addition, the discharger must identify treatment or control measures to be taken to minimize or prevent water quality degradation.

Application of Water Quality Objectives

Water quality objectives are defined in the Water Code as "the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area." (See Chapter III) Water quality objectives may be stated in either numerical or narrative form. Water quality objectives apply to all waters within a surface water or ground water resource for which beneficial uses have been designated, rather than at an intake, wellhead or other point of consumption.

In conjunction with the issuance of NPDES and storm water permits, the Regional Water Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Water Board that the mixing zone will not adversely impact beneficial uses. If allowed, different mixing zones may be designated for different types of objectives, including, but not limited to, acute aquatic life objectives, chronic aquatic life objectives, human health objectives, and acute and chronic whole effluent toxicity objectives, depending in part on the averaging period over which the objectives apply. In determining the site of such mixing zones, the Regional Water Board will consider the applicable procedures and guidelines in EPA's Water Quality Standards Handbook, August 1994, and the Technical Support Document for Water Quality-based Toxics Control, March 1991, both of which are incorporated by reference into this plan. Pursuant to EPA guidelines, mixing zones designated for acute aquatic life objectives will generally be limited to a small zone of initial dilution in the immediate vicinity of the discharge.

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

The numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect beneficial uses. Numerical receiving water limitations will be established in Board orders for constituents and parameters which will, at a minimum, meet all applicable water quality objectives. However, the water quality objectives do not require improvement over naturally occurring background concentrations. In cases where the natural background concentration of a particular constituent exceeds an applicable water quality objective, the natural background concentration will be considered to comply with the objective. Consistent with Resolution No. 68-16, the Regional Water Board will impose more stringent numerical limitations (or prohibitions) which will maintain the existing quality of the receiving water, unless, pursuant to Resolution No. 68-16, some adverse change in water quality is allowed. Maintenance of the existing high quality of water means maintenance of "background" water quality conditions, i.e., the water quality found upstream or upgradient of the discharge, unaffected by other discharges. Therefore, the water quality objectives will define the least stringent limits which will be imposed and background defines the most stringent limits which will be imposed on ambient water quality.

This Basin Plan contains numerical water quality objectives for various constituents and parameters in Chapter III. Where numerical water quality objectives are listed, these are the limits necessary for the reason-

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

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

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

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

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

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

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

Where the Regional Water Board determines it is infeasible to achieve immediate compliance with water quality objectives adopted by the Regional Water Board or the State Water Board, or with water quality criteria adopted by the federal Environmental Protection Agency, or with an effluent limitation based on these objectives or criteria, the Regional Water Board shall establish in NPDES permits a schedule of compliance. The schedule of compliance shall include a time schedule for completing specific actions that demonstrate reasonable progress toward the attainment of the objectives or criteria and shall contain a final compliance date, based on the shortest practicable time (determined by the Regional Water Board) required to achieve compliance. In no event shall an NPDES permit include a schedule of compliance that allows more than ten years (from the date of

adoption of the objective or criteria) for compliance with water quality objectives, criteria or effluent limitations based on the objectives or criteria. Schedules of compliance are authorized by this provision only for those water quality objective or criteria adopted after the effective date of this provision. The Regional Water Board will establish compliance schedules in NPDES permits consistent with the provisions of the State Water Board's Compliance Schedule Policy (Resolution 2008-0025) and in accordance with Title 23, California Code of Regulations, Section 2231, compliance schedules may be included in waste discharge requirements for discharges other than from point sources to navigable waters. Time schedules in waste discharge requirements are established consistent with Water Code Section 13263.

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

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Ground Water Cleanups

The Regional Water Board's strategy for managing contaminated sites is guided by several important principles, which are based on Water Code Sections 13000 and 13304, the Chapter 15 regulations and State Water Board Resolution No. 92-49:

1. State Water Board Policy and Regulation

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

2. Site Investigation

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

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3. Source Removal/Containment

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

4. Cleanup Level Approval

   Ground water and soil cleanup levels are approved by the Regional Water Board through the adoption of enforcement orders or waste discharge requirements. The Executive Officer may approve cleanup levels as appropriately delegated by the Regional Water Board.

5. Site Specificity

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

6. Discharger Submittals

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

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

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

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

7. Ground Water Cleanup Levels

   Ground water cleanup levels shall be established based on:

   a. background concentrations of individual pollutants;

   b. applicable water quality objectives to protect designated beneficial uses of the water body, as listed in Chapters II and III;

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

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

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

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

   g. Compliance with c, above, shall be determined through risk assessments, performed by the discharger, using procedures consistent with those used by the Department of Toxic Substances Control, the Office of Environmental Health Hazard Assessment, and the USEPA. The Regional Water Board is not the lead agency for specifying risk assessment procedures or for reviewing risk assessments. The Board will assist the discharger, as necessary, in obtaining the appropriate, most current procedures from the above listed agencies. To prevent duplication of effort, the Regional Water Board will rely on the Department of Toxic Substances Control, the Office of Environmental Health Hazard Assessment, or appropriately designated local health agencies to review and evaluate the adequacy of such risk assessments.

8. Compliance with Ground Water Cleanup Levels

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

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

   a. Modified cleanup levels meet the conditions listed in 7b and c, above.

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

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

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

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

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

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

10. Soil Cleanup Levels

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

11. Verification of Soil Cleanup

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

12. Remaining Constituents

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

Variance Policy for Surface Waters

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

I. Variances from Surface Water Quality Standards for Point Source Dischargers

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

is a multiple discharger variance program. Permittees that qualify for the *Variance Program for Salinity Water Quality Standards* by meeting the criteria in section III.A. may submit a salinity variance application in accordance with the requirements specified in section III of this Policy.

B. The Regional Water Board may not grant a variance if:

(1) Water quality standards addressed by the variance will be achieved by implementing technology-based effluent limitations required under sections 301(b) and 306 of the Clean Water Act, or
(2) The variance would likely jeopardize the continued existence of any endangered species under section 4 of the Endangered Species Act or result in the destruction or adverse modification of such species' critical habitat.

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

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

D. In making a determination on a variance application that is based on factor (3) in paragraph C above, the Regional Water board may consider the following:

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

E. In making a determination on a variance application that is based on factor (6) in paragraph C. above, the Regional Water Board may consider the following:

(1) The cost and cost-effectiveness of pollutant removal by implementing the methodology capable of attaining the adopted or proposed WQBEL for the specific constituent(s) for which a variance is being requested.
(2) The reduction in concentrations and loadings of the pollutant(s) in question that is attainable by source control and pollution prevention efforts as compared to the reduction attainable by use of the methodology capable of attaining the adopted or proposed WQBEL.
(3) The overall impact of attaining the adopted or proposed WQBEL and implementing the methodologies capable of attaining the adopted or proposed WQBEL.
(4) The technical feasibility of installing or operating any of the available methodologies capable of attaining the WQBEL for which a variance is sought.

(5) Other relevant information requested by the Regional Water Board or supplied by the applicant or the public.

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

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

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

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

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

II. Variance Application Requirements and Processes

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

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

C. A complete variance application must contain the following:

(1) Identification of the specific constituent(s) and water quality standard(s) for which a variance is sought;
(2) Identification of the receiving surface water, and any available information with respect to receiving water quality and downstream beneficial uses for the specific constituent;
(3) Identification of the WQBEL(s) that is being considered for adoption, or has been adopted in the NPDES permit;
(4) List of methods for removing or reducing the concentrations and loadings of the pollutants with an assessment of technical effectiveness and the costs and cost-effectiveness of these methods. At a minimum, and to the extent feasible, the methods must include source control measures, pollution prevention measures, facility upgrades and end-of-pipe treatment technology. From this list, the applicant must identify the method(s) that will consistently attain the WQBELs and provide a detailed discussion of such methodologies;
(5) Documentation of at least one of the following over the next ten years. Documentation that covers less than ten years will limit the maximum term that the Regional Water Board can consider for the variance:
    (i) That naturally occurring pollutant concentrations prevent the attainment of the surface water quality standard or
    (ii) That natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the surface water quality standard, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges to enable surface water quality standards to be met; or

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

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

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

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

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

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

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

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

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

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

conducted in conjunction with the Regional Water Board's process for the renewal of the NPDES permit.

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

(1) An interim effluent limitation for the constituent(s) for which the variance is sought. The interim effluent limitation(s) must be consistent with the current level of the constituent(s) in the effluent and may be lower based on anticipated improvement in effluent quality. The Regional Water Board may consider granting an interim effluent limitation(s) that is higher than the current level if the permittee has demonstrated that drought, water conservation, and/or water recycling efforts will cause the quality of the effluent to be higher than the current level and that the higher interim effluent limitation will not adversely affect beneficial uses. When the duration of the variance is shorter than the duration of the permit, compliance with effluent limitations sufficient to meet the water quality criterion upon the expiration of the variance shall be required;
(2) A requirement to prepare and implement a pollution prevention plan pursuant to Water Code section 13263.3 to address the constituent(s) for which the variance is sought;
(3) Any additional monitoring that is determined to be necessary by the Regional Water Board to evaluate the effects on the receiving water body of the variance from water quality standards;
(4) A provision allowing the Regional Water Board to reopen and modify the permit based on any revision to the variance made by the Regional Water Board during the next revision of the water quality standards or by EPA upon review of the variance; and
(5) Other conditions that the Regional Water Board determines to be necessary to implement the terms of the variance.

H. The variance, as adopted by the Regional Water Board in section G, is not in effect until it is approved by U.S. EPA.

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

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

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

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

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

III. Variance Program for Salinity Water Quality Standards

The State Water Board and the Regional Water Board recognize that salt is impacting beneficial uses in the Central Valley and management of salinity in surface and ground waters is a major challenge for dischargers. In response, the Water Boards initiated the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) in 2006. The State Water Board *Recycled Water Policy* requires the development of salt and nutrient management plans protective of ground water and submittal of these plans to the Regional Water Board by May 2016. These plans are to become the basis of basin plan amendments to be considered by the Regional Water Board by May 2017. CV-SALTS is the stakeholder effort working to develop comprehensive salt and nitrate management plans (SNMPs) that will satisfy the Recycled Water Policy's salt and nutrient management plans. CV-SALTS is undertaking technical work to analyze salt and nitrate conditions in surface and ground water in the Central Valley, identify implementation measures, and develop monitoring strategies to ensure environmental and economic sustainability. The technical work under development includes developing the models for loading and transport of salt, development and evaluation of effective management practices, and implementing activities to ensure beneficial uses are protected. Participation by all stakeholders is necessary to assure that the work is scientifically justified, supported by broad stakeholder representation, and completed in a timely fashion. The Regional Water Board has indicated its support for the comprehensive effort through CV-SALTS in Resolutions R5-2006-0024, R5-2010-0024, and R5-2013-0149 and the March 2010 Memorandum of Agreement between the Regional Water Board, the Central Valley Salinity Coalition and the State Water Board.

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

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

C. An application for variance from WQBELs based on a salinity water quality standard must contain the following:

(1) Identification of the salinity constituents for which the variance is sought;
(2) Identification of the receiving surface water, and any available information with respect to receiving water quality and downstream beneficial uses for the specific constituent;
(3) Identification of the WQBEL that is being considered for adoption, or has been adopted in the NPDES permit;
(4) A description of salinity reduction/elimination measures that have been undertaken as of the application date, if any;

(5) A Salinity Reduction Study Work Plan, which at a minimum must include the following:
   (i) Data on current influent and effluent salinity concentrations,
   (ii) Identification of known salinity sources,
   (iii) Description of current plans to reduce/eliminate known salinity sources,
   (iv) Preliminary identification of other potential sources,
   (v) A proposed schedule for evaluating sources,
   (vi) A proposed schedule for identifying and evaluating potential reduction, elimination, and prevention methods.
(6) An explanation of the basis for concluding that there are no readily available or cost-effective methodologies available to consistently attain the WQBELs for salinity.
(7) A detailed discussion explaining why the permittee's situation is similar to or comparable with the case studies supporting the *Salinity Variance Program* identified in the *Staff Report for the Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins and the Water Quality Control Plan for the Tulare Lake Basin to add Policies for Variances from Surface Water Quality Standards for Point Source Dischargers, Variance Program for Salinity, and Exception from Implementation of Water Quality Objectives for Salinity, June 2014*.
(8) A detailed discussion of proposed interim discharge limitation(s) that represents the highest level of treatment that the permittee can consistently achieve during the term of the variance. If the permittee indicates that certain constituents in the effluent are likely to decrease during the term of the variance due to efforts, then the proposed interim discharge limitation(s) shall account for such decreases.
(9) Documentation of the applicant's active participation in CV-SALTS as indicated by a letter of support from CV-SALTS.
(10) A detailed plan of how the applicant will continue to participate in CV-SALTS and how the applicant will contribute to the development and implementation of the SNMPs.

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

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

F. The Regional Water Board may approve a salinity variance, either as requested, or as modified by the Regional Water Board, after finding that the permittee qualifies for the salinity variance, the attainment of the WQBEL is not feasible, the permittee has implemented or will implement feasible salinity reduction/elimination measures and the permittee continues to participate in CV-SALTS consistent with the demonstrations based on the case studies identified in the *Staff Report for the Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins and the Water Quality Control Plan for the Tulare Lake Basin to add Policies for Variances from Surface Water Quality Standards for Point Source Dischargers, Variance Program for Salinity, and Exception from Implementation of Water Quality Objectives for Salinity, June 2014*. The Regional Water Board may take action to approve a variance and issue a new, or reissue or modify an existing NPDES permit as part of the same Board meeting. The permit shall contain all conditions needed to implement the variance, including, at a minimum, all of the following:

(1) The interim effluent limitation(s) that are determined to be attainable during the term of the variance. When the

duration of the variance is shorter than the duration of the permit, compliance with effluent limitations sufficient to meet the water quality criterion upon the expiration of the variance shall be required;

(2) A requirement to implement the Salinity Reduction Study Work Plan submitted with the variance application as required by paragraph C.5, above;

(3) A requirement to participate in CV-SALTS and contribute to the development and implementation of the SNMPs in accordance with the plan required by paragraph C.10, above.

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

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

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

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

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

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

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Dilution

Neither surface nor ground waters shall be used to dilute wastes for the primary purpose of meeting waste discharge requirements, where reasonable methods for treating the wastes exist. Blending of wastewater with surface or ground water to promote beneficial reuse of wastewater in water short areas may be allowed where the Regional Water Board determines such reuse is consistent with other regulatory policies set forth or referenced herein.

Prohibitions

The Porter-Cologne Water Quality Control Act allows the Regional Water Board to prohibit certain types of discharges or discharges to certain waters {California Water Code, Section 13243}. Prohibitions may be revised, rescinded, or adopted as necessary. The prohibitions applicable to the Tulare Lake Basin are identified and described below.

Leaching Systems

Discharge of wastes from new and existing leaching and percolation systems in the following areas is prohibited:

Corcoran Fringe Area, Kings County (Order No. 77-224)
East Porterville Area, Tulare County (Order No. 75-069)

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Home Garden Community Services District, Kings County (Order No. 77-20)
Kettleman City County Service Area No. 1, Kings County (Order No. 75-071)

In addition, county moratoria prohibit new septic tank disposal systems in the following areas:

Del Rio, Fresno County
Delft Colony, Tulare County
El Rancho, Tulare County
Lindcove, Tulare County
Poplar, Tulare County
Seville, Tulare County
Tonyville, Tulare County
Tooleville, Tulare County
Traver, Tulare County
Wells Tract, Tulare County
Yettem, Tulare County

Petroleum

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

Hazardous Waste

Any discharge that may affect water quality of hazardous waste or chemicals known to cause cancer or reproductive toxicity, except in accordance with waste discharge and other federal, state, and local requirements.

Water Quality Limited Segments (WQLSs)

WQLSs are those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate effluent limitations for point sources {40 CFR 130, et seq.}.

Additional treatment beyond minimum federal requirements will be imposed on dischargers to a WQLS. Point source dischargers will be assigned or allocated a maximum allowable load of critical pollutants. If necessary, nonpoint source discharges will be identified and reduction goals will be developed for these sources.

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

Water Quality Assessment

A second list of water bodies comprises the Water Quality Assessment. The Assessment describes the condition of water bodies within the Tulare Lake Basin to the best of the Regional Water Board's knowledge. For water bodies with impairments (actual or suspected), a fact sheet is prepared to describe the Regional Water Board's actions or proposed actions and to estimate the costs to correct the impairments. The Assessment is updated periodically on an as-needed basis.

Waivers

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

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

ACTIONS RECOMMENDED FOR IMPLEMENTATION BY OTHER AGENCIES

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

Irrigated Agriculture

The water quality concerns from irrigated agriculture are great and the Regional Water Board cannot resolve

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~~TABLE IV-2~~
~~WASTE DISCHARGE REQUIREMENT WAIVER AND LIMITATIONS~~
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these alone. The following actions should be taken by other agencies:

1. As a last resort and where the withholding of irrigation water is the only means of achieving significant improvements in water quality, the State Water Board should use its water rights authority to preclude the supplying of water to specific lands.

2. The State Water Board should require all water agencies in the Central Valley, regardless of size, to submit an "informational" report on water conservation.

3. The State Water Board should continue to declare the drainage problem in the Central Valley a priority nonpoint source problem in order to make EPA nonpoint source control funding available to the area.

4. The Legislature should sponsor additional bond issues before the voters to provide low interest loans for agricultural water conservation and water quality projects. The bonds should incorporate provisions that would allow recipients to be private landowners, and that would allow irrigation efficiency improvement projects that reduce drainage discharges to be eligible for both water conservation funds and water quality facilities funds.

5. The US Bureau of Reclamation should give the districts and growers subject to this program first priority in their water conservation loan program.

6. The State Water Board should request legislation that will protect negotiated fish flow releases for instream uses in those critical reaches designated by the California Department of Fish and Wildlife from any new exercise of appropriative or riparian rights. These flow releases should recognize and protect existing contractual commitments for beneficial use.

Mining

Agencies with jurisdiction over mineral rights should issue these rights for limited periods of time and distribute them to the Regional Water Board for review.

Transfer of Water

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

1. Make optimum use of existing water resource facilities.

2. Store what would otherwise be surplus wet-weather basin outflows in off-stream reservoirs.

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3. Conjunctively use surface and ground waters.

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

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

Water Quality Planning

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

Sole Source Aquifer

An aquifer may be designated by the U. S. Environmental Protection Agency to be a Sole Source Aquifer if it is the sole or principal drinking water source for an area and which, if contaminated, could create a significant hazard to public health.

The U. S. Environmental Protection Agency has designated a Sole Source Aquifer in Fresno County in accordance with Section 1424(e) of the Safe Drinking Water Act. The Sole Source Aquifer includes all or portions of the communities of Fresno, Clovis, Kerman, Raisin City, Selma, and Sanger. Specifically, it is the area bordered by (1) Fresno Slough Bypass on the west, (2) the San Joaquin River on the north, (3) the Friant-Kern Canal on the east, and (4) the Kings River on the south.

Watershed Management Plans

In many cases, particularly situations involving nonpoint source pollution, standard regulatory techniques are not appropriate or adequate to improve the quality of water. The Regional Water Board supports implementing a watershed based approach to address water quality problems. The benefits to implementing a watershed based program would include gaining participation of stakeholders and focusing efforts on the most important problems and those sources contributing most significantly to those problems.

In many instances, a watershed program is initiated by entities other than the Regional Water Board. A group of affected and concerned entities identifies water quality problems caused or exacerbated by the presence of man. This group then considers the needs and concerns of the watershed to develop a watershed management plan in a coordinated manner. In some of these groups, the Regional Water Board is in an oversight position and the solution is developed from within the group.

CONTINUOUS PLANNING FOR WATER QUALITY CONTROL

Knowledge of water quality problems changes constantly. Because of this, control actions and water quality objectives must be regularly evaluated for their effectiveness in protecting beneficial uses. As warranted, the actions, water quality objectives, or designated beneficial uses may be changed to ensure that the proper beneficial uses are protected and enhanced. The Regional Water Board has a continuous planning process to serve these functions and maintain its water quality regulatory program.

The Regional Water Board is periodically apprised of water quality problems in the Tulare Lake Basin, but the major review of water quality is done every three years as part of the Triennial Review of water quality standards.

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

The control actions that are identified through the Triennial Review process are incorporated into the Basin Plan to meet requirements of Water Code Section 13242 (a) and (b). These requirements include describing actions to achieve water quality objectives and developing a time schedule to implement these actions.

This basin plan update serves as the Triennial Review. The following issues are identified for study during this triennial review period:

I. Salinity in the Lower Kings River: This issue was identified during the 1987 Triennial Review. Since that time, two studies were conducted on

the Lower Kings River. The result of these studies was proposed modifications to the implementation and the monitoring and surveillance portions of this plan. However, due to drought conditions, neither investigation was conclusive. Additional study will be necessary to adequately define the salinity problems and develop policy decisions.

II. Beneficial Uses of Surface Water: The Basin Plan designated beneficial uses for all streams in the Tulare Lake Basin but recognized that those uses needed to be modified when additional studies become available. Various agencies have information on uses which were not available in 1975. This information should be used to develop a new table of beneficial uses which accurately describes the individual streams.

III. Ground Water Monitoring Network to detect trends in water quality: The Basin Plan describes a ground water monitoring network for the Tulare Lake Basin. This network was never established. As more and more contaminants are found in the ground water, establishment of an effective monitoring system has become imperative.

IV. Ground Water Contamination: There are several areas within the Tulare Lake Basin where the ground water is adversely impacted by salts and chemicals to the extent that the ground water no longer supports all its beneficial uses. In some cases, the cause of the impact is identified and clean-up operations are proceeding. In most cases, the presence of the salts and chemicals are due to nonpoint source impacts and the source is not clear. Investigations should be done to identify potential sources of these contaminants and practices should be developed to reduce these impacts.

V. Ground Water Quality Objectives for Salinity: The Basin Plan contains water quality objectives for salinity increases in ground water. These objectives have never been studied to determine their adequacy in promoting the Board's goal of minimizing the rate of salinity increase in the Tulare Lake Basin. A study should be conducted to confirm the adequacy of the listed objectives.

VI. Dissolved Oxygen Objectives: The dissolved oxygen objective for Reach III of the Kings River (Pine Flat Dam to Friant-Kern) may not be achievable due to natural conditions. A study should be conducted to investigate this and establish more appropriate objectives, if necessary.

Estimated Costs of Agricultural Water Quality Control Programs

Long-Term Irrigated Lands Regulatory Program
The Central Valley Water Board intends on establishing a long-term irrigated lands regulatory program (Long-Term Program) by adopting one or more general waste discharge requirements and/or conditional waivers of WDRs to regulate the discharge of waste to ground and surface waters from irrigated agricultural operations. While the Central Valley Water Board has not established the Long-Term Program yet, it will be based, in whole or in part, on six alternatives described in the *Irrigated Lands Regulatory Program Final Environmental Impact Report* (Final PEIR; ICF International 2011) certified by resolution R5-2011-0017. The cost estimate below is based upon and encompasses the full range of those alternatives.

The cost estimate for the Long-Term Program accounts for program administration (e.g., Board oversight and third-party activities), monitoring for groundwater and surface water quality, and implementation of management practices throughout the Central Valley. The estimated cost for the annual capital and operational costs to comply with the Long-Term Program range from $216 million to $1,321 million (2007 dollars). This cost estimate is a cumulative total that includes costs from the Sacramento River and San Joaquin River Basin, and the Tulare Lake Basin.

Potential financing sources include:

1. The Federal Farm Bill, which authorizes funding for conservation programs such as the Environmental Quality Incentives Program (EQIP) and the Conservation Stewardship Program.

2. Grant and loan programs administered by the State Water Resources Control Board and Department of Water Resources, which are targeted for agricultural drainage management, water use efficiency, and water quality improvement.

   These programs include:

   a. Agricultural Drainage Management Program (State Water Resources Control Board)

   b. Agricultural Drainage Loan Program (State Water Resources Control Board)

   c. Clean Water Act funds (State Water Resources Control Board)

   d. Agricultural Water Quality Grant Program (State Water Resources Control Board)

   e. Clean Water State Revolving Fund (State Water Resources Control Board)

   f. Integrated Regional Water Management grants (State Water Resources Control Board, Department of Water Resources)

3. Those identified in the San Joaquin River Subsurface Agricultural Drainage Control Program (see Water Quality Control Plan for the Sacramento River and San Joaquin River Basins), which are listed below:

a. Private financing by individual sources.

b. Bonded indebtedness or loans from governmental institutions.

c. Surcharge on water deliveries to lands contributing to the drainage problem.

d. Ad Valorem tax on lands contributing to the drainage problem.

e. Taxes and fees levied by a district created for the purpose of drainage management.

f. State or federal grants or low-interest loan programs.

g. Single-purpose appropriations from federal or State legislative bodies (including land retirement programs).

V. PLANS AND POLICIES

In addition to this Basin Plan, statewide plans and policies adopted by the State Water Board direct Regional Water Board actions or clarify the Regional Water Board's intent. Agreements between other agencies and either the State or Regional Water Board also affect Regional Water Board actions. All policies, plans, and agreements may be revised. Any revision will supersede the policies, plans, and agreements described below and found in the appendices.

State Water Board Policies and Plans

The State Water Board adopts water quality control policies and water quality control plans to direct Regional Water Board actions. Two of the policies (Policy for the Enclosed Bays and Estuaries of California, and the Pollutant Policy Document) and three of the plans (the Ocean Plan, the Delta Plan, and the Tahoe Plan) do not apply to the Tulare Lake Basin. The applicable policies and plans are described below.

1. The State Policy for Water Quality Control

   Adopted in 1972, this policy declares the State Water Board's intent to protect water quality through the implementation of water resources management programs and serves as the general basis for subsequent water quality control policies. See Appendix 1.

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

   This policy, adopted on 28 October 1968, is intended to maintain high quality waters. It establishes criteria the Regional Water Board must satisfy before allowing discharges that may reduce water quality of surface or ground waters even though such a reduction will still protect beneficial uses.

   Changes in water quality may be allowed only if the change is consistent with maximum benefit to the people of the State, does not unreasonably affect present and anticipated beneficial uses, and does not result in water quality less than that prescribed in water quality control plans and policies. U. S. EPA water quality standards regulations require each state to adopt an "antidegradation" policy and specify the minimum requirements for it {40 CFR 131.12}. The State Water Board has interpreted Resolution No. 68-16 to incorporate the federal antidegradation policy. Appendix 2 contains Resolution No. 68-16, Appendix 26 contains the federal policy.

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

   Adopted in June 1975, this policy prohibits discharge of blowdown waters to land unless in compliance with Title 23, California Code of Regulations, Chapter 15. The policy also prohibits the discharge of once through cooling water to surface waters unless existing water quality and aquatic resources can be maintained. Further, it sets forth seven principles that, among other things, establish higher priorities for use of water sources other than fresh inland waters. For the Tulare Lake Basin, the powerplant must investigate the feasibility of using wastewater for powerplant cooling. Regional water boards are directed to adopt requirements that contain mass emission rates that maintain existing water quality. See Appendix 3.

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

   This policy was adopted on 6 January 1977. Because reclamation provides an alternate source of water suitable for irrigation, reuse is encouraged by the State Water Board. The policy also encourages water conservation and calls for other agencies to assist in implementation. See is Appendix 4.

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

   This policy, adopted 19 March 1987, permits wastes produced by the mechanical destruction of

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car bodies, old appliances and similar castoffs to be disposed of into certain landfills at the discretion of and under specific conditions designated and enforced by the Regional Water Board. See Appendix 5.

6. State Water Board Resolution No. 88-23, Policy Regarding Regulation of Underground Storage Tanks

   This policy, adopted on 18 February 1988, implements a pilot program to fund oversight of remedial action at leaking underground storage tank sites, in cooperation with the California Department of Public Health. Oversight may be deferred to the regional water boards. See Appendix 6.

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

   This policy, adopted on 19 May 1988, specifies that, except under specifically defined exceptions, all surface and ground waters are suitable or potentially suitable for MUN. The specific exceptions are for waters with existing high total dissolved solids concentrations (greater than 3,000 mg/l), aquifers with low sustainable yield (less than 200 gallons per day for a single well), water with contamination that cannot be treated for domestic use using best management practices or best economically achievable treatment practices, waters within particular municipal, industrial and agricultural wastewater conveyance and holding facilities, and regulated geothermal ground waters. Where the Regional Water Board finds that one of the exceptions applies, it may remove the MUN designation for the particular water body through a formal Basin Plan amendment which includes a public hearing. The exception becomes effective upon approval by the State Water Board and the Office of Administrative Law. See Appendix 7.

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

   These policies and procedures describe the manner in which the Regional Water Board will require dischargers to cleanup and abate the effect of discharges. This cleanup and abatement shall be done in a manner that promotes attainment of background water quality, or the highest water quality which is reasonable if background levels of water quality cannot be restored. Any cleanup less stringent than background water quality shall be consistent with State Water Board Resolution No. 68-16. These policies and procedures, including future revisions, are specifically incorporated into this Basin Plan. See Appendix 8.

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

   Adopted on 17 June 1993, this policy directs the Regional Water Board to amend waste discharge requirements for municipal solid waste landfills to incorporate pertinent provisions of the federal "Subtitle D" regulations under the Resource Conservation and Recovery Act (40 CFR Parts 257 and 258). Landfills which are subject to the Subtitle D regulations and this policy are those which accepted municipal solid waste on or after 9 October 1991. See Appendix 9.

10. The Water Quality Control Plan for the Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan)

    This plan was adopted on 18 May 1972 and amended 18 September 1975. It specifies water quality objectives, effluent quality limits, and discharge prohibitions related to thermal characteristics of interstate waters and waste discharges. See Appendix 10.

11. Nonpoint Source Management Plan and the Nonpoint Source Implementation and Enforcement Policy

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

    The NPS Implementation and Enforcement Policy, adopted by the State Water Board on 20 May 2004 (State Water Board Resolution No. 2004-0030),

explains how the Porter-Cologne Act mandates and authorities, delegated to the State Water Board and Regional Water Boards by the California Legislature, will be used to implement and enforce the NPS Program Plan. The policy also provides a bridge between the NPS Program Plan and the *SWRCB Water Quality Enforcement Policy*. The NPS Implementation and Enforcement Policy, including future revisions, is incorporated into this Basin Plan and shall be implemented according to the policy's provisions.

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

    The State Water Board adopted a policy that establishes: (1) implementation provisions for priority pollutant criteria promulgated by the U.S. Environmental Protection Agency (U.S. EPA) through the National Toxics Rule (40 CFR 131.36) (promulgated on 22 December 1992 and amended on 4 May 1995) and through the California Toxics Rule (40 CFR 131.38) (promulgated on 18 May 2000 and amended on 13 February 2001), and for priority pollutant objectives established by Regional Water Boards in their basin plans; (2) monitoring requirements for 2,3,7,8-TCDD equivalents; and (3) chronic toxicity control provisions. In addition, the SIP includes special provisions for certain types of discharges and factors that could affect the application of other provisions in the SIP. The SIP including future revisions is incorporated into this Basin Plan and shall be implemented according to the policy's provisions.

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

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

14. Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (*303(d) Listing Policy*)

    Pursuant to California Water Code Section 13191.3(a), this State policy for water quality control describes the process by which the State Water Board and the Regional Water Boards will comply with the listing requirements of Section 303(d) of the federal Clean Water Act. The objective of this policy is to establish a standardized approach for developing California's Section 303(d) List in order to achieve the overall goal of achieving water quality standards and maintaining beneficial uses in all of California's surface waters. The 303 (d) Listing Policy, including future revisions, is incorporated into this Basin Plan and shall be implemented in accordance with the Policy's provisions.

15. Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options (Impaired Waters Policy)

    Section 303(d) of the Clean Water Act requires states to identify waters within their borders that are not attaining water quality standards. This State policy for water quality control describes the existing tools and mechanisms that the regional water boards will use to address the water bodies listed as impaired under Section 303(d) of the federal Clean Water Act. The Impaired Waters Policy, including future revisions, is incorporated into this Basin Plan and shall be implemented in accordance with the Policy's provisions.

16. Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits (Compliance Schedule Policy)

    The Policy authorizes the Regional Water Board to include a compliance schedule in a permit for an existing discharger to implement a new, revised, or newly interpreted water quality objective or criterion in a water quality standard that results in a permit limitation more stringent than the limitation previously imposed. The Compliance Schedule Policy, including future revisions, is incorporated into this Basin Plan

and shall be implemented in accordance with the Policy's provisions.

17. Policy for Water Quality Control for Recycled Water (Recycled Water Policy)

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

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

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

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

The Regional Water Board acts in accordance with State Water Board agreements with federal agencies and other State agencies which have been formalized with either an MAA, MOU, or an MOA.

1. U. S. Forest Service Agreement

   On 26 February 1981 the State Water Board Executive Director signed an MAA with the U. S. Forest Service (Forest Service) which waives discharge requirements for certain Forest Service nonpoint source discharges provided that the Forest Service implements State Water Board approved best management practices and procedures and the provisions of the MAA. The MAA covers all Forest Service lands in California. Implementation of the best management plans, in conjunction with monitoring and performance review requirements approved by the State and Regional Water Boards, is the primary method of meeting the Basin Plan's water quality objectives for the activities to which the best management plans apply. The MAA does not include Forest Service point source discharges and in no way limits the authority of the Regional Water Board to carry out its legal responsibilities for management or regulation of water quality. See Appendix 11.

2. Department of Toxic Substances Control

   On 26 January 1986, the State Water Board signed an MOA with the Department of Health Services, now the Department of Toxic Substances Control, regarding the implementation of the hazardous waste program. The agreement covers surveillance and enforcement related to water quality at landfills, surface impoundments, waste piles, and land treatment facilities that treat, store, or dispose of hazardous waste. It also covers the issuance, modification, or denial of permits to facilities, including the revision of the water quality aspects of hazardous waste management facility siting, design, closure, post-closure, and surface and ground water monitoring and protection. See Appendix 12.

3. State Water Board Division of Drinking Water Programs

   In 1988, the State Water Board signed an MOA with the Department of Health Services (now the State Water Board Division of Drinking Water Programs) regarding the use of reclaimed water. The MOA outlines the basic activities of the agencies, allocates primary areas of responsibility and authority between these agencies, and provides for methods and mechanisms to assure coordination for activities related to the use of reclaimed water. See Appendix 13.

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4. California Department of Forestry Agreement

   In February 1988, the State Water Board signed an MAA with the California Department of Forestry and Fire Protection and the California Board of Forestry, for the purpose of carrying out, pursuant to Section 208 of the Federal Clean Water Act, those portions of the State's Water Quality Management Plan related to controlling water quality impacts caused by silvicultural activities on nonfederal forest lands. As with the Forest Service MAA, the Department of Forestry agreement requires the Department to implement certain best management plans to protect water quality from timber harvest and associated activities. Approval of the MAA as a water quality management plan component by the U. S. EPA results in the Regional Water Boards relinquishing some authority to issue waste discharge requirements for State timber operations. However, Department of Forestry and the Regional and State Water Boards must still ensure that the operations incorporate best management plans and comply with applicable water quality standards. Appendix F of the MAA also calls for the preparation of a MOU for the Regional Water Boards, the State Water Board, and the Department of Forestry to prescribe interagency procedures for implementing best management plans. See Appendix 14.

5. Department of Conservation Agreement

   A March 1988 MOA between the State Water Board and the State Department of Conservation, California Department of Oil and Gas, Gas & Geothermal Resources (Department of Conservation), outlines procedures for reporting proposed oil, gas, and geothermal field discharges and for prescribing permit requirements. The procedures are intended to provide a coordinated approach resulting in a single permit satisfying the statutory obligations of both agencies. The purpose of the new agreement is to ensure that the construction or operation of Class II injection disposal wells and the land disposal of wastewaters from oil, gas, and geothermal production facilities does not cause degradation of waters of the state. The MOA requires the Department of Conservation to notify the Regional Water Board of all pollution

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problems, including spills associated with operators and/or new proposed oil field discharges. The agencies work together to review, prepare, and coordinate permits and enforcement. See Appendix 15.

6. Department of Toxic Substances Control

   On 30 July 1990, the State Water Board signed a MOU with the Department of Health Services, Toxic Substances Control Program (later reorganized into the Department of Toxic Substances Control) explaining the roles of the agencies (including the Regional Water Board) in the cleanup of hazardous waste sites. The MOU describes the protocol the agencies will follow to determine which agency will act as lead and which will act as support, the responsibilities of the agencies in their respective roles, the procedures the agencies will follow to ensure coordinated action, the technical and procedural requirements which each agency must satisfy, the procedures for enforcement and settlement, and the mechanism for dispute resolution. This MOU does not alter the Regional Water Board's responsibilities with respect to water quality protection. See Appendix 16.

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

   On 31 July 1990, the State Water Board signed a MOU with the Soil Conservation Service, now the Natural Resources Conservation Service, to develop appropriate guidelines and procedures to provide technical assistance on the management of nonpoint sources. See Appendix 17.

8. Environmental Affairs Agency, Air Resources Board, and California Department of Resources Recycling and Recovery (CalRecycle)

   On 27 August 1990, the State Water Board signed a MOU with the Environmental Affairs Agency, Air Resources Board, and California Integrated Waste Management Board (now CalRecycle) to enhance program coordination and reduce duplication of effort. This MOU consists of provisions describing the scope of the agreement (including definitions of the parties and issues to which the MOU applies), the principles which will govern the conduct of the parties, and the existing statutory framework. See Appendix 18.

9. California Department of Pesticide Regulation

   On 23 December 1991, the State Water Board signed a MOU with the California Department of Pesticide Regulation to exchange information regarding pesticides in surface waters, develop water quality objectives to protect beneficial uses, and promote the identification and development of best management practices whenever necessary to protect beneficial uses. This agreement was revised on 19 January 1993 to facilitate implementation of the original agreement. See Appendix 19.

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

    In January 1992, the State Water Board signed a MOU with the U. S. Bureau of Reclamation, the U. S. Fish and Wildlife Sesrvice, the U. S.Soil Conservation Service (now the Natural Resources Conservation Service), the U. S. Geological Survey, the Department of Water Resources, the Department of Fish and Game (now the California Department of Fish and Wildlife), and the Department of Food and Agriculture. Subject to the availability of funding and legal authority, these agencies agreed to use the management plan described in the September 1990 final report of the San Joaquin Valley Drainage Program as a guide for remedying subsurface agricultural drainage and related problems. See Appendix 20.

11. California Integrated Waste Management Board (now the California Department of Resources Recycling and Recovery (CalRecycle)

    On 8 January 1993, the State Water Board signed a MOU to address the Regional Water Board's review of Solid Waste Assessment Test (SWAT) reports. See Appendix 21.

12. U. S. Bureau of Land Management

    On 27 January 1993, the State Water Board signed a MOU to work cooperatively with the U. S. Bureau of Land Management to develop and implement best management practices to reduce or prevent nonpoint source pollution. See Appendix 22.

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Regional Water Board General Policy

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

   In January 1970, the Regional Water Board adopted Resolution No. 70-118, which delegates certain duties and powers of the Board to its Executive Officer pursuant to Section 13223 of the California Water Code. See Appendix 23.

Regional Water Board Memoranda of Understanding (MOU)

1. U. S. Bureau of Land Management

   In September 1985, the Regional Water Board Executive Officer signed an MOU with the U. S. Bureau of Land Management, Bakersfield District. The MOU aims at improving coordination between the two agencies for the control of water quality problems resulting from mineral extraction activities on BLM administered lands. See Appendix 24.

2. California Department of Fish and Wildlife and Mosquito Abatement and Vector Control Districts

   In March 1993, the Regional Water Board Executive Officer signed a MOU with the Department of Fish and Game (now the California Department of Fish and Wildlife) and Mosquito Abatement Districts in the southern San Joaquin Valley to coordinate weed control efforts in wastewater treatment facilities. See Appendix 25.

VI. SURVEILLANCE AND MONITORING

The effectiveness of a water quality control program cannot be judged without the information supplied by a comprehensive surveillance and monitoring program. This chapter describes the methods and programs that the Regional Water Board uses to acquire water quality information. Accumulation of data is required by both the Clean Water Act and the Porter-Cologne Water Quality Control Act.

Many local water agencies conduct data collection programs, as do some governmental agencies. Cost-effective management shows the benefit of utilizing local efforts for basic elements of the programs. Governmental agencies would perform valuable service by processing data, engaging in cooperative programs, and conducting special studies and intensive surveys.

Although not addressed in detail in this chapter, water quality analysis must comply with the laboratory certification program, and data must be reported to EPA in a form compatible with the STORET; the federal data storage and retrieval program.

The overall objectives of the surveillance and monitoring program are to:

- Measure the achievement of water quality goals and objectives and to aid in setting priorities for improvements;
- Measure specific effects of water quality changes on the beneficial uses;
- Measure background conditions of water quality and long-term trends in water quality;
- Locate and identify sources of water pollution that pose an acute, accumulative, or chronic threat to the environment;
- Provide information needed to relate receiving water quality to mass emissions of point and nonpoint sources of pollutants;
- Provide data for determining waste discharger compliance with NPDES permit conditions and waste discharge requirements;
- Collect data necessary to perform segment classifications and ranking for the water quality assessment;
- Form a basis for setting water quality based requirements;
- Provide data for preparing waste load allocations and total maximum daily load allocations necessary to achieve water quality control in water quality limited segments;
- Provide data needed to carry on the continuing planning process;
- Measure the effects of water rights decisions on water quality and to guide the State Water Board in its responsibility to regulate unappropriated water for the control of quality;
- Provide a clearinghouse for the collection and dissemination of water quality data gathered by other agencies and private parties cooperating in the program;
- Prepare reports on water quality conditions as required by Federal and State regulations and other users requesting water quality data.

Currently, monitoring and surveillance by the Regional Water Board within the Tulare Lake Basin is irregular and detailed information may not be available for certain areas in the Basin. In selecting sampling points, maximum use will be made of stations and data that are now a part of the program of other governmental agencies with whom cooperation has been agreed upon or favorably discussed. In order to ensure that collected data is useful to the present surveillance program, stations will be selected which can reasonably be expected to provide information consistent with the needs of this plan.

The Regional Water Board's surveillance and monitoring efforts include different types of sample collection and analysis. Surface water surveillance may involve analyses of water, sediment, or tissue samples. Ground water surveillance often includes collection and analysis of soil samples. Soil, water, and sediment samples are analyzed via standard, EPA approved, laboratory methods. The Regional Water Board addresses quality assurance through bid specifications and individual sampling actions such as submittal of split, duplicate, or spiked samples and lab inspections.

Although surveillance and monitoring efforts have traditionally relied upon measurement of key chemical or physical parameters (e.g., metals, organic and

inorganic compounds, bacteria, temperature, and dissolved oxygen) as indicators of water quality, there is increasing recognition that close approximation of water quality impacts requires the use of biological indicators. This is particularly true for regulation of toxic compounds in surface waters where standard physical or chemical measurement may be inadequate to indicate the wide range of substances and circumstances able to cause toxicity to aquatic organisms. The use of biological indicators to identify or measure toxic discharges is often referred to as biotoxicity testing. EPA has issued guidelines and technical support materials for biotoxicity testing. A key use of the method is to monitor for compliance with narrative water quality objectives or permit requirements that specify that there is to be no discharge of toxic materials in toxic amounts. The Regional Water Board will continue to use biotoxicity procedures and testing in its surveillance and monitoring program.

The recommended surveillance program is composed of the following elements:

Surface Water

The surface water monitoring network for the Tulare Lake Basin will be composed of a small number of fixed stations to evaluate water quality trends. If additional stations, parameters, or frequencies are required in this network, contractual funds should be budgeted by the State Water Board.

Sampling stations for the major surface waters of the Tulare Lake Basin were selected from those used by the Department of Water Resources in their surface water quality monitoring program. Areas not covered may be supplemented by other federal, state or local data on water column sampling. Table VI-1 lists the surface water sampling stations for the Tulare Lake Basin.

Surface water grab samples are expected to provide sufficient analytical detail to affirm the mineral character of the stream at key points, occurrence of

TABLE VI-1
SURFACE WATER SAMPLING STATIONS

DWR Station No.	Station Name
	Kings River
C1 1490.00	Above North Fork at Rogers Crossing
C1 1460.00	Below North Fork
C1 1140.00	Below Pine Flat Reservoir
C0 1140.00	Below Peoples Weir near Kingsburg
C0 1121.00	South Fork below Empire Weir 2 near Stratford
C0 1128.00	North Fork below Stinson Weir near Wheaton
	Kaweah River
C2 1250.00	At Three Rivers
C0 2185.00	Below Terminus Dam
	Tule River
C3 1150.00	Near Springville
C0 3196.00	Below Success Dam
	Kern River
C5 1500.00	At Kernville
C5 1350.00	Below Isabella Dam
C0 5150.00	Near Bakersfield
	California Aqueduct at Check 13
	California Aqueduct at Tehachapi Afterbay
B7 1910.00	Friant-Kern Canal at Friant
B0 7715.00	San Joaquin River above Mendota Dam
	San Luis Drain near Mendota
C0 0965.00	Buena Vista Slough near Lost Hills
C6 1350.00	Caliente Creek near Bena
	Grapevine Creek at Grapevine

TABLE VI-1
SURFACE WATER SAMPLING STATIONS

DWR Station No.	Station Name
C7 1820.00	Bitterwater Creek near Lost Hills
C0 7120.00	Avenal Creek near Avenal
C0 7050.00	Zapato Chino near Avenal
	Jacalitos Creek near Coalinga
C7 5400.00	Warthan Creek Trib 2 near Coalinga
C7 6150.00	Los Gatos Creek above Nunez Canyon near Coalinga
C7 7050.00	Cantua Creek near Cantua
B8 1100.00	Panoche Creek below Silver Creek near Panoche
C1 5100.00	Dry Creek near Academy
C0 1555.00	Dog Creek below Dry Creek near Academy
	Redbank Creek
	Fancher Creek
C1 1120.00	Mill Creek near Piedra
C0 1185.00	Wahtoke Creek near Navelencia
C0 2520.00	Sand Creek near Monson
C0 2680.00	Cottonwood Creek near Redbank
C0 2780.00	Limekiln Creek near Terminus
C2 8170.00	Yokhohl Creek at Friant Kern Canyon near Exeter
C0 3650.00	Lewis Creek East of Lindsay
C3 5100.00	Deer Creek Foothills near Terra Bella
C4 1100.00	White River Foothills near Ducor

toxic substances, general levels of nutrients and biological responses, and common physical characteristics.

The State Water Board manages its own Toxic Substances Monitoring Program to collect and analyze fish tissue for the presence of bioaccumulative chemicals. The Regional Water Board participates in the selection of sampling sites for its basins and annually is provided with a report of the testing results.

Ground Water

Ground water monitoring will be undertaken in various areas to support activities in the point and nonpoint source investigations. Sampling will be done to show long-term trends and identify problem areas for further study. Basins with the highest priority will be selected on the basis of economic importance and degree of threat to ground water quality. The first priority subtasks are:

- Designation of principal aquifers
- Selection of wells for potential inclusion in the ground water network
- Identification of potential pollution sources.

Wells for this ground water monitoring network shall be selected from a pool of qualified wells. Qualified wells are geologically and structurally described on a well log which includes perforated intervals. Qualified wells are also clearly located and accessible. Field checks of their availability, suitability, and access will be made. Final selection of wells shall be based on how representative the well is of ground water pollution and in areas of high use of ground water. This effort also relies upon information generated as part of state and federal programs' ground water surveillance efforts. A Ground Water Sampling Manual should be prepared by the State Water Board in cooperation with the Department of Water Resources to standardize sampling procedures and give guidance to local agencies when conducting ground water data programs.

Self-Monitoring

Self-monitoring reports are normally submitted by the discharger on a monthly or quarterly basis as required by the permit conditions. Most dischargers will be required to submit self-monitoring reports. These reports will be reviewed by the Regional Water Board and entered into the data bank. This program will be continued at its present level, with additions made to the present list as additional self-monitoring requirements are imposed.

Compliance Monitoring

Compliance monitoring will determine permit compliance, validate self-monitoring reports, and provide data for enforcement actions. Discharger compliance monitoring and enforcement actions are the responsibility of Regional Water Board staff. The key element of the compliance monitoring program will be personal visits to the facility for direct observation and to review procedures that assure quality control.

The scope of the Compliance Monitoring Program for the Basin depends on the number and complexity of Waste Discharge Requirements and NPDES orders issued.

Complaint Investigation

Every effort will be made to prevent conditions that give rise to complaints. When such conditions occur, complaints from citizens and public or governmental agencies stemming from the discharge of pollutants or creation of nuisance conditions will be investigated. The Regional Water Board will document observed conditions and prepare reports and letters, or take other follow-up actions as necessary.

Intensive Surveys

Intensive monitoring surveys are specially designed to investigate problems in water quality class segments or hydrologic units requiring sampling in addition to the routine monitoring programs. Surveys are repeated at appropriate intervals depending on the parameters involved, the variability of conditions, and changes in hydrologic or effluent regimes. They usually consist of localized intermittent sampling at a higher than normal frequency. These surveys will provide detailed water quality data to locate and evaluate violations of water quality objectives and to calculate waste load allocations or total maximum daily load allocations as the case may require. The level of effort devoted to a given monitoring survey will depend upon the severity and complexity of the pollution problem in the survey area.

Aerial Surveillance

Low-altitude flights are conducted primarily to observe variations in field conditions, gather photographic records of discharges, and document variations in water quality.

Subsurface Agricultural Drainage

All local agricultural water supply and drainage agencies should participate in joint, coordinated programs to monitor the volume and quality of drainage water in collection, treatment, and/or disposal systems.

Lower Kings River

The Kings River Conservation District should continue monitoring the Lower Kings River monthly for electrical conductivity, pH and temperature.

The Regional Water Board should continue monitoring the River and specific discharges for constituents of concern on a regular basis. River samples should focus on areas of special concern, i.e. where human activity such as fishing or boating is most frequent and/or where water quality objectives are not met on a regular basis. Specific discharges should be selected based upon the electrical conductivity of the discharge. Monitoring should be conducted quarterly, at a minimum, to assess seasonal variations in flow and water quality.

The Regional Water Board should monitor storm water discharges from NAS Lemoore to check for hydrocarbons during peak flow periods and review existing pollution control procedures at the installation to insure such discharges are minimized.

Water Quality Control Plan for the Tulare Lake Basin
Appendix Directory

1. State Water Board Policy for Water Quality Control
2. State Water Board Resolution No. 68-16, Statement of Policy with Respect to Maintaining the High Quality of the State's Waters
3. State Water Board Resolution No. 75-58, The Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling
4. State Water Board Resolution No. 77-1, Policy with Respect to Water Reclamation in California
5. State Water Board Resolution No. 87-22, Policy on the Disposal of Shredder Waste
6. State Water Board Resolution No. 88-23, Policy Regarding the Underground Storage Tank Pilot Program
7. State Water Board Resolution No. 88-63, Sources of Drinking Water Policy
8. State Water Board Resolution No. 92-49, Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304
9. State Water Board Resolution No. 93-62, Policy for Regulation of Discharges of Municipal Solid Waste
10. State Water Board Water Quality Control Plan for Temperature (Thermal Plan)
11. State Water Board MAA with Forest Service, U. S. Department of Agriculture
12. State Water Board MOA with DHS (now the California Department of Public Health) (Implementation of Hazardous Waste Program)
13. State Water Board MOA with DHS (now the State Water Board Division of Drinking Water Programs) (Use of Reclaimed Water)
14. State Water Board MAA with California Department of Forestry and Fire Protection and the Board of Forestry
15. State Water Board MOA with California Department of Conservation, Division of Oil and Gas
16. State Water Board MOU with Department of Health Services/Department of Toxice Substances Control (later the Department of Health Services was renamed the Department of Public Health and the Toxic Substances Control Program was reorganized into the Department of Toxic Substances Control)
17. State Water Board MOU with Soil Conservation Service, U. S. Department of Agriculture
18. State Water Board MOU with Environmental Affairs Agency and the Air Resources Board
19. State Water Board MOU with Department of Pesticide Regulation
20. State Water Board MOU with ... re. Implementation of the San Joaquin Valley Drainage Program's Recommended Plan

21. State Water Board MOU with California Integrated Waste Management Board (now the California Department of Resources Recycling and Recovery (CalRecycle))

22. State Water Board MOU with U. S. Bureau of Land Management - Nonpoint Source Issues

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

24. Regional Water Board MOU with U. S. Bureau of Land Management, Bakersfield District Office

25. Regional Water Board MOU with California Department of Fish and Game (now the California Department of Fish and Wildlife) & Mosquito Abatement and Vector Control Districts of the South San Joaquin Valley

26. Federal Antidegradation Policy

~~27. Regional Water Board Resolution 89-247, Conditional Waiver of Waste Discharge Requirements at Retail Fertilizer Facilities~~ - - - Deleted 27 March 2014

~~28. Regional Water Board Resolution 90-034, Conditional Waiver of Waste Discharge Requirements at Pesticide Applicator Facilities~~ - - - Deleted 27 March 2014

29. Guideline for Mining

30. Guideline for Erosion/Sedimentation

31. Guideline for Small Hydroelectric Facilities

~~32. Guideline for Disposal from Land Developments~~ - - - Deleted 27 March 2014

~~33. Regional Water Board list of Water Quality Limited Segments~~ - - - Deleted 17 October 2002

34. Guidelines for Use of Reclaimed Water

Appendix L – Exhibit 24 of the James Irrigation District Comment Letter

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

CENTRAL VALLEY REGION

1685 "E" Street Fresno, CA 93706-2007
Phone (559) 445-5116 • FAX (559) 445-5910
http://www.waterboards.ca.gov/centralvalley

ORDER NO. R5-2008-0033
NPDES NO. CA0084239

WASTE DISCHARGE REQUIREMENTS FOR THE MALAGA COUNTY WATER DISTRICT WASTEWATER TREATMENT FACILITY FRESNO COUNTY

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 1. Discharger Information	
Discharger	Malaga County Water District
Name of Facility	Malaga Wastewater Treatment Facility
Facility Address	3749 South Maple Avenue
	Fresno, CA 93725
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a major discharge.	

For the discharge identified below:

Table 2. Discharge Location				
Discharge Point	**Effluent Description**	**Discharge Point Latitude**	**Discharge Point Longitude**	**Receiving Water**
001	Tertiary Treated	36º 40' 43" N	119º 44' 41" W	Central Canal
002	Secondary Treated	Evaporation/Percolation Ponds (Disposal Ponds)		Groundwater

Table 3. Administrative Information	
This Order was adopted by the Regional Water Quality Control Board on:	**14 March 2008**
This Order shall become effective on:	**14 March 2008**
This Order shall expire on:	**14 March 2013**
The Discharger shall file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	**14 September 2012**

IT IS HEREBY ORDERED that Order No. 99-100 is rescinded upon the effective date of this Order, except for enforcement purposes, and, in order to meet the provisions contained in Division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal Clean Water Act (CWA) and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 14 March 2008.

PAMELA C. CREEDON, Executive Officer

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List of Attachments

I. FACILITY INFORMATION

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 4. Facility Information

Discharger	Malaga County Water District
Name of Facility	Malaga Wastewater Treatment Facility
Facility Address	3749 South Maple Avenue
	Fresno, CA 93725
	Fresno County
Facility Contact, Title, and Phone	Russ Holcomb, General Manager, (559) 485-7353
Mailing Address	3580 South Frank Street
	Fresno, CA 93725
Type of Facility	Publicly Owned Treatment Works
Facility Design Flow	0.85 mgd, Secondary Treated Wastewater to Disposal Ponds (Discharge Point 002)
	0.45 mgd, Disinfected Tertiary Treated Wastewater to Central Canal (Discharge Point 001)
	1.2 mgd Total Flow

II. FINDINGS

The California Regional Water Quality Control Board, Central Valley Region (hereinafter Regional Water Board), finds:

A. Background. Malaga County Water District (hereinafter Discharger) is currently discharging pursuant to Waste Discharge Requirements (WDRs) Order No. 99-100 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0084239. The Discharger submitted a Report of Waste Discharge (RWD) dated 31 December 2003, and applied for a NPDES permit renewal to discharge up to 1.2 million gallons per day (mgd) of treated wastewater from its Malaga Wastewater Treatment Facility (WWTF), hereinafter "Facility". The application was deemed complete on 31 June 2004. The Discharger subsequently submitted information to supplement the RWD dated 23 January 2006, 9 March 2006, and 17 November 2006.

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. Facility Description. The Discharger owns and operates the Facility. The sanitary sewer system leading to the Facility is also owned and operated by the Discharger. The secondary and tertiary treatment systems consist of three screw pumps (one in service at a time), a barminutor, an aerated grit chamber, a flash mixing box, a flocculation tank, one primary clarifier (DAF unit), three activated sludge aeration tanks, two aerobic sludge digesters, a sludge thickening tank, three secondary clarifiers, a "fuzzy" filter, and chlorination/dechlorination tank. The Discharger committed to replace the

chlorination/dechlorination tank with ultraviolet disinfection in late 2008. The Facility disposes of secondary wastewater in 36 acres of evaporative/percolation ponds. By design, up to 0.85 mgd of secondary treated wastewater can be discharged to the ponds (Discharge Point 002) for disposal.

Up to 0.45 mgd of tertiary treated wastewater can be discharged to the Fresno Irrigation District's (FID's) Central Canal (Discharge 001), a water of the United States within the South Valley Flow Hydrologic Unit (No. 551.00). The Central Canal is a distributary of the Kings River via the Fresno and Fancher Creek Canals, and feeds into other canals and aqueducts to the south and to the west. The Central Canal is hydraulically connected to Fresno Slough that during periods of heavy rain drains to the San Joaquin River; both also waters of the United States.

Digested sludge is dewatered onsite using one acre of unlined sludge drying beds, and then hauled offsite for land application. Attachment B provides maps of the area around the Facility and associated groundwater monitoring well network. Attachment C provides a flow schematic of the Facility.

C. Legal Authorities. This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and chapter 5.5, division 7 of the California Water Code (commencing with Water Code section 13370). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

D. Background and Rationale for Requirements. Requirements in this Order are based on information submitted as part of the application, monitoring and reporting data, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for Order requirements, is hereby incorporated into this Order and constitutes part of the Findings for this Order. Attachments A through E and G are also incorporated into this Order.

E. Industrial Pretreatment Program. Cease and Desist Order No. 5-01-001 directed the Discharger to submit the then overdue industrial pretreatment program (IPP) required by WDRs Order No. 99-100. On 6 October 2004, the Discharger submitted its industrial pretreatment program (IPP) and a draft ordinance amending its Municipal Code. The State Water Board Office of Chief Counsel deemed the ordinance adequate on 29 December 2005. This Order approves the City's Industrial Pretreatment Program.

F. California Environmental Quality Act (CEQA). Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100-21177.

G. Technology-based Effluent Limitations. Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, Title 40 of the Code of Federal Regulations (CFR)[1] require that permits include conditions meeting applicable

1 All further statutory references are to Title 40 of the Code of Federal Regulations (40 CFR), unless otherwise indicated.

technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at Part 133. A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet (Attachment F).

H. Water Quality-based Effluent Limitations. Section 301(b) of the CWA and section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. This Order contains requirements, expressed as a technology equivalence requirement, more stringent than secondary treatment requirements that are necessary to meet applicable water quality standards. Factors listed in CWC Section 13241 were considered in establishing these requirements. The rationale for these requirements, which consist of tertiary treatment or equivalent requirements, is discussed in the Fact Sheet.

Section 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed State criterion or policy interpreting the State's narrative criterion, supplemented with other relevant information, as provided in 40 CFR section 122.44(d)(1)(vi).

I. Water Quality Control Plans. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition* (hereinafter Basin Plan) designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Though the Basin Plan at page II-2 states that the *"…beneficial uses of any specifically identified water body generally apply to its tributary streams,"* the Central Canal is a man-made conveyance and the tributary rule does not apply.

Beneficial use of Central Canal is AGR and also municipal and domestic supply (MUN) per the Basin Plan because it is a water for which beneficial uses are not specifically listed therein.

Additionally, NPDES permits must implement the requirements of the CWA. The federal regulations implementing the CWA create a rebuttable presumption that all waters are of fishable, swimmable quality. Thus, the quality of water in the Central Canal must be suitable for REC-1 and WARM.

The Basin Plan designates the beneficial uses of groundwater in Detailed Analysis Unit 233 as MUN, AGR, industrial service supply (IND), industrial process supply (PRO), REC-1, and REC-2.

Thus, as described further in the Fact Sheet, beneficial uses are as follows:

Table 5. Basin Plan Beneficial Uses		
Discharge Point	**Receiving Water Name**	**Beneficial Use(s)**
001	Central Canal (Man-made conveyance)	MUN, AGR, REC-1, WARM
002	Groundwater	MUN, AGR, IND, PRO, REC-1, REC-2

Requirements of this Order implement the Basin Plan.

J. National Toxics Rule (NTR) and California Toxics Rule (CTR). USEPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and November 1999. About forty criteria in the NTR applied in California. On 18 May 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on 13 February 2001. These rules contain water quality criteria for priority pollutants.

K. State Implementation Policy. On 2 March 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on 28 April 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on 18 May 2000 with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005 that became effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

L. Compliance Schedules and Interim Requirements. In general, an NPDES permit must include final effluent limitations that are consistent with Clean Water Act section 301 and with 40 CFR 122.44(d). There are exceptions to this general rule. The State Water Board has concluded that where the Regional Water Board's Basin Plan allows for schedules of compliance and the Regional Water Board is newly interpreting a narrative standard, it may include schedules of compliance in the permit to meet effluent limits that implement a narrative standard. See In the Matter of Waste Discharge Requirements for Avon Refinery (State Water Board Order WQ 2001-06 at pp. 53-55). See also Communities for a Better Environment (CBE) et al. v. State Water Resources Control Board, 34 Cal.Rptr.3d 396, 410 (2005). The Basin Plan includes a provision that authorizes the use of compliance schedules in NPDES permits for water quality objectives that are adopted after the date of adoption of the Basin Plan, which was

17 August 1995 (See Basin Plan at page IV-22). Consistent with the State Water Board's Order in the CBE matter, the Regional Water Board has the discretion to include compliance schedules in NPDES permits when it is including an effluent limitation that is a "new interpretation" of a narrative water quality objective. This conclusion is also consistent with the United States Environmental Protection Agency policies and administrative decisions. See, e.g., Whole Effluent Toxicity (WET) Control Policy. The Regional Water Board, however, is not required to include a schedule of compliance, but may issue a Time Schedule Order pursuant to CWC section 13300 or a Cease and Desist Order pursuant to CWC section 13301 where it finds that the discharger is violating or threatening to violate the permit. The Regional Water Board will consider the merits of each case in determining whether it is appropriate to include a compliance schedule in a permit, and, consistent with the Basin Plan, should consider feasibility of achieving compliance, and must impose a schedule that is as short as practicable to achieve compliance with the objectives, criteria, or effluent limit based on the objective or criteria.

For CTR constituents, Section 2.1 of the SIP provides that, based on a Discharger's request and demonstration that it is infeasible for an existing Discharger to achieve immediate compliance with an effluent limitation derived from a CTR criterion, compliance schedules may be allowed in an NPDES permit. Unless an exception has been granted under section 5.3 of the SIP, a compliance schedule may not exceed 5 years from the date that the permit is issued or reissued, nor may it extend beyond 10 years from the effective date of the SIP (or 18 May 2010) to establish and comply with CTR criterion-based effluent limitations. Where a compliance schedule for a final effluent limitation exceeds 1 year, the Order must include interim numeric limitations for that constituent or parameter. Where allowed by the Basin Plan, compliance schedules and interim effluent limitations or discharge specifications may also be granted to allow time to implement a new or revised water quality objective. This Order includes a compliance schedule and interim effluent limitations. A detailed discussion of the basis for the compliance schedule(s) and interim effluent limitation(s) and/or discharge specifications is included in the Fact Sheet.

M. Alaska Rule. On 30 March 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards (WQS) become effective for CWA purposes. (40 CFR 131.21; 65 Fed. Reg. 24641 (27 April 2000).) Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after 30 May 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by 30 May 2000 may be used for CWA purposes, whether or not approved by USEPA.

N. Stringency of Requirements for Individual Pollutants. This Order contains both technology-based and water quality-based effluent limitations for individual pollutants. The technology-based effluent limitations consist of restrictions on BOD_5 and TSS. The water quality-based effluent limitations consist of restrictions on turbidity and pathogens. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In addition, this Order contains effluent limitations more stringent than the minimum, federal technology-based requirements.

These limitations are more stringent than required by the CWA. Specifically, this Order includes effluent limitations for BOD, TSS, turbidity and pathogens more stringent than applicable federal standards that are necessary to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in the Fact Sheet. In addition, the Regional Water Board has considered the factors in Water Code section 13241 in establishing these requirements.

Water quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant water quality-based effluent limitations were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR section 131.38. The scientific procedures for calculating the individual water quality-based effluent limitations are based on the CTR-SIP, which was approved by USEPA on May 1, 2001. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "*applicable water quality standards for purposes of the [Clean Water] Act*" pursuant to 40 CFR section 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the technology-based requirements of the CWA and the applicable water quality standards for purposes of the CWA.

O. Antidegradation Policy. Section 131.12 of 40 CFR requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 is consistent with the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the state and federal antidegradation policies. As discussed in detail in the Fact Sheet the permitted discharge is consistent with the antidegradation provision of section 131.12 and State Water Board Resolution No. 68-16 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16.

P. Anti-Backsliding Requirements. Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. Fact Sheet, Attachment F, covers whether anti-backsliding is an issue in this Order.

Q. Monitoring and Reporting. Section 122.48 of 40 CFR requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Regional Water Board to require technical and

monitoring reports. The Monitoring and Reporting Program provided in Attachment E establishes monitoring and reporting requirements to implement federal and State requirements.

R. Standard and Special Provisions. Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR, section 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR, section 122.42, are provided in Attachment D. The Discharger must comply with all standard provisions and with those additional conditions that are applicable to it under section 122.42. This Order includes special provisions applicable to the Discharger. Rationale for the special provisions is provided in the attached Fact Sheet.

S. Provisions and Requirements Implementing State Law. The provisions and requirements in subsections IV.C, V.B, and portions of VI.C of this Order are included to implement State law only. These provisions and requirements are not required or authorized under the federal CWA; consequently, violations of these provisions and requirements are not subject to the enforcement remedies that are strictly for NPDES violations.

T. Notification of Interested Parties. Discharger and interested agencies and persons were notified of intent to prescribe Waste Discharge Requirements for the discharge and provided with an opportunity to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet of this Order.

U. Consideration of Public Comment. In a public meeting all comments pertaining to the discharge were heard and considered. Notice of the Public Hearing is provided in the Fact Sheet of this Order.

III. DISCHARGE PROHIBITIONS

A. Discharge of pollutants or wastewater at a location or in a manner or of a character substantively different from that described in the Findings is prohibited.

B. The by-pass or overflow of wastes from the Facility is prohibited, except as allowed by federal Standard Provisions I.G. and I.H. (Attachment D).

C. Creation of a condition of pollution or nuisance, as defined in Section 13050 of the California Water Code, is prohibited.

D. Discharge of waste classified as “hazardous,” as defined in Section 2521(a) of Title 23, CCR, Section 2510, et seq., or “designated,” as defined in Section 13173 of the California Water Code, is prohibited.

E. Discharge of oil or residuary product of petroleum, or of chemicals known to cause cancer or reproductive toxicity, is prohibited except as specifically authorize herein.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Facility Effluent Limitations

Unless otherwise indicated, the following Effluent Limitations apply to both Discharge Points 001 and 002. Compliance with these limitations shall be measured at monitoring locations 001 and 002, respectively. The Effluent shall not:

1. Exceed an average monthly daily flow of:

   a. 0.45 mgd at Discharge Point 001

   b. 0.85 mgd at Discharge Point 002

   c. 1.2 mgd, total

2. As an average monthly EC, exceed the monthly flow-weighted average of EC in the source water plus 500 µmhos/cm, or a total of 1,000 µmhos/cm, whichever is more stringent.

3. Exceed a chloride concentration of 175 mg/L as a daily maximum.

4. Exhibit a pH of less than 6.5 or greater than 8.3 standard units.

B. Effluent Limitations – Discharge Point D-001(Tertiary Treatment)

1. Final Effluent Limitations

The Discharger shall maintain compliance with the following effluent limitations at Discharge Point 001, with compliance measured at Monitoring Location M-001 as described in the attached MRP:

a. **Conventional, Priority, and Non-Conventional Pollutants**:

Table 6. Effluent Limitations

Parameter	Units	Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily
Conventional Pollutants				
Biochemical Oxygen Demand (BOD_5) @ 20°C	mg/L	10	15	30
	lbs/day[1]	38	56	113
Total Suspended Solids (TSS)	mg/L	10	15	30
	lbs/day[1]	38	56	113
Settleable Solids	ml/L	0.1	--	0.2
Priority Pollutants [4]				
Bromoform	µg/L	4.3	--	8.6

Table 6. Effluent Limitations				
Parameter	Units	Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily
Chlorodibromomethane (Dibromochloromethane)	µg/L	0.41	--	0.82
Dichlorobromomethane (Bromodichloromethane)	µg/L	0.56	--	1.1
Non-Conventional Pollutants				
Ammonia Nitrogen, Total (as N) (May-October) [3]	mg/L	0.8	--	1.1
	lbs/day[1]	3.0	--	4.1
Ammonia Nitrogen, Total (as N) (November-April) [3]	mg/L	0.4	--	0.6
	lbs/day[1]	1.5	--	2.3
Boron	mg/L	--	--	1.0
Turbidity	NTU	2	--	5[2]

1. Based on a design flow of 0.45 mgd
2. 5 NTU more than 5% of the 24-hour period, 10 NTU at any time
3. Effective 19 May 2010. In interim, see Table 7
4. Effective 1 November 2008, if the Discharger certifies to the Executive Officer in writing that the ultraviolet system is operational and chlorine is no longer being used for disinfection purposes or detected in the effluent, the Executive Officer may, at her discretion, notify the Discharger that these effluent limitations and associated monitoring are suspended.

b. **Percent Removal:** The average monthly percent removal of BOD and total suspended solids shall not be less than 90 percent.

c. **Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

   i. 70% for any one bioassay; and

   ii. 90% for the median of any three consecutive bioassays.

d. **Total Residual Chlorine.** Effluent total residual chlorine shall not exceed:

   i. 0.01 mg/L, as a 4-day average; and

   ii. 0.02 mg/L, as a 1-hour average;

e. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:

   i. 2.2 most probable number (MPN)/ 100 mL as a 7-day median;

   ii. 23 MPN/ 100 mL more than once in any month; and

   iii. 240 MPN/ 100 ml at any time.

2. Interim Effluent Limitations

The interim effluent limitations in Table 7 shall apply in lieu of the final effluent limitations specified for the same parameters in Table 6 until the effective date of the final effluent limitations as specified in footnotes 3 and 4, Table 6:

Table 7. Interim Effluent Limitations

Parameter	Units	Effluent Limitations	
		Average Monthly	Maximum Daily
Ammonia	mg/L	--	1.3
Bromoform	µg/L	---	28
Chlorodibromomethane (Dibromochloromethane)	µg/L	---	143
Dichlorobromomethane (Bromodichloromethane)	µg/L	---	162

C. Land Discharge Specifications – Discharge Point D-002 (Secondary Treatment)

The Discharger shall maintain compliance with the effluent limitations in Table 8 at Discharge Point D-002, with compliance measured at Monitoring Location M-002 as described in the attached MRP:

Table 8. Land Discharge Specifications

Parameter	Units	Effluent Limitations	
		Average Monthly	Maximum Daily
Biochemical Oxygen Demand (BOD) (5 day @ 20 ºC)	mg/L	40	80
Total Suspended Solids (TSS)	mg/L	40	80
Settleable Solids	mL/L	0.2	1.0

D. Reclamation Specifications

Not Applicable

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

Receiving water limitations are based on water quality objectives contained in the Basin Plan and are a required part of this Order. The discharge shall not cause the following in the Central Canal:

1. **Un-ionized Ammonia**. Un-ionized ammonia to be present in amounts that adversely affect beneficial uses or to be present in excess of 0.025 mg/L (as N).

2. **Biostimulatory Substances**. Water to contain biostimulatory substances that promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.

3. **Chemical Constituents**. Chemical constituents to be present in concentrations that adversely affect beneficial uses.

4. **Color.** Discoloration that causes nuisance or adversely affects beneficial uses.

5. **Dissolved Oxygen**:

    a. The monthly median of the mean daily dissolved oxygen concentration to fall below 85 percent of saturation in the main water mass at centroid of flow;

    b. The 95 percentile dissolved oxygen concentration to fall below 75 percent of saturation; or

    c. The dissolved oxygen concentration to be reduced below 5.0 mg/L at any time.

6. **Floating Material**. Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.

7. **Oil and Grease**. Oils, greases, waxes, or other materials to be present in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.

8. **pH**. The pH to be depressed below 6.5 or raised above 8.3

9. **Pesticides**:

    a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;

    b. Pesticides to be present in bottom sediments or aquatic life in concentrations that adversely affect beneficial uses;

    c. Pesticides to be present in concentrations in excess of the maximum contaminant levels set forth in California Code of Regulations, Title 22, Division 4, Chapter 15/specified in Table 64444-A (Organic Chemicals) of Section 64444 of Title 22 of the California Code of Regulations.

10. **Radioactivity**

    a. Radionuclides to be present in concentrations that are deleterious to human, plant, animal, or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

b. Radionuclides to be present in excess of the maximum contaminant levels specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations.

11. **Suspended Sediments**. The suspended sediment load and suspended sediment discharge rate of surface waters to be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

12. **Settleable Substances**. Substances to be present in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

13. **Suspended Material**. Suspended material to be present in concentrations that cause nuisance or adversely affect beneficial uses.

14. **Taste and Odors**. Taste- or odor-producing substances to be present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or to domestic or municipal water supplies.

15. **Temperature**. The ambient temperature to be increased by more than 5°F.

16. **Toxicity**. Toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.

17. **Turbidity**. The turbidity to increase as follows:

    a. More than 1 Nephelometric Turbidity Unit (NTU) where natural turbidity is between 0 and 5 NTUs.

    b. More than 20 percent where natural turbidity is between 5 and 50 NTUs.

    c. More than 10 NTU where natural turbidity is between 50 and 100 NTUs.

    d. More than 10 percent where natural turbidity is greater than 100 NTUs.

B. Groundwater Limitations

Release of waste constituents from the Facility, in combination with other sources, shall not cause underlying groundwater to contain waste constituents in concentrations that adversely affect beneficial use of it. More specifically, the Facility shall not cause or contribute to the following in groundwater:

1. EC greater than 900 umhos/cm.

2. Total nitrogen greater than 10 mg/L.

3. Taste or odor producing constituents that cause nuisance.

4. Total coliform equal to or greater than 2.2 MPN/100mL.

VI. PROVISIONS

A. Standard Provisions

1. All Standard Provisions included in Attachment D are part of this Order.

2. The following provisions are part of this Order:

   a. If the Discharger's wastewater treatment plant is publicly owned or subject to regulation by California Public Utilities Commission, it shall be supervised and operated by persons possessing certificates of appropriate grade according to Title 23, CCR, Division 3, Chapter 26.

   b. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:

      i. violation of any term or condition contained in this Order;

      ii. obtaining this Order by misrepresentation or by failing to disclose fully all relevant facts;

      iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and

      iv. a material change in the character, location, or volume of discharge.

      The causes for modification include:

      - *New regulations.* New regulations have been promulgated under Section 405(d) of the Clean Water Act, or the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued.

      - *Land application plans.* When required by a permit condition to incorporate a land application plan for beneficial reuse of sewage sludge, to revise an existing land application plan, or to add a land application plan.

      - *Change in sludge use or disposal practice.* Under 40 CFR 122.62(a)(1), a change in the Discharger's sludge use or disposal practice is a cause for modification of the permit. It is cause for revocation and reissuance if the Discharger requests or agrees.

      The Regional Water Board may review and revise this Order at any time upon application of any affected person or the Regional Water Board's own motion.

   c. If a toxic effluent standard or prohibition (including any scheduled compliance specified in such effluent standard or prohibition) is established under Section

307(a) of the CWA, or amendments thereto, for a toxic pollutant that is present in the discharge authorized herein, and such standard or prohibition is more stringent than any limitation upon such pollutant in this Order, the Regional Water Board will revise or modify this Order in accordance with such toxic effluent standard or prohibition.

The Discharger shall comply with effluent standards and prohibitions within the time provided in the regulations that establish those standards or prohibitions, even if this Order has not yet been modified.

d. This Order shall be modified, or alternately revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:

   i. contains different conditions or is otherwise more stringent than any effluent limitation in the Order; or

   ii. controls any pollutant limited in the Order.

   The Order, as modified or reissued under this paragraph, shall also contain any other requirements of the CWA then applicable.

e. The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.

f. The Discharger shall take all reasonable steps to minimize any adverse effects to waters of the State or users of those waters resulting from any discharge or sludge use or disposal in violation of this Order. Reasonable steps shall include such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or sludge use or disposal.

g. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by USEPA under Section 307 of the CWA, or amendment thereto, for any discharge to the municipal system.

h. The discharge of any radiological, chemical or biological warfare agent or high-level, radiological waste is prohibited.

i. A copy of this Order shall be maintained at the discharge facility and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.

j. Safeguard to electric power failure:

   i. The Discharger shall provide safeguards to assure that, should there be reduction, loss, or failure of electric power, the discharge shall comply with the terms and conditions of this Order.

ii. Upon written request by the Regional Water Board, the Discharger shall submit a written description of safeguards. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures experienced over the past five years on effluent quality and on the capability of the Discharger to comply with the terms and conditions of the Order. The adequacy of the safeguards is subject to the approval of the Regional Water Board.

iii. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Regional Water Board not approve the existing safeguards, the Discharger shall, within ninety days of having been advised in writing by the Regional Water Board that the existing safeguards are inadequate, provide to the Regional Water Board and USEPA a schedule of compliance for providing safeguards such that in the event of reduction, loss, or failure of electric power, the Discharger shall comply with the terms and conditions of this Order. The schedule of compliance shall, upon approval of the Regional Water Board, become a condition of this Order.

k. The Discharger, upon written request of the Regional Water Board, shall file with the Board a technical report on its preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. This report may be combined with that required under Regional Water Board Standard Provision VI.A.2.j.

The technical report shall:

i. Identify the possible sources of spills, leaks, untreated waste by-pass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.

ii. Evaluate the effectiveness of present facilities and procedures and state when they became operational.

iii. Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

The Regional Water Board, after review of the technical report, may establish conditions that it deems necessary to control accidental discharges and to minimize the effects of such events. Such conditions shall be incorporated as part of this Order, upon notice to the Discharger.

l. A publicly owned treatment works (POTW), whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment and disposal facilities. The projections shall be made in January, based on the last three years' average dry

weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in four years, the Discharger shall notify the Regional Water Board by 31 January. A copy of the notification shall be sent to appropriate local elected officials, local permitting agencies and the press. Within 120 days of the notification, the Discharger shall submit a technical report showing how it will prevent flow volumes from exceeding capacity or how it will increase capacity to handle the larger flows. The Regional Water Board may extend the time for submitting the report.

m. The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

n. The Discharger shall conduct analysis on any sample provided by USEPA as part of the Discharge Monitoring Quality Assurance (DMQA) program. The results of any such analysis shall be submitted to USEPA's DMQA manager.

o. For POTWs, prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. (Water Code section 1211).

p. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, maximum daily effluent limitation, 1-hour average effluent limitation, or receiving water limitation contained in this Order, the Discharger shall notify the Regional Water Board by telephone (559) 445-5116 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within five days, unless the Regional Water Board waives confirmation. The written notification shall include the information required by Attachment D, Section V.E.1 [40 CFR section 122.41(l)(6)(i)].

B. Monitoring and Reporting Program (MRP) Requirements

The Discharger shall comply with the MRP and any revisions thereto (Attachment E of this Order).

C. Special Provisions

1. Reopener Provisions

a. This Order may be reopened for modification, or revocation and reissuance, as a result of the detection of a reportable priority pollutant generated by special conditions included in this Order. These special conditions may be, but are not limited to, fish tissue sampling, whole effluent toxicity, monitoring requirements on internal waste stream(s), and monitoring for surrogate parameters. Additional requirements may be included in this Order as a result of the special condition monitoring data.

b. Conditions that necessitate a major modification of a permit are described in 40 CFR section 122.62, including:

   i. If new or amended applicable water quality standards are promulgated or approved pursuant to Section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.

   ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.

c. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity effluent limitations, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on the new provisions.

d. **Water Effects Ratios (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity.** For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity testing, as specified in the Monitoring and Reporting Program (Attachment E, Section V.). Furthermore, this Provision requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exceeds the toxicity numeric monitoring trigger established in this Provision, the Discharger is required to

initiate a Toxicity Reduction Evaluation (TRE), in accordance with an approved TRE Work Plan, and take actions to mitigate the impact of the discharge and prevent reoccurrence of toxicity. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TREs are designed to identify the causative agents and sources of whole effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. This Provision includes requirements for the Discharger to develop and submit a TRE Work Plan and includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

i. Initial Investigative Toxicity Reduction Evaluation (TRE) Work Plan. **Within 90 days of the effective date of this Order**, the Discharger shall submit to the Regional Water Board an Initial Investigative TRE Work Plan for approval by the Executive Officer. This should be a one to two page document including, at minimum:

   a) A description of the investigation and evaluation techniques that will be used to identify potential causes and sources of effluent toxicity, effluent variability, and treatment system efficiency;

   b) A description of the facility's methods of maximizing in-house treatment efficiency and good housekeeping practices, and a list of all chemicals used in operation of the facility; and

   c) A discussion of who will conduct the Toxicity Identification Evaluation, if necessary (i.e. an in-house expert or outside contractor).

ii. **Accelerated Monitoring and TRE Initiation.** When the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity monitoring, and the testing meets all test acceptability criteria, the Discharger shall initiate accelerated monitoring as required in the Accelerated Monitoring Specifications. WET testing results exceeding the monitoring trigger during accelerated monitoring demonstrates a pattern of toxicity and requires the Discharger to initiate a TRE to address the effluent toxicity.

iii. **Numeric Monitoring Trigger.** The numeric toxicity monitoring trigger is > **1 TUc** (where TUc = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE.

iv. **Accelerated Monitoring Specifications.** If the monitoring trigger is exceeded during regular chronic toxicity testing, within 14-days of notification by the laboratory of the test results, the Discharger shall initiate accelerated monitoring. Accelerated monitoring shall consist of four (4) chronic toxicity tests in a six-week period (i.e. one test every two weeks) using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:

a) If the results of four (4) consecutive accelerated monitoring tests do not exceed the monitoring trigger, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring. However, notwithstanding the accelerated monitoring results, if there is adequate evidence of a pattern of effluent toxicity, the Executive Officer may require that the Discharger initiate a TRE.

b) If the source(s) of the toxicity is easily identified (i.e. temporary plant upset), the Discharger shall make necessary corrections to the facility and shall continue accelerated monitoring until four (4) consecutive accelerated tests do not exceed the monitoring trigger. Upon confirmation that the effluent toxicity has been removed, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring.

c) If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and initiate a TRE to investigate the cause(s) of, and identify corrective actions to reduce or eliminate effluent toxicity. Within thirty (30) days of notification by the laboratory of the test results exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Regional Water Board including, at minimum:

1) Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including TRE WET monitoring schedule;

2) Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and

3) A schedule for these actions.

Within sixty (60) days of notification by the laboratory of the test results, the Discharger shall submit to the Regional Water Board a TRE Work Plan for approval by the Executive Officer. The TRE Work Plan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Work Plan must be developed in accordance with EPA guidance[2].

b. **BPTC Evaluation Tasks**. The Discharger shall propose a work plan and schedule for providing BPTC as required by Resolution 68-16. The technical report describing the work plan and schedule shall contain a preliminary evaluation of each component and propose a time schedule for completing the comprehensive technical evaluation.

Following completion of the comprehensive technical evaluation, the Discharger shall submit a technical report describing the evaluation's results and critiquing each evaluated component with respect to BPTC and minimizing the discharge's

2 See Attachment F (Fact Sheet) Section VII.B.2.a. for a list of EPA guidance documents that must be considered in development of the TRE Workplan.

impact on groundwater quality. Where deficiencies are documented, the technical report shall provide recommendations for necessary modifications (*e.g.*, new or revised salinity source control measures, WWTP component upgrade and retrofit) to achieve BPTC and identify the source of funding and proposed schedule for modifications. The schedule shall be as short as practicable but in no case shall completion of the necessary modifications exceed four years past the Executive Officer's determination of the adequacy of the comprehensive technical evaluation, unless the schedule is reviewed and specifically approved by the Regional Water Board. The technical report shall include specific methods the Discharger proposes as a means to measure processes and assure continuous optimal performance of BPTC measures. The Discharger shall comply with the following compliance schedule in implementing the work required by this Provision:

Task	Compliance Date
1 -Submit technical report: work plan and schedule for comprehensive evaluation	**By 14 September 2008**
2 -Commence comprehensive evaluation	**30 days** following Executive Officer approval of Task 1.
3 -Complete comprehensive evaluation	As established by Task 1 and/or 2 years following Task 2, whichever is sooner
4 -Submit technical report: comprehensive evaluation results	**60 days** following completion of Task 3.
5 -Submit annual report describing the overall status of BPTC implementation and compliance with groundwater limitations over the past reporting year	To be submitted in accordance with the MRP (Attachment E, Section X.D.1.)

c. **Use Attainability Study**. If the Discharger finds it in its best interest to pursue de-designation of MUN, it shall provide information necessary to support a Regional Water Board Use Attainability Analysis (UAA) for the Central Canal downstream of Discharge Point D-001. In such case, it shall submit a technical report in the form of a work plan with proposed time schedule to provide the necessary information. The work plan must describe in detail the information the Discharger intends to provide and how this information will address the requirements of 40CFR 131.3(g) and 131.10(g) and the criteria for exception from designation as MUN set forth in the Basin Plan. Reopening of this Order for inclusion of effluent limitations for pollutants driven by the MUN designation, as determined by RPA, shall by delayed pending completion of the following tasks and further action by the Regional Water Board, if the work plan is approved by the Executive Officer and, upon submittal of the completed technical report, if the technical report in the opinion of the Executive Officer warrants the UAA and consideration of de-designation of MUN by the Regional Water Board.

Task	Compliance Date
1 -Implement work plan in accordance with conditions of approval determined by the Executive Officer.	Within 30 days of Executive Officer's written approval
2 -Semi-annual monitoring reports on progress over previous one-half calendar year	1 February and 1 August of each year
3 -Submittal of technical report with all required information	By the deadline approved by the Executive Officer but no later than January 2010.

d. **Groundwater Monitoring.** The Discharger currently maintains one upgradient and four downgradient groundwater monitoring wells. To determine the adequacy of the current monitoring network, the Discharger shall submit to the Regional Water Board by **15 September 2008** a technical report evaluating the current groundwater monitoring system. The technical report shall contain an evaluation of each groundwater monitoring well. Following completion of the comprehensive technical evaluation, the Discharger shall submit a technical report describing the evaluation's results. Where deficiencies are documented, the technical report shall provide recommendations for necessary modifications (*e.g.*, new or expanded groundwater monitoring wells). All monitoring wells shall comply with the appropriate standards as described in California Well Standards Bulletin 74-90 (June 1991) and Water Well Standards: State of California Bulletin 74-81 (December 1981), and any more stringent standards adopted by the Discharger or County pursuant to CWC section 13801.

3. Best Management Practices and Pollution Prevention

a. Pollutant Minimization Program

The Discharger shall develop and conduct a Pollutant Minimization Program (PMP) as further described below when there is evidence (e.g., sample results reported as DNQ when the effluent limitation is less than the MDL, sample results from analytical methods more sensitive than those methods required by this Order, presence of whole effluent toxicity, health advisories for fish consumption, results of benthic or aquatic organism tissue sampling) that a priority pollutant is present in the effluent above an effluent limitation and either a sample result is reported as DNQ and the effluent limitation is less than the RL; or a sample result is reported as ND and the effluent limitation is less than the MDL, using definitions described in Attachment A and reporting protocols described in MRP section X.A.5.

The PMP shall include, but not be limited to, the following actions and submittals acceptable to the Regional Water Board:

i. An annual review and semi-annual monitoring of potential sources of the reportable priority pollutant(s), which may include fish tissue monitoring and other bio-uptake sampling;

ii. Quarterly monitoring for the reportable priority pollutant(s) in the influent to the wastewater treatment system;

iii. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutant(s) in the effluent at or below the effluent limitation;

iv. Implementation of appropriate cost-effective control measures for the reportable priority pollutant(s), consistent with the control strategy; and

v. An annual status report that shall be sent to the Regional Water Board including:

a) All PMP monitoring results for the previous year;

b) A list of potential sources of the reportable priority pollutant(s);

c) A summary of all actions undertaken pursuant to the control strategy; and

d) A description of actions to be taken in the following year.

4. Construction, Operation and Maintenance Specifications

a. Disposal Pond Requirements.

i. Ponds shall be managed to prevent breeding of mosquitoes. In particular,

a) An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.

b) Weeds shall be minimized.

c) Dead algae, vegetation, and debris shall not accumulate on the water surface.

ii. Ponds shall have sufficient capacity to contain all wastewater volume generated annually that cannot be reliably and consistently disposed of by evaporation and percolation from the ponds, or discharged at Discharge Point D-001, including ancillary inflow and infiltration and design seasonal precipitation. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.

iii. Prior to the onset of the rainy season of each year, available pond storage capacity shall at least equal the design volume necessary to comply with the previous paragraph.

iv. The Discharger shall maintain and operate all ponds sufficient to protect the integrity of containment levees and prevent overtopping or overflows. Unless a California civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically). As a means of managing available capacity and to discern compliance with this paragraph, the Discharger shall install and maintain in each pond permanent markers with calibration that indicates the water level at design capacity and enables determination of available operational freeboard.

5. Special Provisions for Municipal Facilities (POTWs Only)

a. **Pretreatment Requirements**.

i. The Discharger shall implement its approved pretreatment program and the program shall be an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Regional Water Board, the State Water Board or the U.S. Environmental Protection Agency (U.S. EPA) may take enforcement actions against the Discharger as authorized by the CWA.

ii. The Discharger shall enforce the Pretreatment Standards promulgated under sections 307(b), 307(c), and 307(d) of the Clean Water Act. The Discharger shall perform the pretreatment functions required by 40 CFR Part 403 including, but not limited to:

a) Adopting the legal authority required by 40 CFR 403.8(f)(1);

b) Enforcing the Pretreatment Standards of 40 CFR 403.5 and 403.6;

c) Implementing procedures to ensure compliance as required by 40 CFR 403.8(f)(2); and

d) Providing funding and personnel for implementation and enforcement of the pretreatment program as required by 40 CFR 403.8(f)(3).

e) Publishing a list of significant violators as required by 40 CFR 403.8(f)(2)(vii).

iii. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the necessary legal authorities, programs, and controls to ensure that the following incompatible wastes are not introduced to the treatment system, where incompatible wastes are:

a) Wastes which create a fire or explosion hazard in the treatment works;

b) Wastes which will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0, unless the works is specially designed to accommodate such wastes;

c) Solid or viscous wastes in amounts which cause obstruction to flow in sewers, or which cause other interference with proper operation or treatment works;

d) Any waste, including oxygen demanding pollutants (BOD, *etc*.), released in such volume or strength as to cause inhibition or disruption in the treatment works, and subsequent treatment process upset and loss of treatment efficiency;

e) Heat in amounts that inhibit or disrupt biological activity in the treatment works, or that raise influent temperatures above 40°C (104°F), unless the Regional Water Board approves alternate temperature limits;

f) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

g) Pollutants which result in the presence of toxic gases, vapors, or fumes within the treatment works in a quantity that may cause acute worker health and safety problems; and:

h) Any trucked or hauled pollutants, except at points predesignated by the Discharger.

iv. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the legal authorities, programs, and controls necessary to ensure that indirect discharges do not introduce pollutants into the sewerage system that, either alone or in conjunction with a discharge or discharges from other sources:

a) Flow through the system to the receiving water in quantities or concentrations that cause a violation of this Order, or:

b) Inhibit or disrupt treatment processes, treatment system operations, or sludge processes, use, or disposal and either cause a violation of this Order or prevent sludge use or disposal in accordance with this Order.

b. **Sludge/Biosolids Discharge Specifications**

i. Collected screenings, residual sludge, biosolids, and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer, and consistent with *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste,* as set forth in

Title 27, CCR, Division 2, Subdivision 1, section 20005, et seq. Removal for further treatment, disposal, or reuse at sites (i.e., landfill, composting sites, soil amendment sites) that are operated in accordance with valid waste discharge requirements issued by a regional water quality control board will satisfy these specifications.

ii. Sludge and solid waste shall be removed from screens, sumps, ponds, clarifiers, etc. as needed to ensure proper plant performance.

iii. The treatment of sludge generated at the Facility shall be confined to the Facility property and conducted in a manner that precludes infiltration of waste constituents into soils in a mass or concentration that will violate Groundwater Limitations V.B. In addition, the storage of residual sludge, solid waste, and biosolids on Facility property shall be temporary and controlled, and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate Groundwater Limitations V.B.

iv. The use and disposal of biosolids shall comply with existing federal and State laws and regulations, including permitting requirements and technical standards included in 40 CFR 503. If the State Water Board and the Regional Water Board are given the authority to implement regulations contained in 40 CFR 503, this Order may be reopened to incorporate appropriate time schedules and technical standards. The Discharger must comply with the standards and time schedules contained in 40 CFR 503 whether or not they have been incorporated into this Order.

c. **Sludge/Biosolids Disposal Requirements**

Any proposed change in sludge or biosolids use or disposal practice from that described herein as hauled off by an authorized, independent party shall be reported to the Executive Officer and USEPA Regional Administrator at least **90 days** in advance of the change.

d. **Collection System**

Requirements of the is Order do not apply to the Discharger's collection system except for a 24-hour reporting requirement in the event of an overflow from the collection system that endangers human health or the environment. In such an event, the Discharger shall comply with the Twenty-four Hour Reporting provisions set forth in Attachment D, section V.E.

e. **Electronic Notification System.**

This permit, and the Monitoring and Reporting Program which is a part of this permit, requires that certain parameters be monitored on a continuous basis. The wastewater treatment plant is not staffed on a full time basis. Permit violations or system upsets can go undetected during this period. The Discharger is required to establish an electronic system for operator notification

for continuous recording device alarms. For existing continuous monitoring systems, the electronic notification system shall be installed **by 14 September 2008**. For systems installed following permit adoption, the notification system shall be installed simultaneously.

6. Other Special Provisions

a. Wastewater discharged at Discharge Point D-001 shall be oxidized, coagulated, filtered, and adequately disinfected as this is defined in California Code of Regulations, Title 22, Division 4, Chapter 3, (Title 22), or the equivalent.

b. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Regional Water Board (Attachment D, Section II.C.).

c. To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Regional Water Board and a statement. The statement shall comply with the signatory and certification requirements in the federal Standard Provisions (Attachment D, Section V.B.) and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

d. The Discharger shall not allow pollutant-free wastewater to be discharged into the collection, treatment, and disposal system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

e. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the wastewater treatment and pond disposal areas, or at the outfall to the Central Canal.

f. Dissolved oxygen in the upper zone (1 foot) of effluent in disposal ponds of less than 1.0 mg/L will be considered an indication that the ponds are organically overloaded and threatening to violate Discharge Prohibition III.C. Should the DO be below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Regional Water Board within 7 days with a proposal that will insure a consistent DO of at least 1.0 mg/L within 30 days.

g. The Facility shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

h. Public contact with wastewater shall be precluded through such means as fences and signs controlling access to the facility, or other acceptable alternatives.

i. The Discharger shall for each fiscal year (July-June) pay the required annual filing fee in accordance with the current fee schedule established by the State Water Board by the due date specified in the annual invoice (typically issued during October of each fiscal year). The fee is for privilege of discharge authorized by this Order.

j. Except as expressly identified and authorized in this Order, the Discharger shall not use surface or groundwater as dilution to achieve compliance with effluent limitations in this Order.

k. Physical facilities shall be designed and constructed according to accepted engineering practice and shall be capable of full and consistent compliance with this Order when properly operated and maintained. Proper operation and maintenance shall be described in an Operation and Maintenance ("O&M") manual prepared by the design engineer. The operation and maintenance manual shall be reviewed at least every time a significant change, alteration, or expansion is made to the facility. The Discharger shall certify in every annual report whether the operation and maintenance manual is complete and reflective of the Facility, and whether operation, maintenance, and staffing for the year being reported was as prescribed in the O&M manual.

7. Compliance Schedules

a. **Compliance Schedules for Final Effluent Limitations for bromoform, chlorodibromomethane, dichlorobromomethane, and ammonia**

i. **By 1 November 2008,** the Discharger shall comply with the final effluent limitations for bromoform, chlorodibromomethane, and dichlorobromomethane. **By 18 May 2010,** the Discharger shall comply with the final effluent limitations for ammonia.

ii. **Treatment Feasibility Study.** The Discharger shall perform an engineering treatment feasibility study examining the feasibility, costs and benefits of different treatment options that may be required to remove ammonia from the discharge. A work plan and time schedule for preparation of the treatment feasibility study shall be completed and submitted to the Regional Water Board **by 14 July 2008** and will be subject to the approval of the Executive Officer. The treatment feasibility study shall be completed and submitted to the Regional Water Board **within one (1) year following work plan approval by the Executive Officer**, and progress reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

VII. COMPLIANCE DETERMINATION

Compliance with the effluent limitations contained in section IV of this Order will be determined as specified below:

A. BOD and TSS Effluent Limitations. Compliance with the final effluent limitations for BOD and TSS required shall be ascertained by 24-hour composite samples. Compliance with effluent limitations for percent removal shall be calculated using the arithmetic mean of 20°C BOD (5-day) and total suspended solids in effluent samples collected over a monthly period as a percentage of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period.

B. Average Monthly Daily Flow Effluent Limitations. The Average Monthly Daily Flow represents the daily average flow determined over a calendar month.

C. Total Coliform Organisms Effluent Limitations. For each day that an effluent sample is collected and analyzed for total coliform organisms, the 7-day median shall be determined by calculating the median concentration of total coliform bacteria in the effluent utilizing the bacteriological results of the last seven days for which analyses have been completed. If the 7-day median of total coliform organisms exceeds a most probable number (MPN) of 2.2 per 100 milliliters, the Discharger will be considered out of compliance for that parameter for that 1 day only within the reporting period.

D. Total Residual Chlorine Effluent Limitations. Continuous monitoring analyzers for chlorine residual or for dechlorination agent residual in the effluent are appropriate methods for compliance determination. A positive residual dechlorination agent in the effluent indicates that chlorine is not present in the discharge, which demonstrates compliance with the effluent limitations. This type of monitoring can also be used to prove that some chlorine residual exceedances are false positives. Continuous monitoring data showing either a positive dechlorination agent residual or a chlorine residual at or below the prescribed limit are sufficient to show compliance with the total residual chlorine effluent limitations, as long as the instruments are maintained and calibrated in accordance with the manufacturer's recommendations.

Any excursion above the 1-hour average or 4-day average total residual chlorine effluent limitations is a violation. If the Discharger conducts continuous monitoring and the Discharger can demonstrate, through data collected from a back-up monitoring system, that a chlorine spike recorded by the continuous monitor was not actually due to chlorine, then any excursion resulting from the recorded spike will not be considered an exceedance, but rather reported as a false positive.

ATTACHMENT A – DEFINITIONS

Arithmetic Mean (μ), also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$, where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

Average Monthly Effluent Limitation (AMEL): the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL): the highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Best Practicable Treatment or Control (BPTC): BPTC is a requirement of State Water Resources Control Board Resolution 68-16 – "Statement of Policy with Respect to Maintaining High Quality of Waters in California" (referred to as the "Antidegradation Policy"). BPTC is the treatment or control of a 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."* Pollution is defined in CWC Section 13050(l). In general, an exceedance of a water quality objective in the Basin Plan constitutes "pollution".

Bioaccumulative pollutants are those substances taken up by an organism from its surrounding medium through gill membranes, epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

Carcinogenic pollutants are substances that are known to cause cancer in living organisms.

Coefficient of Variation (*CV*) is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

Daily Discharge: Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Detected, but Not Quantified (DNQ) are those sample results less than the RL, but greater than or equal to the laboratory's MDL.

Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effluent Concentration Allowance (ECA) is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in U.S. EPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Estimated Chemical Concentration is the estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

Inland Surface Waters are all surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

Instantaneous Maximum Effluent Limitation: the highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation: the lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Maximum Daily Effluent Limitation (MDEL) means the highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median is the middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the $n/2$ and $n/2+1$).

Method Detection Limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater

than zero, as defined in title 40 of the Code of Federal Regulations, Part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (ML) is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Natural Groundwater is the term usually reserved for the subsurface water that occurs naturally beneath the water table in soils and geologic formations that are fully saturated.

Not Detected (ND) are those sample results less than the laboratory's MDL.

Overflow is a spill, release, discharge, or diversion of untreated or partially treated wastewater.

Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (PMP) means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Regional Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State or Regional Water Board.

Reporting Level (RL) is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a

sample result that are selected by the Regional Water Board either from Appendix 4 of the SIP in accordance with section 2.4.2 of the SIP or established in accordance with section 2.4.3 of the SIP. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the RL.

Satellite Collection System is the portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Source of Drinking Water is any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

Standard Deviation (σ) is a measure of variability that is calculated as follows:

$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

where:

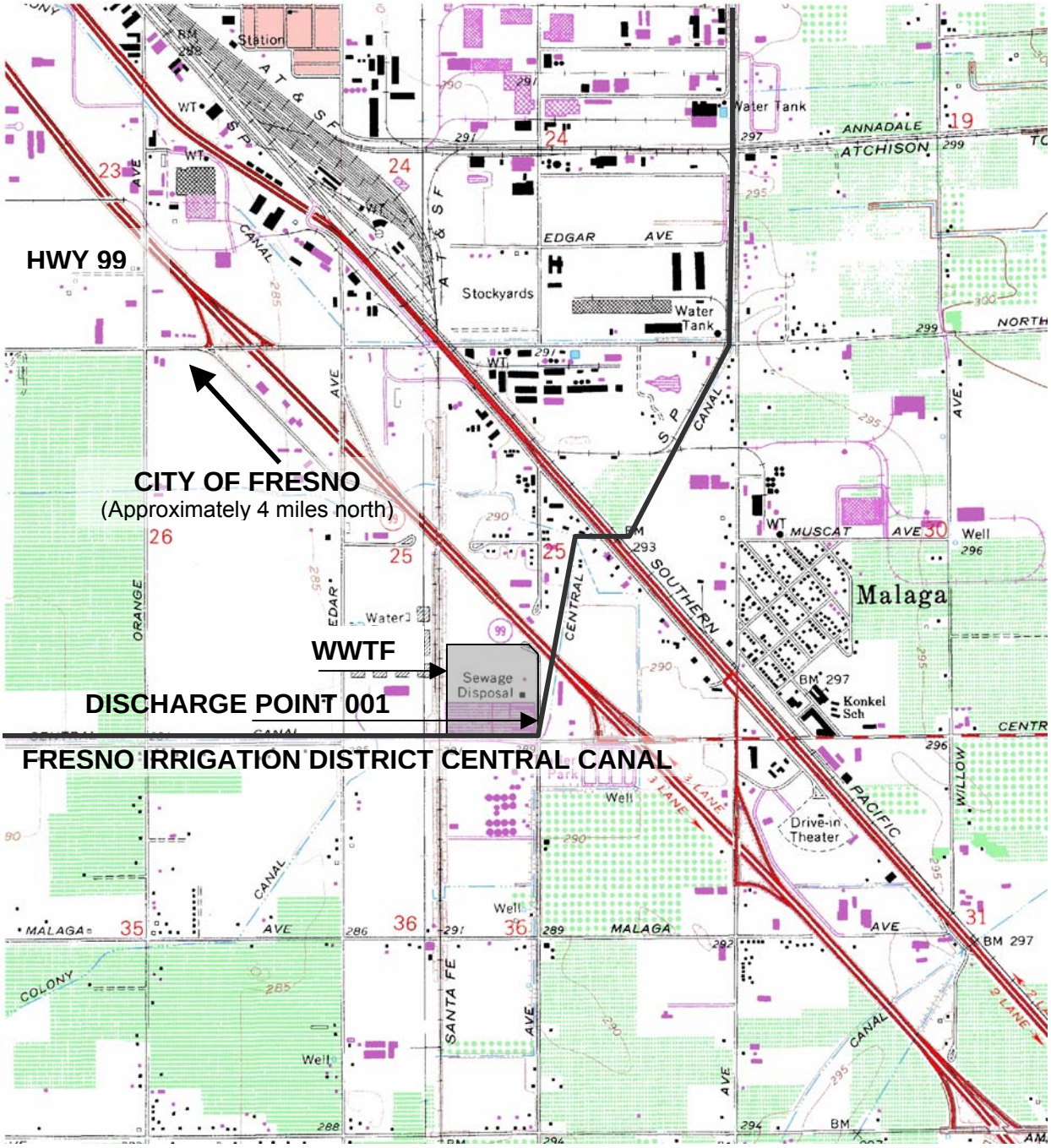
x is the observed value;

μ is the arithmetic mean of the observed values; and

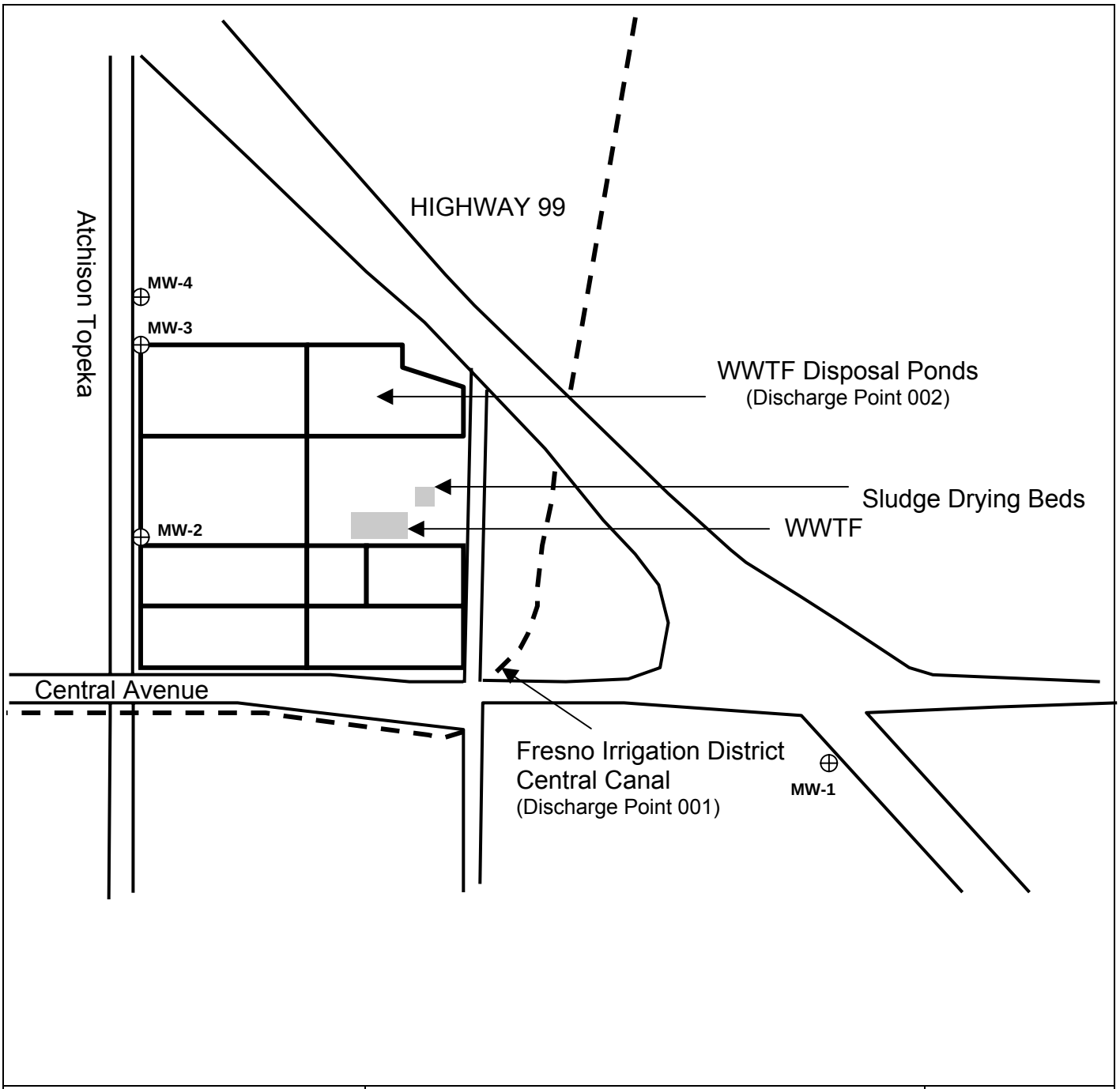
n is the number of samples.

Toxicity Reduction Evaluation (TRE) is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

ATTACHMENT B – MAP

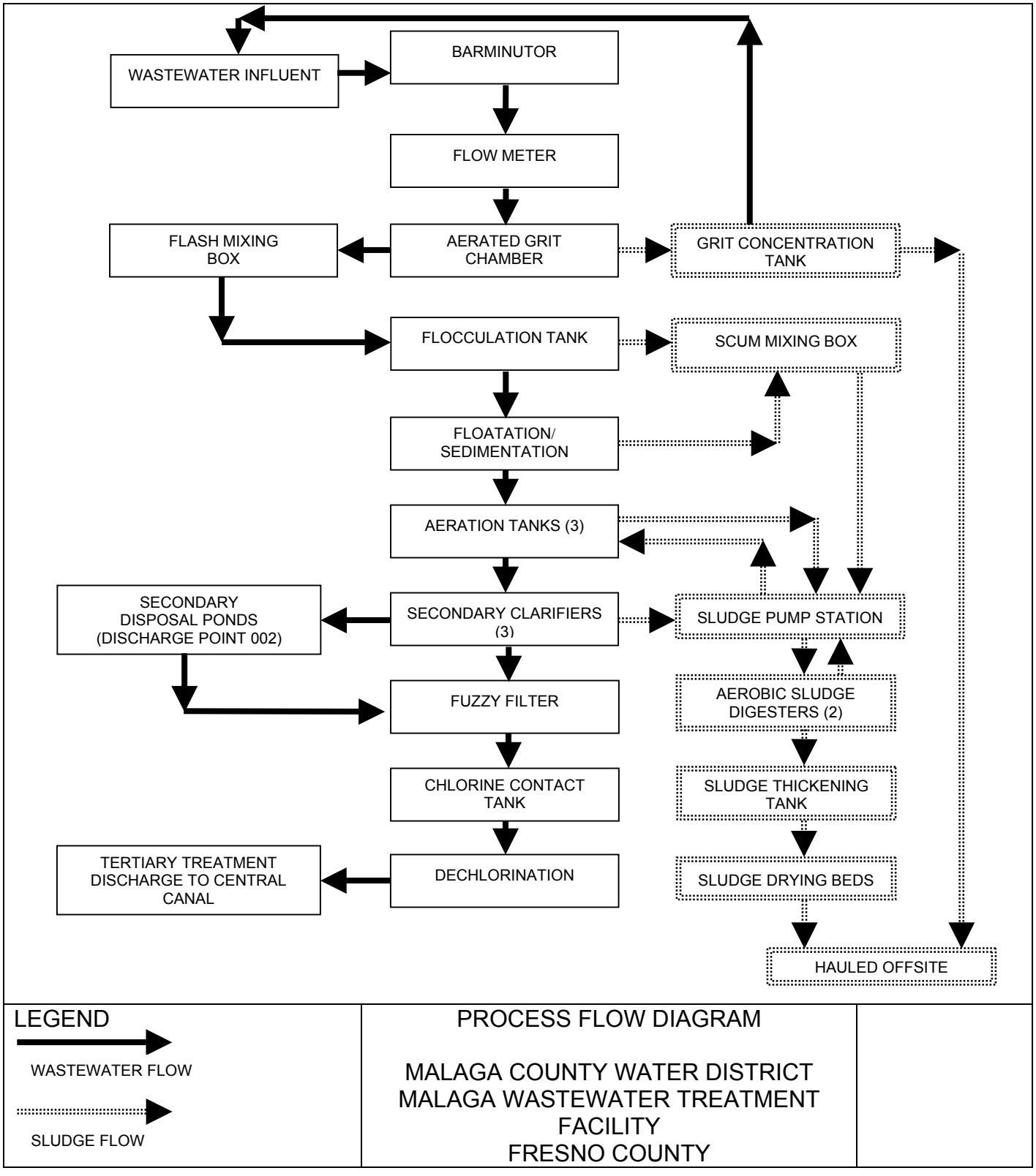


Drawing Reference: U.S.G.S TOPOGRAPHIC MAP MALAGA 7.5 MINUTE QUADRANGLE *Photorevised 1979* *Not to scale*	SITE LOCATION MAP MALAGA COUNTY WATER DISTRICT MALAGA WASTEWATER TREATMENT FACILITY FRESNO COUNTY	N W E S



LEGEND	GROUNDWATER MONITORING WELL MAP	
⊕ Monitoring Well – – – Receiving Water Revised from map by Provost & Pritchard *Not to scale (Locations Approximate)*	MALAGA COUNTY WATER DISTRICT MALAGA WASTEWATER TREATMENT FACILITY FRESNO COUNTY	N W E S

ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT D –STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 CFR 122.41(a).)

2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 CFR 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 CFR 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 CFR 122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 CFR 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 CFR 122.41(g).)

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 CFR 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 CFR 122.41(i); Water Code § 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 CFR 122.41(i)(1));

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 CFR 122.41(i)(2));

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 CFR 122.41(i)(3)); and

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 CFR 122.41(i)(4).)

G. Bypass

1. Definitions

   a. “Bypass” means the intentional diversion of waste streams from any portion of a treatment facility. (40 CFR 122.41(m)(1)(i).)

   b. “Severe property damage” means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 CFR 122.41(m)(1)(ii).)

2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedance of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 CFR 122.41(m)(2).)

3. Prohibition of bypass. Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless (40 CFR 122.41(m)(4)(i)):

   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 CFR 122.41(m)(4)(i)(A));

b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 CFR 122.41(m)(4)(i)(B)); and

c. The Discharger submitted notice to the Regional Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 CFR 122.41(m)(4)(i)(C).)

4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 CFR 122.41(m)(4)(ii).)

5. Notice

a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 CFR 122.41(m)(3)(i).)

b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 CFR 122.41(m)(3)(ii).)

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 CFR 122.41(n)(1).)

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 CFR 122.41(n)(2).

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 CFR 122.41(n)(3)):

a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 CFR 122.41(n)(3)(i));

b. The permitted facility was, at the time, being properly operated (40 CFR 122.41(n)(3)(ii));

c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 CFR 122.41(n)(3)(iii)); and

d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 CFR 122.41(n)(3)(iv).)

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 CFR 122.41(n)(4).

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 CFR 122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 CFR 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 CFR 122.41(l)(3); § 122.61.)

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 CFR 122.41(j)(1).)

B. Monitoring results must be conducted according to test procedures under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503 unless other test procedures have been specified in this Order. (40 CFR 122.41(j)(4); § 122.44(i)(1)(iv)).

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time. (40 CFR 122.41(j)(2).)

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 CFR 122.41(j)(3)(i));

2. The individual(s) who performed the sampling or measurements (40 CFR 122.41(j)(3)(ii));

3. The date(s) analyses were performed (40 CFR 122.41(j)(3)(iii));

4. The individual(s) who performed the analyses (40 CFR 122.41(j)(3)(iv));

5. The analytical techniques or methods used (40 CFR 122.41(j)(3)(v)); and

6. The results of such analyses. (40 CFR 122.41(j)(3)(vi).)

C. Claims of confidentiality for the following information will be denied (40 CFR 122.7(b)):

1. The name and address of any permit applicant or Discharger (40 CFR 122.7(b)(1)); and

2. Permit applications and attachments, permits and effluent data. (40 CFR 122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, State Water Board, or USEPA within a reasonable time, any information which the Regional Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 CFR 122.41(h); Wat. Code, § 13267.)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 CFR 122.41(k).)

2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA). (40 CFR 122.22(a)(3).).

3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or USEPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 CFR 122.22(b)(1));

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 CFR 122.22(b)(2)); and

   c. The written authorization is submitted to the Regional Water Board and State Water Board. (40 CFR 122.22(b)(3).)

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 CFR 122.22(c).)

5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware

that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." (40 CFR 122.22(d).)

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 CFR 122.22(l)(4).)

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 CFR 122.41(l)(4)(i).)

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board. (40 CFR 122.41(l)(4)(ii).)

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 CFR 122.41(l)(4)(iii).)

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 CFR 122.41(l)(5).)

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 CFR 122.41(l)(6)(i).)

2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 CFR 122.41(l)(6)(ii)):

   a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 CFR 122.41(l)(6)(ii)(A).)

b. Any upset that exceeds any effluent limitation in this Order. (40 CFR 122.41(l)(6)(ii)(B).)

3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 CFR 122.41(l)(6)(iii).)

F. Planned Changes

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 CFR 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) (40 CFR 122.41(l)(1)(i)); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order. (40 CFR 122.41(l)(1)(ii).)

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 CFR 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. (40 CFR 122.41(l)(2).)

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 CFR 122.41(l)(7).)

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 CFR 122.41(l)(8).)

VI. STANDARD PROVISIONS – ENFORCEMENT

A. The Regional Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13267, 13350, 13385, 13386, and 13387.

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Publicly-Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the Regional Water Board of the following (40 CFR 122.42(b)):

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants (40 CFR 122.42(b)(1)); and

2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order. (40 CFR 122.42(b)(2).)

3. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW. (40 CFR 122.42(b)(3).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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List of Tables

ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The 40 Code of Federal Regulations (CFR) 122.48 requires that all NPDES permits specify monitoring and reporting requirements. Water Code Sections 13267 and 13383 also authorize the Regional Water Quality Control Board (Regional Water Board) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements, which implement the federal and state regulations.

I. GENERAL MONITORING PROVISIONS

A. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring locations shall not be changed without notification to and the approval of this Regional Water Board.

B. Chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the California Department of Public Health. In the event a certified laboratory is not available to the Discharger, analyses performed by a non-certified laboratory will be accepted provided a Quality Assurance-Quality Control program is instituted by the laboratory. A manual containing the steps followed in this program must be kept in the laboratory and shall be available for inspection by Regional Water Board staff. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Regional Water Board.

C. All analyses shall be performed in a laboratory certified to perform such analyses by the California Department of Public Health. Laboratories that perform sample analyses shall be identified in all monitoring reports.

D. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.

E. Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
---	**M-INF**	WWTF influent at the inlet of the headworks
001	**M-001**	Following disinfection and prior to discharge to the Central Canal (36°40'43" N. Latitude and 119°40'41" W. Longitude).
002	**M-002**	After the secondary clarifiers, but prior to filtration units and discharge to the disposal ponds.
---	**R-001**	500 feet upstream of Discharge Point D-001
---	**R-002**	500 feet downstream of Discharge Point D-001
---	**SPL-001**	Water Supply
---	**G-001 – G-004**	Groundwater Monitoring Wells
---	**PND-001**	Disposal Ponds
---	**BIO-001**	Sludge drying beds before removal to storage or disposal

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location M-INF

1. The Discharger shall monitor influent to the WWTF at Monitoring Location M-INF as follows:

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	mgd	Metered	Continuous	
Biochemical Oxygen Demand (BOD) (5 day @ 20ºC)	mg/L	24-hr Composite[2]	1/Week	[1]
Total Suspended Solids (TSS)	mg/L	24-hr Composite[2]	1/Week	[1]

1. Pollutants shall be analyzed using the analytical methods described in 40 CFR 136
2. 24-hour flow proportional composite

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location M-001

1. The Discharger shall monitor at Monitoring Location M-001 as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level:

Table E-3. Tertiary Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency[4]	Required Analytical Test Method
Flow	mgd	Metered	Continuous[7]	
Turbidity	NTU	Grab	1/Week	
pH	standard units	Grab	1/Day	[1]

Table E-3. Tertiary Effluent Monitoring				
Parameter	**Units**	**Sample Type**	**Minimum Sampling Frequency[4]**	**Required Analytical Test Method**
Electrical Conductivity @ 25°C (EC)	µmhos/cm	Grab	1/Day	[1]
Temperature[3]	°F	Grab	1/Day	[1]
Residual Chlorine, Total (TRC)[9]	mg/L	Grab	1/Day	[1,2]
Settleable Solids (SS)	ml/L	Grab	1/Day	[1]
Total Coliform Organisms (TCO)	MPN/100 ml	Grab	1/Week	[1]
Biochemical Oxygen Demand (BOD) (5 day @ 20 °C)	mg/L	24-hr Composite[8]	1/Week	[1]
	Lbs/day	Calculated	1/Week	[1]
Total Suspended Solids (TSS)	mg/L	24-hr Composite[8]	1/Week	[1]
	Lbs/day	Calculated	1/Week	[1]
Total Dissolved Solids (TDS)	mg/L	24-hr Composite[8]	1/Month	[1]
Ammonia Nitrogen, Total (as N)[5]	mg/L	Grab	1/Month	[1]
	Lbs/day	Calculated	1/Month	[1]
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Month	[1]
	Lbs/day	Calculated	1/Month	[1]
Total Nitrogen	mg/L	Grab	1/Month	[1]
Phosphorus, Total (as P)	mg/L	Grab	1/Month	[1]
Aluminum[9]	µg/L	24-hr Composite[8]	1/Month	[1]
Boron	µg/L	24-hr Composite[8]	1/Month	[1]
Copper[9]	µg/L	24-hr Composite[8]	1/Month	[1]
Cyanide[9]	µg/L	24-hr Composite[8]	1/Month	[1]
Chloride	mg/L	24-hr Composite[8]	1/Month	[1]
Fluoride	mg/L	24-hr Composite[8]	1/Month	[1]
Diazinon[9]	µg/L	24-hr Composite[8]	1/Month	[1]
Bromoform[9]	µg/L	24-hr Composite[8]	1/Month	[1]
Chlorodibromomethane (Dibromochloromethane)[9]	µg/L	24-hr Composite[8]	1/Month	[1]
Dichlorobromomethane (Bromodichloromethane)[9]	µg/L	24-hr Composite[8]	1/Month	[1]
Minerals[6]	mg/L	24-hr Composite[8]	1/Year	[1]

1. Pollutants shall be analyzed using the analytical methods described in 40 CFR 136; for priority pollutants the methods must meet the lowest minimum levels (MLs) specified in Attachment 4 of the SIP, where no methods are specified for a given pollutant, by methods approved by this Regional Board or the State Board.

2. Total chlorine residual must be monitored with a method sensitive to and accurate at the permitted level of 0.01 mg/L.
3. Effluent Temperature monitoring shall be at the Outfall location.
4. If results appear to violate effluent limitations, but sampling frequency is not sufficient to validate violation, or indicates a violation and potential upset of the treatment process, the frequency shall be increased to confirm the magnitude and duration of violation, if any, and aid in identification and resolution of the problem.
5. Report as total ammonia nitrogen; record pH at time of collection.
6. Minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).
7. Flow shall be monitored continuously and recorded daily.
8. 24-hour flow proportioned composite.
9. If a statistically valid database establishes that reasonable potential no longer exists for this pollutant, the Executive Officer may, as appropriate, decrease the frequency or eliminate monitoring of the constituent in this table.

B. Monitoring Location M-002

1. The Discharger shall monitor at Monitoring Location M-002 as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level:

Table E-4. Secondary Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency[3]	Required Analytical Test Method
Flow	mgd	Metered	Continuous[2]	
Electrical Conductivity @ 25°C (EC)	µmhos/cm	Grab	1/Day	[1]
Biochemical Oxygen Demand (BOD) (5 day @ 20°C)	mg/L	Grab	1/Week	[1]
	lbs/day	Calculated	1/Week	[1]
Total Suspended Solids (TSS)	mg/L	Grab	1/Week	[1]
	lbs/day	Calculated	1/Week	[1]
Settleable Solids (SS)	ml/L	Grab	1/Week	[1]
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Quarter	[1]
Minerals[4]	mg/L	Grab	1/Year	[1]

1. Pollutants shall be analyzed using the analytical methods described in 40 CFR 136
2. Flow shall be monitored continuously and recorded daily.
3. If results appear to violate effluent limitations, but sampling frequency is not sufficient to validate violation, or indicates a violation and potential upset of the treatment process, the frequency shall be increased to confirm the magnitude and duration of violation, if any, and aid in identification and resolution of the problem.
4. Minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance)

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

A. Acute Toxicity Testing. The Discharger shall conduct acute toxicity testing to determine whether the effluent is contributing acute toxicity to the Central Canal. The Discharger shall meet the following acute toxicity testing requirements:

1. *Monitoring Frequency* – the Discharger shall perform **quarterly** acute toxicity testing, concurrent with effluent ammonia sampling.

2. *Sample Types* – For static non-renewal and static renewal testing, the samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location M-001.

3. *Test Species* – Test species shall be fathead minnows (*Pimephales promelas*).

4. *Methods* – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature, total residual chlorine, and pH shall be recorded at the time of sample collection. No pH adjustment may be made unless approved by the Executive Officer.

5. *Test Failure* – If an acute toxicity test does not meet all test acceptability criteria, as specified in the test method, the Discharger must re-sample and re-test as soon as possible, not to exceed 7 days following notification of test failure.

B. Chronic Toxicity Testing. The Discharger shall conduct three species chronic toxicity testing to determine whether the effluent is contributing chronic toxicity to the Central Canal. The Discharger shall meet the following chronic toxicity testing requirements:

1. *Monitoring Frequency* – the Discharger shall perform **quarterly** three species chronic toxicity testing.

2. *Sample Types* – Effluent samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location specified in the Monitoring and Reporting Program. The laboratory water control shall be used as the diluent.

3. *Sample Volumes* – Adequate sample volumes shall be collected to provide renewal water to complete the test in the event that the discharge is intermittent.

4. *Test Species* – Chronic toxicity testing measures sublethal (e.g. reduced growth, reproduction) and/or lethal effects to test organisms exposed to an effluent compared to that of the control organisms. The Discharger shall conduct chronic toxicity tests with:

   - The cladoceran, water flea, *Ceriodaphnia dubia* (survival and reproduction test);
   - The fathead minnow, *Pimephales promelas* (larval survival and growth test); and
   - The green alga, *Selenastrum capricornutum* (growth test).

5. *Methods* – The presence of chronic toxicity shall be estimated as specified in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition,* EPA/821-R-02-013, October 2002.

6. *Reference Toxicant* – As required by the SIP, all chronic toxicity tests shall be conducted with concurrent testing with a reference toxicant and shall be reported with the chronic toxicity test results.

7. *Dilutions* – The chronic toxicity testing shall be performed using the dilution series identified in Table E-5, below. The laboratory water control shall be used as the diluent.

8. *Test Failure* –The Discharger must re-sample and re-test as soon as possible, but no later than fourteen (14) days after receiving notification of a test failure. A test failure is defined as follows:

   a. The reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition*, EPA/821-R-02-013, October 2002 (Method Manual), and its subsequent amendments or revisions; or

   b. The percent minimum significant difference (PMSD) measured for the test exceeds the upper PMSD bound variability criterion in Table 6 on page 52 of the Method Manual. (A retest is only required in this case if the test results do not exceed the monitoring trigger specified in Special Provisions VI.C.2.a.iii.)

Table E-5. Chronic Toxicity Testing Dilution Series

Sample	Dilutions (%)					Controls	
	100	75	50	25	12.5	Receiving Water	Laboratory Water
% Effluent	100	75	50	25	12.5	0	0
% Laboratory Water	0	25	50	75	87.5	0	100

C. WET Testing Notification Requirements. The Discharger shall notify the Regional Water Board within 24-hrs after the receipt of test results exceeding the monitoring trigger during regular or accelerated monitoring, or an exceedance of the acute toxicity effluent limitation.

D. WET Testing Reporting Requirements. All toxicity test reports shall include the contracting laboratory's complete report provided to the Discharger and shall be in accordance with the appropriate "Report Preparation and Test Review" sections of the method manuals. At a minimum, whole effluent toxicity monitoring shall be reported as follows:

1. **Chronic WET Reporting.** Regular chronic toxicity monitoring results shall be reported to the Regional Water Board within 30 days following completion of the test, and shall contain, at minimum:

a. The results expressed in TUc, measured as 100/NOEC, and also measured as $100/LC_{50}$, $100/EC_{25}$, $100/IC_{25}$, and $100/IC_{50}$, as appropriate.

b. The statistical methods used to calculate endpoints;

c. The statistical output page, which includes the calculation of the percent minimum significant difference (PMSD);

d. The dates of sample collection and initiation of each toxicity test; and

e. The results compared to the numeric toxicity monitoring trigger.

Additionally, the monthly discharger self-monitoring reports shall contain an updated chronology of chronic toxicity test results expressed in TUc, and organized by test species, type of test (survival, growth or reproduction), and monitoring frequency, i.e., either quarterly, monthly, accelerated, or TRE. (Note: items a through c, above, are only required when testing is performed using the full dilution series.)

2. **Acute WET Reporting.** Acute toxicity test results shall be submitted with the monthly discharger self-monitoring reports and reported as percent survival.

3. **TRE Reporting.** Reports for Toxicity Reduction Evaluations shall be submitted in accordance with the schedule contained in the Discharger's approved TRE Work Plan.

4. **Quality Assurance (QA).** The Discharger must provide the following information for QA purposes:

   a. Results of the applicable reference toxicant data with the statistical output page giving the species, NOEC, LOEC, type of toxicant, dilution water used, concentrations used, PMSD, and dates tested.

   b. The reference toxicant control charts for each endpoint, which include summaries of reference toxicant tests performed by the contracting laboratory.

   c. Any information on deviations or problems encountered and how they were dealt with.

VI. POND MONITORING REQUIREMENTS

A. Monitoring Location PND-001

Permanent markers shall be placed in the evaporation/percolation ponds with calibration marks indicating the water level at design capacity and available operational freeboard. In addition, the Discharger shall inspect the conditions of the ponds once per week and write visual observations of potential problems in a bound logbook. Notations shall include observations of whether weeds are developing in the water or the pond surface, and their locations; whether dead algae, vegetation, scum, or debris are accumulating on the pond surface, and their location; whether borrowing animals or

insects are present; and the color of the pond. A copy of the entries made in the log each month shall be submitted with the monitoring report the following month. Where the operation and maintenance (O&M) manual requires remedial action, the Discharger shall briefly explain the action to be taken to correct the discrepancy. Pond monitoring shall include the following:

Table E-6. Freeboard and Dissolved Oxygen Pond Monitoring

Constituent	Units	Sample Type	Frequency
Freeboard	feet[1]	Observation	1/Week
Dissolved Oxygen[2]	mg/L	Grab	1/Week[3]

1. To the nearest tenth of a foot.
2. Samples shall be collected from a depth of one-foot, opposite the inlet, between 0800 and 0900 hours.
3. Should sampling indicate DO < 1.0 mg/L or disposal ponds produce objectionable odors, the monitoring frequency for the subject pond shall be increased to daily until DO ≥ 1.0 mg/L, and/or odor-producing conditions are resolved.

VII. RECLAMATION MONITORING REQUIREMENTS

Not Applicable

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

A. Monitoring Locations R-001 and R-002

1. The Discharger shall monitor the Central Canal at Monitoring Locations R-001 and R-002 as follows:

Table E-7a. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency[3]	Required Analytical Test Method
Flow	mgd	Grab	Continuous	[2]
pH	Standard Units	Grab	1/Day	[1]
Electrical Conductivity @ 25°C (EC)	umhos/cm	Grab	1/Day	[1]
Temperature	°F	Grab	1/Day	[1]
Chlorine, Total Residual	mg/L	Grab	1/Day	[1]
Dissolved Oxygen (DO)	mg/L	Grab	1/Month	[1]
Aluminum	µg/L	Grab	1/Month	[1]
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Month	[1]
Ammonia, Un-ionized (as N)[4]	mg/L	Calculated	1/Month	[1]
Fecal Coliform Organisms	MPN/100 ml	Grab	1/Month	[1]
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Month	[1]

Table E-7a. Receiving Water Monitoring Requirements				
Parameter	**Units**	**Sample Type**	**Minimum Sampling Frequency[3]**	**Required Analytical Test Method**
Total Kjeldahl Nitrogen (TKN) (as N)	mg/L	Grab	1/Month	[1]
Phosphorus, Total (as P)	mg/L	Grab	1/Month	[1]
Turbidity	NTU	Grab	1/Month	[1]
Minerals[5]	mg/L	Grab	1/Year	[1]

1. Pollutants shall be analyzed using the analytical methods described in 40 CFR 136; for priority pollutants the methods must meet the lowest minimum levels (MLs) specified in Attachment 4 of the SIP, where no methods are specified for a given pollutant, by methods approved by this Regional Board or the State Board.
2. Flow shall be monitored continuously and recorded daily.
3. If results appear to violate effluent limitations, but sampling frequency is not sufficient to validate violation, or indicates a violation and potential upset of the treatment process, the frequency shall be increased to confirm the magnitude and duration of violation, if any, and aid in identification and resolution of the problem.
4. Temperature and pH shall be determined at the time of sample collection for the calculation of un-ionized ammonia.
5. Minerals shall include at least total dissolved solids, chloride, sulfate, bicarbonate alkalinity, carbonate alkalinity, calcium, magnesium, potassium, sodium, boron, iron, phosphate, manganese, hardness, and all major anions and cations. Analyses should be accompanied by an anion/cation balance demonstrating that analyses are complete.

2. In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by R-001 and R-002. Attention shall be given to the presence of:

   i. Floating or suspended matter
   ii. Discoloration
   iii. Bottom deposits
   iv. Aquatic life
   v. Visible films, sheens coatings
   vi. Fungi, slimes, or objectionable growths
   vii. Potential nuisance conditions

   Notes on receiving water conditions shall be summarized in the monitoring reports.

B. Monitoring Location G-001, G-002, G-003, G-004

1. The Discharger shall monitor in groundwater at G-001- G-004 as follows:

Table E-7b. Ground Water Monitoring Requirements				
Parameter	**Units**	**Sample Type**	**Minimum Sampling Frequency**	**Required Analytical Test Method**
Depth to groundwater	Feet[3]	Measure	1/Month[2]	NA
Groundwater elevation	Feet[3]	Calclulate	1/Month[2]	NA
pH	Standard Units	Grab	1/Month[2]	[1]
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Month[2]	[1]
Electrical Conductivity @ 25ºC (EC)	µmhos/cm	Grab	1/Month[2]	[1]
Minerals[4]	mg/L	Grab	1/Year	[1]

1. Pollutants shall be analyzed using the analytical methods described in 40 CFR 136; for priority pollutants the methods must meet the lowest minimum levels (MLs) specified in Attachment 4 of the SIP, where no methods are specified for a given pollutant, by methods approved by this Regional Board or the State Board.
2. Monthly during the first year of monitoring and annually thereafter.
3. To the nearest hundredth, above mean sea level.
4. Minerals shall include at least total dissolved solids, chloride, sulfate, bicarbonate alkalinity, carbonate alkalinity, calcium, magnesium, potassium, sodium, boron, iron, phosphate, manganese, and all major anions and cations. Analyses should be accompanied by an anion/cation balance demonstrating that analyses are complete.

IX. OTHER MONITORING REQUIREMENTS

A. Priority Pollutants

The State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP). The SIP states that the Regional Water Boards will require periodic monitoring for pollutants for which criteria or objectives apply and for which no effluent limitations have been established. Accordingly, the Regional Water Board is requiring, as part of this Order, that the Discharger conduct annual **(1/Year)** effluent monitoring (Monitoring Location M-001) of priority pollutants. Priority pollutants are defined as USEPA Priority Pollutants and consist of the constituents listed in the most recent National Toxics Rule and California Toxics Rule. The Discharger must analyze pH and hardness of the effluent and receiving water at the same time as priority pollutants.

B. Sludge/Biosolids

Sludge in this document means the solid, semisolid, and liquid residues removed during the primary, secondary, or advanced wastewater treatment processes. Biosolids refers to sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agriculture, silviculture, horticulture, and land reclamation activities. Residues from the sludge thickener and drying beds are assumed to qualify as Class B biosolids while residues removed from ponds are assumed to require further treatment to qualify as biosolids. For convenience, the following refers to sludge but is applicable to biosolids as well.

1. **Monitoring Location BIO-001**

   a. A composite sample of sludge shall be collected annually at Monitoring Location BIO-001 in accordance with EPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989, and tested for priority pollutants listed in 40 CFR 122 Appendix D, Tables II and III (excluding total phenols).

   b. A composite sample of sludge shall be collected when sludge is removed from the ponds for disposal in accordance with USEPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989, and tested for the metals listed in Title 22.

c. Sampling records shall be retained for a minimum of **five years**. A log shall be kept of sludge quantities generated and of handling and disposal activities. The frequency of entries is discretionary; however, the log should be complete enough to serve as a basis for part of the annual report.

d. Upon removal of sludge, the Discharger shall submit characterization of sludge quality, including sludge percent solids and quantitative results of chemical analysis for the priority pollutants listed in 40 CFR 122 Appendix D, Tables II and III (excluding total phenols). Suggested methods for analysis of sludge are provided in USEPA publications titled "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods" and "Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater". Recommended analytical holding times for sludge samples should reflect those specified in 40 CFR 136.6.3(e). Other guidance is available in USEPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989.

Table E-8. Sludge Monitoring Requirements (Monitoring Location BIO-001)

Parameter	Units	Sample Type	Minimum Sampling Frequency[2]	Required Analytical Test Method
pH	Standard Units	Grab	1/Year	[1, 2]
Fecal Coliform	MPN/100 ml	Grab	1/Year	[1, 2]
Ammonia Nitrogen, Total (as N)	mg/kg	Grab	1/Year	[1, 2]
Nitrate Nitrogen, Total (as N)	mg/kg	Grab	1/Year	[1, 2]
Phosphorous, Total	mg/kg	Grab	1/Year	[1, 2]
Potassium, Total	mg/kg	Grab	1/Year	[1, 2]
Metals[3]	mg/kg	Grab	1/Year	[1, 2]

1. Pollutants shall be analyzed using the analytical methods described in 40 CFR 136; for priority pollutants the methods must meet the lowest minimum levels (MLs) specified in Attachment 4 of the SIP, where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board.
2. When sludge is removed from the treatment units (or at least annually), but prior to disposal, a composite sample of sludge shall be analyzed, on a dry weight basis.
3. Arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel selenium and zinc analysis of soluble concentrations of heavy metals shall also be included as needed. Sampling records shall be retained for a minimum of five years. A log shall be kept of sludge quantities generated and of handling and disposal activities. Additional sludge sampling may be requested at subsequent intervals, depending upon review of analytical results. An annual sludge monitoring report shall be submitted and shall include all of the above information.

C. Municipal Water Supply

1. Monitoring Location SPL-001

The Discharger shall monitor the Municipal Water Supply at SPL-001 as follows. A sampling station shall be established where a representative sample of the

municipal water supply can be obtained. Municipal water supply samples shall be collected at approximately the same time as effluent samples.

Table E-9. Municipal Water Supply Wells Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Month	[1]
Electrical Conductivity @ 25ºC (EC) [2]	µmhos/cm	Grab	1/Month	[1]
Minerals[3]	mg/L	Grab	1/Year	[1]

1. Pollutants shall be analyzed using the analytical methods described in 40 CFR 136; for priority pollutants the methods must meet the lowest minimum levels (MLs) specified in Attachment 4 of the SIP, where no methods are specified for a given pollutant, by methods approved by this Regional Board or the State Board.
2. As the source water is from more than one well, the EC results shall be reported as a weighted average and include copies of supporting calculations.
3. Minerals shall include at least total dissolved solids, chloride, sulfate, bicarbonate alkalinity, carbonate alkalinity, calcium, magnesium, potassium, sodium, boron, iron, phosphate, manganese, and all major anions and cations. Analyses should be accompanied by an anion/cation balance demonstrating that analyses are complete.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.

2. Upon written request of the Regional Water Board, the Discharger shall submit a summary monitoring report. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year(s).

3. **Compliance Time Schedules.** For compliance time schedules included in the Order, the Discharger shall submit to the Regional Water Board, on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Water Board by letter when it returns to compliance with the compliance time schedule.

4. The Discharger shall report to the Regional Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986.

5. **Reporting Protocols.** The Discharger shall report with each sample result the applicable Reporting Level (RL) and the current Method Detection Limit (MDL), as determined by the procedure in Part 136.

The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

a. Sample results greater than or equal to the RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

   For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (± a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

d. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from *extrapolation* beyond the lowest point of the calibration curve.

6. **Multiple Sample Data.** When determining compliance with an AMEL , AWEL, or MDEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

   a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

   b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

B. Self Monitoring Reports (SMRs)

1. At any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit Self-Monitoring Reports (SMRs) using

the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal

2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit continuously, daily, weekly, monthly, quarterly and annual SMRs including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order.
3. With the exception of flow, all constituents monitored on a continuous basis (metered), shall be reported as daily maximums, daily minimums, and daily averages; flow shall be reported as the total volume discharged per day for each day of discharge.
4. If the Discharger monitors any pollutant at the locations designated herein more frequently than is required by this Order, the results of such monitoring shall be included in the calculation and reporting of the values required in the discharge monitoring report form. Such increased frequency shall be indicated on the discharge monitoring report form.
5. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-10. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	Permit effective date	All	First day of second calendar month following month of sampling
1 / Day	Permit effective date	Calendar day (Midnight through 11:59 PM)	First day of second month following month of sampling
1 / Week 2 / Week 3 / Week	Sunday following permit effective date or on permit effective date if on a Sunday	Sunday through Saturday	First day of second calendar month following month of sampling
1 / Month	First day of calendar month following permit effective date or on permit effective date if that date is first day of the month	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1 / Quarter 2 / Quarter	Closest of January 1, April 1, July 1, or October 1 following (or on) permit effective date	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31	May 1 August 1 November 1 February 1
1 / Year	January 1 following (or on) permit effective date	January 1 through December 31	February 1

6. In addition to the signatory requirements of Standard Provisions (Attachment D), all monitoring reports shall be signed: by the chief operator of the Facility and, if the

chief operator of the Facility is not in direct line of supervision of the laboratory function for a discharger conducting any of its own analyses, also by the chief of the laboratory.

7. The Discharger shall submit SMRs in accordance with the following requirements:

   a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The highest daily maximum for the month, monthly and weekly averages, and medians, and removal efficiencies (%) for BOD and Total Suspended Solids, shall be determined and recorded as needed to demonstrate compliance. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.

   b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory.

   c. SMRs must be submitted to the Regional Water Board, signed and certified as required by the Standard Provisions (Attachment D) and 6, above, to the address listed below:

      Regional Water Quality Control Board
      NPDES Unit
      Central Valley Region
      1685 "E" Street
      Fresno, CA 93706-2007

C. Discharge Monitoring Reports (DMRs)

1. As described in Section X.B.1, above, at any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit SMRs that will satisfy federal requirements for submittal of Discharge Monitoring Reports (DMRs). Until such notification is given, the Discharger shall submit DMRs in accordance with the requirements described below.

2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharger shall submit the original DMR and one copy of the DMR to the address listed below:

STANDARD MAIL	FEDEX/UPS/ OTHER PRIVATE CARRIERS
State Water Resources Control Board Division of Water Quality c/o DMR Processing Center PO Box 100 Sacramento, CA 95812-1000	State Water Resources Control Board Division of Water Quality c/o DMR Processing Center 1001 I Street, 15th Floor Sacramento, CA 95814

All discharge monitoring results must be reported on the official USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated will not be accepted unless they follow the exact same format of EPA Form 3320-1.

D. Other Reports

1. **Progress Reports.** As specified in the compliance time schedules required in Special Provisions VI, progress reports shall be submitted in accordance with the following reporting requirements. At minimum, the progress reports shall include a discussion of the status of final compliance, whether the Discharger is on schedule to meet the final compliance date, and the remaining tasks to meet the final compliance date.

Table E-11. Reporting Requirements for Special Provisions Progress Reports

Special Provision	Reporting Requirements
BPTC Evaluation Tasks	**1 February**, annually**,** following completion of Task 4 of BPTC Evaluation Compliance Schedule
Compliance Schedules for ammonia, bromoform, bromodichloromethane, and Dibromochloromethane compliance with final effluent limitations.	**1 June**, annually, until final compliance

2. Within **60 days** of permit adoption, the Discharger shall submit a report outlining minimum levels, method detection limits, and analytical methods for approval, with a goal to achieve detection levels below applicable water quality criteria. At a minimum, the Discharger shall comply with the monitoring requirements for CTR constituents as outlined in Section 2.3 and 2.4 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*, adopted 2 March 2000 by the State Water Resources Control Board. All peaks identified by analytical methods shall be reported.

3. **Annual Operations Report**. By **30 January** of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

   a. The names, certificate grades, and general responsibilities of all persons employed at the Facility.

   b. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.

c. A statement certifying when the flow meter(s) and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration.

d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment plant as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.

e. The Discharger may also be requested to submit an annual report to the Regional Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

f. The available pond storage capacity as determined on or about 15 November of the prior year.

4. **Annual Pretreatment Reporting Requirements.** The Discharger shall submit annually a report to the Regional Water Board, with copies to USEPA Region 9 and the State Water Board, describing the Discharger's pretreatment activities over the previous 12 months. In the event that the Discharger is not in compliance with any conditions or requirements of this Order, including noncompliance with pretreatment audit/compliance inspection requirements, then the Discharger shall also include the reasons for noncompliance and state how and when the Discharger shall comply with such conditions and requirements.

   An annual report shall be submitted by **28 February** and include at least the following items:

   a. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling of the POTWs influent and effluent for those pollutants USEPA has identified under Section 307(a) of the CWA which are known or suspected to be discharged by industrial users.

      Sludge shall be sampled during the same 24-hour period and analyzed for the same pollutants as the influent and effluent sampling and analysis. The sludge analyzed shall be a composite sample of a minimum of 12 discrete samples taken at equal time intervals over the 24-hour period. Wastewater and sludge sampling and analysis shall be performed at least annually. The discharger shall also provide any influent, effluent or sludge monitoring data for nonpriority pollutants which may be causing or contributing to Interference, Pass-Through or adversely impacting sludge quality. Sampling and analysis shall be performed in accordance with the techniques prescribed in 40 CFR 136 and amendments thereto.

b. A discussion of Upset, Interference, or Pass-Through incidents, if any, at the treatment plant, which the Discharger knows or suspects were caused by industrial users of the POTW. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name and address of, the industrial user(s) responsible. The discussion shall also include a review of the applicable pollutant limitations to determine whether any additional limitations, or changes to existing requirements, may be necessary to prevent Pass-Through, Interference, or noncompliance with sludge disposal requirements.

c. The cumulative number of industrial users that the Discharger has notified regarding Baseline Monitoring Reports and the cumulative number of industrial user responses.

d. An updated list of the Discharger's industrial users including their names and addresses, or a list of deletions and additions keyed to a previously submitted list. The Discharger shall provide a brief explanation for each deletion. The list shall identify the industrial users subject to federal categorical standards by specifying which set(s) of standards are applicable. The list shall indicate which categorical industries, or specific pollutants from each industry, are subject to local limitations that are more stringent than the federal categorical standards. The Discharger shall also list the noncategorical industrial users that are subject only to local discharge limitations. The Discharger shall characterize the compliance status through the year of record of each industrial user by employing the following descriptions:

   i. complied with baseline monitoring report requirements (where applicable);

   ii. consistently achieved compliance;

   iii. inconsistently achieved compliance;

   iv. significantly violated applicable pretreatment requirements as defined by 40 CFR 403.8(f)(2)(vii);

   v. complied with schedule to achieve compliance (include the date final compliance is required);

   vi. did not achieve compliance and not on a compliance schedule; and

   vii. compliance status unknown.

   A report describing the compliance status of each industrial user characterized by the descriptions in items iii. through vii. above shall be submitted for each calendar quarter **within 21 days of the end of the quarter**. The report shall identify the specific compliance status of each such industrial user and shall also identify the compliance status of the POTW with regards to audit/pretreatment compliance inspection requirements. If none of the aforementioned conditions exist, at a minimum, a letter indicating that all industries are in compliance and no

violations or changes to the pretreatment program have occurred during the quarter must be submitted. The information required in the fourth quarter report shall be included as part of the annual report. This quarterly reporting requirement shall commence upon issuance of this Order.

e. A summary of the inspection and sampling activities conducted by the Discharger during the past year to gather information and data regarding the industrial users. The summary shall include:

   i. the names and addresses of the industrial users subjected to surveillance and an explanation of whether they were inspected, sampled, or both and the frequency of these activities at each user; and

   ii. the conclusions or results from the inspection or sampling of each industrial user.

f. A summary of the compliance and enforcement activities during the past year. The summary shall include the names and addresses of the industrial users affected by the following actions:

   i. Warning letters or notices of violation regarding the industrial users' apparent noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the apparent violation concerned the federal categorical standards or local discharge limitations.

   ii. Administrative orders regarding the industrial users noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.

   iii. Civil actions regarding the industrial users' noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.

   iv. Criminal actions regarding the industrial users noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.

   v. Assessment of monetary penalties. For each industrial user identify the amount of the penalties.

   vi. Restriction of flow to the POTW.

   vii. Disconnection from discharge to the POTW.

   viii. A summary of public participation activities to involve and inform the public.

ix. A description of any changes in sludge disposal methods and a discussion of any concerns not described elsewhere in the report.

g. A description of any significant changes in operating the pretreatment program which differ from the information in the Discharger's approved Pretreatment Program including, but not limited to, changes concerning: the program's administrative structure, local industrial discharge limitations, monitoring program or monitoring frequencies, legal authority or enforcement policy, funding mechanisms, resource requirements, or staffing levels.

h. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases.

Duplicate signed copies of these Pretreatment Program reports shall be submitted to the Regional Water Board and the:

State Water Resources Control Board
Division of Water Quality
P.O. Box 944213
Sacramento, CA 94244-2130

and the

Regional Administrator
U.S. Environmental Protection Agency W-5
75 Hawthorne Street
San Francisco, CA 94105

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for dischargers in California. Only those sections or subsections of this Order identified as "not applicable" have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as "not applicable" are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	5D100124001
Discharger	Malaga County Water District
Name of Facility	Malaga Wastewater Treatment Facility
Facility Address	3749 South Maple Avenue
	Fresno, CA 93725
Facility Contact, Title and Phone	Russ Holcomb, General Manager, (559) 485-7353
Authorized Person to Sign and Submit Reports	Russ Holcomb, General Manager, (559) 485-7353
Mailing Address	3580 S. Frank Street, Fresno, CA 93725
Billing Address	3580 S. Frank Street, Fresno, CA 93725
Type of Facility	Publicly Owned Treatment Works (POTW), SIC Code: 4952
Major or Minor Facility	Major
Threat to Water Quality	2
Complexity	A
Pretreatment Program	Y
Reclamation Requirements	Not Applicable
Facility Permitted Flow	Up to 0.45 mgd to Central Canal.
	Up to 0.85 mgd to Disposal Ponds
	Total Flow of 1.2 mgd
Facility Design Flow	Same as Facility Permitted Flow.
Watershed	South Valley Floor Hydrologic Unit (551.00).
Receiving Water	Central Canal and groundwater.
Receiving Water Type	Surface water and groundwater.

A. The Malaga County Water District (hereinafter Discharger) is the owner and operator of the Malaga Wastewater Treatment Facility (hereinafter Facility or WWTF), a publicly owned treatment works (POTWs).

B. For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

C. The Facility discharges tertiary treated effluent to the Fresno Irrigation District's Central Canal (Discharge Point 001), a water of the United States, and to disposal ponds (Discharge Point 002). These discharges are currently regulated by Waste Discharge Requirements (WDRs) Order No. 99-100, which was adopted on 28 July 1999 and expired on 1 July 2004. The terms and conditions of the current Order were automatically continued and remain in effect until new Waste Discharge Requirements and renewed National Pollutant Discharge Elimination System (NPDES) permit become effective pursuant to this Order.

D. The Discharger filed a report of waste discharge and submitted an application for renewal of its WDRs and NPDES permit on 31 December 2003. Supplemental information was received on 23 January 2006, 9 March 2006 and 17 November 2006. A site visit was conducted on 15 July 2004 and 4 June 2007 to observe operations and collect additional data to develop permit limitations and conditions.

II. FACILITY DESCRIPTION

The Facility is situated on 36 acres at the northwest corner of Central and Maple Avenues. The Discharger provides sewerage service to domestic and industrial users for the unincorporated community of Malaga and serves a population of approximately 1,000 people. The secondary treatment design daily average flow capacity is 1.2 mgd and some of this can be further subjected to tertiary treatment, up to the daily average flow capacity of 0.45 mgd. The disposal ponds have disposal capacity of about 0.85 mgd, but this becomes less without pond maintenance as percolation rates decrease.

A. Site Conditions.

1. Average annual precipitation and pan evaporation in the area are approximately 10 and 65 inches, respectively.

2. Surface soils in the vicinity are moderately permeable and classified as Hesperia fine sandy loam, consisting of well-drained, mainly sandy loam underlain by a silty layer according to the Soil Conservation Service 1962 Soil Survey of the Eastern Fresno Area. The soil has a hardpan layer at five to seven feet that is underlain by alluvial fan deposits of alternating sand and clay layers.

3. First encountered groundwater is 55 to 65 feet below ground surface.

B. Description of Wastewater and Biosolids Treatment or Controls

1. **Industrial Pretreatment Program.** Inflows originate from about 1,000 domestic users, which account for about 35 percent of the flows, and 140 permitted industrial users, which is the remaining 65 percent. The largest industrial users are food processors, glass manufactures, and truck and car washes, as well as process water from the Rio Bravo Power Plant.

   Provision H.10 of WDRs Order No. 99-100 required the District to submit a series of reports to develop an adequate industrial pretreatment program (IPP) by 1 May 2000 for Regional Water Board approval. When the District did not complete this Provision, the District was issued Cease and Desist Order No. 5-01-001, which required, in part, the District to develop an approved IPP by 1 October 2001.

   On 6 October 2004, the Discharger submitted its IPP and draft ordinance amending its Municipal Code. The Regional Water Board provided comments dated 7 February 2005, and State Water Board Office of Chief Counsel deemed the ordinance adequate on 29 December 2005. This Order approves the City's Industrial Pretreatment Program.

2. **Treatment Works.** The treatment train consists of three screw pumps (one in service at a time), screening, an aerated grit chamber, flocculation tank, one primary clarifier which consists of a clarifier/DAF unit (unit out of service), three activated sludge aeration basins, two aerobic sludge digesters, and three secondary clarifiers (two are out of service). The tertiary WWTF consists of the secondary WWTF followed by filtration ("fuzzy" filter) and disinfection by chlorination/dechlorination. In the information submitted to supplement the RWD, the District re-rates the design capacity of the tertiary system to 0.45 mgd and therefore requests the permitted discharge flow equal this at Discharge Point 001.

   The existing clarifier/DAF structure was constructed 35 years ago. Surfacing effluent adjacent to the DAF structure has been traced back to the DAF structure. The District performed an investigation of all adjacent structures and determined that the concrete structure of the DAF has cracks that allow untreated wastewater to escape the structure. The District recently received funding to re-epoxy the DAF structure to repair the leaks and repairs are currently underway.

   The District intends to obtain additional funding to implement ultraviolet disinfection (UV) for its method of disinfection as it committed to as part of an enforcement settlement. The District will complete this project by 1 October 2008 and a time schedule is incorporated into this Order to complete this project.

3. **Sludge and Biosolids Handling.** Sludge and other solids from the treatment process are discharged to two aerobic digesters and a sludge thickening tank, and then discharged to unlined sludge drying beds for dewatering. Dewatered sludge or biosolids, was historically land applied to areas surrounding the WWTF, including areas directly adjacent to the sludge drying beds. The District now stockpiles the solids for up to two years at which point it contracts with a third party for hauling off-

site for disposal, reuse or further treatment prior to reuse. As described in this Fact Sheet, historical sludge handling practices unreasonably degraded groundwater. This Order contains a time schedule to complete the necessary improvements to existing sludge handling practices as part of BPTC evaluation tasks.

C. Discharge Points and Surface Waters

1. The WWTF is in Section 25, T14S, R20E, MDB&M, as shown in Attachment B (Figure B-1), a part of this Order.

2. Up to 0.45 mgd is discharged to the Central Canal from Discharge Point 001.

3. Central Canal water is used for irrigation of alfalfa, almonds, vineyards, truck crops (vegetables, onions, strawberries), oats, peaches, corn, cotton, plums, and pasture. Water not used for irrigation flows to Fresno Slough. During years of heavy rainfall, water flows from Fresno Slough to the Mendota Pool along the San Joaquin River.

D. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

1. Effluent limitations contained in WDRs Order No. 99-100 for discharges from Discharge Point D-001 to Central Canal and representative monitoring data from Monitoring Location M-001 are summarized below:

Table F-2. Historic Tertiary Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (From January 2000 – April 2007)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge[1]	Highest Average Weekly Discharge	Highest Daily Discharge
Conventional Pollutants							
Biochemical Oxygen Demand (BOD) (5 day @ 20ºC)	mg/L	20	--	40	6.3	--	37
pH	s.u.[4]	--	--	6.0-9.0[5]	--	--	6.0-9.3[5]
Total Suspended Solids (TSS)	mg/L	20	--	40	43	--	61
Priority Pollutants							
Not Applicable							
Non-Conventional Pollutants							
Ammonia Nitrogen, Total (as N)	mg/L	2	--	--	6.1	--	--
Boron, Total Recoverable	mg/L	0.4	--	--	0.2	--	--
Carbonate + Bicarbonate (as $CaCo_3$)	mg/L	50	--	--	--	--	--

Table F-2. Historic Tertiary Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (From January 2000 – April 2007)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge[1]	Highest Average Weekly Discharge	Highest Daily Discharge
Chloride	mg/L	175	--	--	100	--	--
Chlorine, Total Residual	mg/L	--	--	0.1	--	--	0.2
Electrical conductivity @ 25ºC (EC)	µmhos/cm	--	--	1,000[6]	--	--	1,337
Flow	mgd	0.35	--	--	0.34	--	--
Settleable Solids	ml/L	0.2	--	0.5	0.1	--	0.1
Sodium, Total Recoverable	mg/L	175	--	--	110	--	--
Turbidity	NTU[2]	2	2	5	4.3	--	6.8
Total Coliform	MPN[3]/100 mL	--	2.2	240	--	240	240

1. When calculating the monthly average, not detected (NDs) were calculated as ½ of the Practical Quantitation Limit (PQL) or Detection Limit for Reporting (DLR). PQLs or DLRs were used since Method Detection Limits (MDLs) were not available in the laboratory reports.
2. Nephelometric Turbidity Units (NTU)
3. Most probable number (MPN)
4. Standard units (s.u.)
5. Instantaneous minimum-maximum range.
6. The annual average EC of the discharge shall not exceed the flow-weighted average EC of the source water plus 500 µmhos/cm, or a total of 1,000 µmhos/cm, whichever is more stringent.

2. Effluent limitations contained in WDRs Order No. 99-100 for discharges from Discharge Point D-002 to disposal ponds and representative monitoring data from Monitoring Location M-002 are summarized below:

Table F-3. Historic Secondary Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation		Monitoring Data (From January 2000 – To April 2007)	
		Average Monthly	Maximum Daily	Highest Average Monthly Discharge[1]	Highest Daily Discharge
Conventional Pollutants					
Biochemical Oxygen Demand (BOD) (5 day @ 20ºC)[2]	mg/L	40	80	9.6	31
pH	s.u.	--	6.0-9.0[2]	--	6.0-9.4[2]
Total Suspended Solids (TSS)[3]	mg/L	40	80	26	87
Priority Pollutants					
Not Applicable					

Table F-3. Historic Secondary Effluent Limitations and Monitoring Data					
Parameter	**Units**	**Effluent Limitation**		**Monitoring Data (From January 2000 – To April 2007)**	
		Average Monthly	**Maximum Daily**	**Highest Average Monthly Discharge[1]**	**Highest Daily Discharge**
Non-Conventional Pollutants					
Dissolved oxygen (DO)	mg/L	--	1.0	--	--
Electrical conductivity @ 25ºC (EC)	µmhos/cm	--	1,000[3]	--	1,302
Flow	mgd	1.2	--	0.82	--
Freeboard	Feet	--	2	generally violated	--
Settleable Solids	mL/L	0.2-	1.0	0.1	0.2

1. When calculating the monthly average, not detected (NDs) were calculated as ½ of the Practical Quantitation Limit (PQL) or Detection Limit for Reporting (DLR). PQLs or DLRs were used since Method Detection Limits (MDLs) were not available in the laboratory reports.
2 Instantaneous minimum-maximum range.
3 The annual average EC of the discharge shall not exceed the flow-weighted average EC of the source water plus 500 µmhos/cm, or a total of 1,000 µmhos/cm, whichever is more stringent.

E. Compliance Summary

1. **Tertiary Treated Wastewater**. The Regional Water Board adopted Administrative Civil Liability (ACL) Order No. R5-2006-0003 on 26 January 2006 for violations of effluent limitations contained in WDRs Order No. 99-100 for Discharge Point 001. Effluent violations from January 2000 through January 2004 described in the ACL Order are summarized below:

Table F-4. Violations of Tertiary Effluent Limitations					
Parameter	**Units**	**Effluent Limitation (Discharge Point 001)**		Number of Violations, Discharge Point 001 **(January 2000 –June 2004)**	
		Average Monthly	**Maximum Daily**	Monthly Average Violations	Maximum Daily Violations
Conventional Pollutants					
pH	s.u.		6.0-9.0[1]	--	1
Total Suspended Solids (TSS)	mg/L	20	40	1	2
Priority Pollutants					
Not Applicable					
Non-Conventional Pollutants					
Chlorine, Total Residual	mg/L		0.1	--	1
Electrical conductivity @ 25ºC (EC)	µmhos/cm		1000[2]	--	360
Turbidity	NTU	2	5	9	2

Table F-4. Violations of Tertiary Effluent Limitations					
Parameter	**Units**	**Effluent Limitation (Discharge Point 001)**		Number of Violations, Discharge Point 001 **(January 2000 –June 2004)**	
		Average Monthly	**Maximum Daily**	Monthly Average Violations	Maximum Daily Violations

1 Instantaneous minimum-maximum range.

2 The annual average EC of the discharge shall not exceed the flow-weighted average EC of the source water plus 500 µmhos/cm, or a total of 1,000 µmhos/cm, whichever is more stringent.

As part of the ACL settlement, the Discharger agreed to complete various compliance projects to address the violations. Generally these are comprised of two components (1) construction of a new potable water well to provide lower EC, and (2) a series of six additional projects to reduce the EC gain as the water makes its way from the source well, through use, treatment, and disposal. A detailed list and compliance dates, as listed in the ACL Order, are summarized below:

Table F-5. Compliance Projects and Status		
Item	**Description**	**Completion Date**
1.a.	Analysis and determination of EC sources	Ongoing
2.	Establish pretreatment ordinance	Ongoing
3.	Construct New Well	Completed
4.	Establish water softener ordinance	1 June 2008
5.	Automate chemical feed	1 November 2006 (completed)
6.	Construction of UV Disinfection	1 October 2008
7.	Continuous monitoring of EC, turbidity, pH, and chlorine residual	1 December 2006

2. **Secondary Treated Wastewater.** Discharger SMRs from January 2000 through July 2006 indicate effluent at Discharge 002 violated the EC limit (shown in Table F-4 above), but at less frequency than at Discharge 001. This is a result, in part, of the chemical additions necessary for the chlorination and dechlorination processes prior to discharge to the Canal. In addition, the Discharger chronically does not meet the minimum 2.0 feet freeboard requirements in the disposal ponds. This is a result of the decrease in percolation rates from deferred pond maintenance. The Discharger is, in part, increasing its discharge volume at Discharge 001 to allow a disposal pond to be taken out of service for maintenance to restore percolation rates.

3. **Cease and Desist Order.** The Regional Water Board adopted Cease and Desist Order No. 5-01-001 for violations of WDRs Order No. 99-100, including violations of the minimum freeboard requirement; exceedances of the EC, turbidity, and chlorine residual limitations; and failing to develop a pretreatment program. The Discharger completed the tasks necessary to satisfy the requirements of the CDO. A separate order to rescind the CDO will be considered with the adoption of this Order.

F. Planned Changes

The Discharger is scheduled to update its disinfection process to ultraviolet disinfection and will increase its discharge flow to the Central Canal.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in the proposed Order are based on the requirements and authorities described in this section.

A. Legal Authority

See Limitations and Discharge Requirements - Findings, Section II.C.

B. California Environmental Quality Act (CEQA)

See Limitations and Discharge Requirements - Findings, Section II.F.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans**. The Regional Water Board adopted a *Water Quality Control Plan for the Tulare Lake Basin, Second Edition* (Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Based on State Water Board Resolution No. 88-63, the Basin Plan specifies that water bodies that do not have beneficial uses listed in the Basin Plan are all designated as having the use of MUN. The Central Canal is a distributary of the Kings River via the Fresno and Fancher Creek Canals, and feeds into other canals and aqueducts to the south and to the west. The Central Canal is hydraulically connected to Fresno Slough. Accordingly, the Central Canal carries waters of the United States and must be maintained of swimmable (REC-1), fishable (WARM) quality. The Basin Plan on page II-1 states: *"Protection and enhancement of beneficial uses of water against quality degradation is a basic requirement of water quality planning under the Porter-Cologne Water Quality Control Act. In setting water quality objectives, the Regional Water Board must consider past, present, and probable future beneficial uses of water."* and with respect to disposal of wastewaters states that "...*use of waters for disposal of wastewaters is not included as a beneficial use…and are subject to regulation as activities that may harm protected uses."*

   The federal CWA section 101(a)(2), states: "*it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983.*" Federal Regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal Regulations, 40 CFR sections 131.2 and 131.10, require that all waters of the State regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shell fish

and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. Section 131.3(e), 40 CFR, defines existing beneficial uses as those uses actually attained after November 28, 1975, whether or not they are included in the water quality standards. Federal Regulation, 40 CFR section 131.10, requires that uses be obtained by implementing effluent limitations, requires that all downstream uses be protected and states that in no case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.

The beneficial uses of the Central Canal downstream of the discharge are thus municipal and domestic supply, agricultural irrigation, water contact recreation, and warm freshwater aquatic habitat. This Order contains Effluent Limitations requiring a tertiary level of treatment, or equivalent, for the surface water discharge, which is necessary to protect the beneficial uses of the receiving water. The Regional Water Board has considered the factors listed in CWC section 13241 in establishing these requirements, as discussed in more detail in the Fact Sheet.

2. **Antidegradation Policy.** Section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. As discussed in detail later in the Fact Sheet (Attachment F, Section IV.D.4.), the discharge is consistent with the antidegradation provisions of 40 CFR section 131.12 and State Water Board Resolution 68-16.

3. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at title 40, Code of Federal Regulations section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. Compliance with the Anti-Backsliding requirements is described in Section IV.D.3.

4. **Emergency Planning and Community Right to Know Act**. Section 13263.6(a), California Water Code, requires that "the Regional Water Board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) (EPCRKA) indicate as discharged into the POTW, for which the State Water Board or the Regional Water Board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective".

The most recent toxic chemical data report does not indicate any reportable off-site releases or discharges to the collection system for this facility. Therefore, a reasonable potential analysis based on information from Emergency Planning and Community Right to Know Act (EPCRA) cannot be conducted. Based on information from EPCRA, there is no reasonable potential to cause or contribute to an excursion above any numeric water quality objectives included within the Basin Plan or in any State Water Board plan, so no effluent limitations are included in this permit pursuant to CWC section 13263.6(a).

However, as detailed elsewhere in this Order, available effluent data indicate that there are constituents present in the effluent that have a reasonable potential to cause or contribute to exceedances of water quality standards and require inclusion of effluent limitations based on federal and state laws and regulations.

5. ***Storm Water Requirements*.** USEPA promulgated Federal Regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater treatment plants are applicable industries under the storm water program and are obligated to comply with the Federal Regulations.

6. ***Endangered Species Act.*** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

D. Other Plans, Polices and Regulations

1. The discharge authorized herein and the treatment and storage facilities associated with the discharge of treated municipal wastewater, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, California Code of Regulations (CCR), section 20005 et seq. (hereafter Title 27). The exemption, pursuant to Title 27 CCR section 20090(a), is based on the following:

   a. The waste consists primarily of domestic sewage and treated effluent;

   b. The waste discharge requirements are consistent with water quality objectives; and

   c. The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act (CWA) and amendments thereto are applicable to the discharge.

The federal CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., § 1311(b)(1)(C); 40 CFR, § 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to Federal Regulations, 40 CFR Section 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that "*are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality*." Federal Regulations, 40 CFR, §122.44(d)(1)(vi), further provide that "[w]*here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits.*"

The CWA requires point source discharges to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations: 40 CFR §122.44(a) requires that permits include applicable technology-based limitations and standards, and 40 CFR §122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Regional Water Board's Basin Plan, page IV-21, contains an implementation policy ("Application of Water Quality Objectives") that specifies that the Regional Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives*." This Policy complies with 40 CFR §122.44(d)(1). With respect to narrative objectives, the Regional Water Board must establish effluent limitations using one or more of three specified sources, including (1) EPA's published water quality criteria, (2) a proposed state criterion (*i.e*., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (*i.e*., the Regional Water Board's "Policy for Application of Water Quality Objectives")(40 CFR 122.44(d)(1) (vi) (A), (B) or (C)), or (3) an indicator parameter. The Basin Plan contains a narrative objective requiring that: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*" (narrative toxicity objective). The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, discoloration, toxic substances, radionuclides, or taste and odor

producing substances that adversely affect beneficial uses. The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The Basin Plan also limits chemical constituents in concentrations that adversely affect surface water beneficial uses. For waters designated as municipal, the Basin Plan specifies that, at a minimum, waters shall not contain concentrations of constituents that exceed Maximum Contaminant Levels (MCL) of CCR Title 22. The Basin Plan further states that, to protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

A. Discharge Prohibitions

The five prohibitions set forth in the Order represent acts that are totally unacceptable to the Regional Water Board.

1. Prohibition A concerns a substantial change in location or manner of the discharge, or a change in its character, from what was provided in the RWD and evaluated for compliance with the Water Code and CWA. Discharge requirements in this Order may not be protective of water quality if there is a substantial change, and hence such is prohibited.

2. Prohibition B prohibits bypass pursuant to 40 CFR 122.41 (m)(4), with federal allowance for exceptions set forth in section 1.G of Attachment D, Standard Provisions.

3. Prohibition C reflects two general situations that, if created, justify cleanup or abatement enforcement activities and assessment of administrative civil liabilities.

4. Prohibition D concerns two categories of waste that are subject to full containment as prescribed by Title 23 and Title 27 of the California Code of Regulations and, if discharged, have high potential for creating a condition that would violate Prohibition C as well.

5. Prohibition E incorporates prohibitions as set forth in the Basin Plan and not covered by the preceding prohibitions.

B. Technology-Based Effluent Limitations

1. Scope and Authority

Regulations promulgated in 40 CFR 125.3(a)(1) require technology-based effluent limitations for municipal dischargers to be placed in NPDES permits based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for POTWs [defined in section 304(d)(1)]. Section 301(b)(1)(B) of that Act requires that such treatment works must,

as a minimum, meet effluent limitations based on secondary treatment as defined by the USEPA Administrator.

Based on this statutory requirement, USEPA developed secondary treatment regulations, which are specified in 40 CFR Part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

2. Applicable Technology-Based Effluent Limitations

a. **BOD_5 and TSS.** Federal Regulations, 40 CFR Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD_5 and TSS. Tertiary treatment is necessary to protect the beneficial uses of the receiving stream and the final effluent limitations for BOD_5 and TSS are based on the technical capability of the tertiary process. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The secondary and tertiary treatment standards for BOD_5 and TSS are indicators of the effectiveness of the treatment processes. The principal design parameter for wastewater treatment plants is the daily BOD_5 and TSS loading rates and the corresponding effluent quality and removal efficiency of the system. Application of tertiary treatment processes results in the ability to achieve lower levels for BOD_5 and TSS than the 40 CFR standards prescribed; the 30-day average BOD_5 and TSS limitations have been revised to 10 mg/L, which is technically achievable based on the capability of a tertiary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD_5 and TSS allows reasonable excursions that will not jeopardize effective disinfection. See Table F-6 for final technology-based effluent limitations required at Discharge Point D-001 by this Order. In addition, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal efficiency shall not be less than 85 percent. A tertiary treatment plant must remove more solids to achieve the more stringent effluent limits. This Order contains a limitation requiring an average of 90 percent removal of BOD_5 and TSS at D-001 over each calendar month.

b. **Flow.** The WWTF, as designed, is capable of providing a tertiary level of treatment for up to a design flow of 0.45 mgd. Therefore, this Order contains a Monthly Average Daily Discharge Flow effluent limit for Discharge Point D-001 of 0.45 mgd.

Table F-6 Summary of Technology-based Effluent Limitations Discharge Point D-001

Parameter	Units	Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily
Conventional Pollutants				
Biochemical Oxygen Demand (BOD) (5 day @ 20°C)[2]	mg/L	10	15	30
	lbs/day[1]	38	56	113
Total Suspended Solids (TSS)[2]	mg/L	10	15	30
	lbs/day[1]	38	56	113
Settleable Solids	ml/L	0.1	--	0.2

1 Based on the average monthly flow of 0.45 mgd

2 The average monthly percent removal of 5-day biochemical oxygen demand (BOD) and total suspended solids (TSS) shall not be less than 90 percent.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

As specified in section 122.44(d)(1)(i), permits are required to include WQBELs for pollutants (including toxicity) that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an in-stream excursion above any state water quality standard. The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the CTR and NTR.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

a. **Receiving Water.** Beneficial uses of the Central Canal are AGR, MUN, REC-1 and WARM.

b. **Hardness.** While no effluent limitation for hardness is necessary in this Order, hardness is critical to the assessment of the need for, and the development of, effluent limitations for certain metals. The *California Toxics Rule*, at (c)(4), states the following:

"Application of metals criteria. (i) *For purposes of calculating freshwater aquatic life criteria for metals from the equations in paragraph (b)(2) of this section, for waters with a hardness of 400 mg/L or less as calcium carbonate, the actual ambient hardness of the surface water shall be used in those equations*." [emphasis added]

The State Water Board, in footnote 19 to Water Quality Order No. 2004-0013, stated: "*We note that…the Regional Water Board…applied a variable hardness value whereby effluent limitations will vary depending on the actual, current*

hardness values in the receiving water. We recommend that the Regional Water Board establish either fixed or seasonal effluent limitations for metals, as provided in the SIP, rather than 'floating' effluent limitations."

Effluent limitations for the discharge must be set to protect the beneficial uses of the receiving water for all discharge conditions. In the absence of the option of including condition-dependent, "floating" effluent limitations that are reflective of actual conditions at the time of discharge, effluent limitations must be set using a reasonable worst-case condition in order to protect beneficial uses for all discharge conditions.

In water, the toxicity of some metals (cadmium, chromium III, copper, lead, nickel, silver and zinc) is dependent on the hardness of the water. In general, the lower the hardness the more toxic metals become. A recent paper entitled "*Developing Protective Hardness-Based Metal Effluent Limitations*" by Robert W. Emerick, Ph.D., P.E. and John E. Pedri, P.E. describes methodologies for calculating criteria for hardness-based metals that ensure the beneficial uses of the receiving water will be protected under all dilution conditions when the final mixed receiving water/effluent hardness is less than 400 mg/L. These methodologies were used to develop hardness-dependent metals criteria that represent reasonable worst-case conditions and were included in the reasonable potential analysis.

The equations presented in the Dr. Emerick's and Mr. Pedri's paper were developed for occasional effluent dominated conditions (i.e., an effluent discharge can constitute up to 100 percent of stream flow at times) and no use of assimilative capacity. The CTR and NTR describe water quality standards for metals that vary as a function of hardness. The relationship between the relative toxicity criteria and constituent concentration as a function of hardness can be either concave upward or concave downward. The most appropriate methodology is dependent on the relationship.

For those metals whereby the criteria exhibit a **concave downward** relationship as a function of hardness (acute and chronic copper, chromium III, nickel, zinc, and chronic cadmium), use of effluent hardness for establishing criteria is fully protective of all beneficial uses regardless of whether the effluent or receiving water hardness is higher. The lowest recorded effluent hardness (i.e., 140 mg/L as $CaCO_3$) was used to establish metals criteria with a concave downward relationship as a function of hardness.

For those metals whereby the regulatory criteria exhibit a **concave upward** relationship as a function of hardness (acute cadmium, acute and chronic lead, and acute silver), developing criteria that account for both the hardness of the receiving water and effluent is required. Under the discharge conditions that exist in the Central Canal where the effluent hardness is higher than receiving water hardness, use of the lowest recorded effluent hardness and the lowest

recorded receiving water hardness to calculate the criteria represent a reasonable worst-case scenario.

For purposes of conducting the reasonable potential analysis for metals, the lowest reported effluent hardness value of 140 mg/L as $CaCO_3$ and the lowest receiving water hardness of 8.6 mg/L as $CaCO_3$ were used. Using these hardness values, only effluent data for copper indicated the discharge may have a reasonable potential to exceed criteria (see Section IV.C.3.h. below).

c. **Assimilative Capacity/Mixing Zone.** The Discharger discharges to the Central Canal year round. During the non-irrigation season effluent discharged from the WWTF is the only flow in the Canal. During the irrigation season the effluent is diluted with irrigation water at minimum ratio of 200 to 1.

3. Determining the Need for WQBELs

a. CWA section 301 (b)(1) requires NPDES permits to include effluent limitations that achieve technology-based standards and any more stringent limitations necessary to meet water quality standards. Water quality standards include Regional Water Board Basin Plan beneficial uses and narrative and numeric water quality objectives, State Water Board-adopted standards, and federal standards, including the CTR and NTR. The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, and tastes and odors. The narrative toxicity objective states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00.) With regards to the narrative chemical constituents objective, the Basin Plan states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)*" in Title 22 of CCR. The narrative tastes and odors objective states: "*Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.*"

b. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs, the Regional Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for, ammonia, bromoform, chlorodibromomethane, chlorine residual, and dichlorobromomethane. Water quality-based effluent limitations (WQBELs) for these constituents are included in this Order. A summary of the reasonable potential analysis (RPA) is provided in

Table F-12, and a detailed discussion of the RPA for each constituent is provided below.

c. The Regional Water Board conducted the RPA in accordance with Section 1.3 of the SIP. Although the SIP applies directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Board may use the SIP as guidance for water quality-based toxics control.[1] The SIP states in the introduction "*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency."* Therefore, in this Order the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents.

d. WQBELs were calculated in accordance with section 1.4 of the SIP, as described in Attachment F, Section IV.C.4.

e. **Aluminum.** The Discharger submitted the result of one effluent sample collected in May 2007 for analysis of total recoverable aluminum. The sample returned 190 ug/L of total aluminum. No samples of the upstream receiving water have been analyzed for aluminum. The MEC of 190 ug/L exceeded the chronic USEPA National Recommended Ambient Water Quality Criteria of 87 ug/L.

   The currently available information is not adequate to demonstrate that aluminum has the reasonable potential to cause, or contribute to, an excursion above an applicable water quality objective. The data set is limited. Additional data should be collected to adequately characterize the presence of aluminum in the discharge.

   The Order requires sampling of the effluent and receiving water for aluminum. To determine whether aluminum in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct a RPA to determine whether effluents limits are necessary to protect the beneficial uses of the Central Canal.

f. **Ammonia.** Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. The Discharger does not currently use nitrification to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. Discharges of ammonia would violate the Basin Plan narrative toxicity objective. Applying 40 CFR 122.44(d)(1)(vi)(B), it is appropriate to use USEPA's Ambient National Water Quality Criteria for the Protection of Freshwater Aquatic Life for ammonia, which was developed to be

1 See, Order WQO 2001-16 (Napa) and Order WQO 2004-0013 (Yuba City)

protective of aquatic organisms.

USEPA's *Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life*, for total ammonia, recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average, criteria continuous concentration or CCC) standards based on pH and temperature. USEPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature.

The maximum permitted effluent pH is 8.3 as the Basin Plan objective for pH in the receiving stream is the range of 6.5 to 8.3. To protect against the worst-case short-term exposure of an organism, a pH value of 8.3 was used to derive the acute criterion. The resulting acute criterion is 3.15 mg/L.

The maximum observed 30-day rolling average temperature and the maximum observed pH were used to calculate seasonal 30-day chronic criteria. The maximum observed 30-day temperature for May through October was 29.4°C, for November through April the maximum observed 30-day temperature was 22.1°C. The maximum observed pH value was 9.0 for November through April and 8.2 for May through October. Using the pH values and the worst-case temperature values on a rolling 30-day basis, the resulting 30-day CCC is 0.3 mg/L (as N) for November through April and 0.69 mg/L (as N) for May through October. The 4-day average concentration is derived in accordance with the USEPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCCs of 0.3 and 0.69 mg/L (as N), the 4-day average concentration that should not be exceeded is 0.75 and 1.73 mg/L (as N), respectively.

The MEC for ammonia was 1.1 mg/L for May through October and 1.8 mg/L for November through April. Therefore, ammonia in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a level necessary to protect aquatic life, resulting in a violation of the Basin Plan's narrative toxicity objective.

The Regional Water Board calculates WQBELs in accordance with SIP procedures for non-CTR constituents, and ammonia is a non-CTR constituent. The SIP procedure assumes a 4-day averaging period for calculating the long term average discharge condition (LTA). However, USEPA recommends modifying the procedure for calculating permit limits for ammonia using a 30-day averaging period for the calculation of the LTA corresponding to the 30-day chronic criteria. Therefore, while the LTAs corresponding to the acute and 4-day chronic criteria were calculated according to SIP procedures, the LTA corresponding to the 30-day chronic criteria was calculated assuming a 30-day

averaging period. The lowest LTA representing the acute, 4-day, and 30-day chronic criteria is then selected for deriving the AMEL and the MDEL. The remainder of the WQBEL calculation for ammonia was performed according to the SIP procedures.

An AMEL and MDEL for ammonia of 0.8 mg/L and 1.1 mg/L, respectively, were calculated for the period from May to October and an AMEL and MDEL for ammonia of 0.4 mg/L and 0.6 mg/L, respectively, were calculated for the period from November to April based on SIP procedures. It appears that the Discharger may be in immediate non-compliance upon issuance of the permit. New or modified control measures may be necessary to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. The Basin Plan includes a provision that authorizes the use of compliance schedules in NPDES permits for water quality objectives adopted after 25 September 1995. The WQBELs for ammonia are based on a new interpretation of the narrative standard for protection of receiving water beneficial uses. Therefore, a compliance schedule for compliance with the ammonia effluent limitations is established in the Order. An interim performance-based maximum daily effluent limitation of 1.3 mg/L has been established in this Order. The interim limitation was determined as described in Attachment F, Section IV.E.1., and is in effect until **18 May 2010**. As part of the compliance schedule, this Order requires the Discharger to submit a work plan and time schedule to conduct a treatment feasibility study within four months and to submit a report within a year to achieve compliance with the final ammonia effluent limitations.

g. **Bromoform.** The CTR includes a bromoform criterion of 4.3 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. The MEC for bromoform was 8.9 µg/L. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for bromoform.

   No dilution is allowed due to periods of no flow in the receiving water. An AMEL and MDEL for bromoform of 4.3 µg/L and 8.6 µg/L, respectively, are included in this Order based on based on the CTR criterion for the protection of human health (See Attachment F for WQBEL calculations). The Discharger is unable to comply with these limitations. Section 2.1 of the SIP allows for compliance schedules within the permit for existing discharges where it is demonstrated that it is infeasible for a Discharger to achieve immediate compliance with a CTR criterion. Using the statistical methods for calculating interim effluent limitations described in Attachment F, Section IV.D.1., an interim performance-based maximum daily limitation of 28 µg/L was calculated.

   Section 2.1 of the SIP provides that: "*Based on an existing discharger's request and demonstration that it is infeasible for the discharger to achieve immediate compliance with a CTR criterion, or with an effluent limitation based on a CTR*

criterion, the RWQCB may establish a compliance schedule in an NPDES permit." Section 2.1, further states that compliance schedules may be included in NPDES permits provided that the following justification has been submitted: …"*(a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream; (b) documentation of source control measures and/or pollution minimization measures efforts currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades); and (d) a demonstration that the proposed schedule is as short as practicable*

Bromoform is a byproduct of the chlorination process. The Discharger indicated its commitment as part of an ACL settlement to complete a UV disinfection system by 1 October 2008 to replace the current chlorination system. Eliminating use of chlorine on schedule should result in no generation of bromoform shortly thereafter. This Order imposes the final bromoform limitation, effective 1 November 2008, with a provision that would allow the Executive Officer to suspend the limitation and monitoring once the Discharger proves that the UV system has eliminated the current reasonable potential of bromoform to violate a water quality objective.

h. **Copper.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. The criteria for copper are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The USEPA default conversion factors for copper in freshwater are 0.96 for both the acute and the chronic criteria. Using the minimum measured hardness from the effluent (140 mg/L as $CaCO_3$) and the USEPA recommended dissolved-to-total translator, the applicable chronic criterion (maximum four-day average concentration) is 12.4 µg/L and the applicable acute criterion (maximum one-hour average concentration) is 19.2 µg/L, as total recoverable.

The MEC for total copper was 22 µg/L, based on just two samples collected and where one was nondetect. There is insufficient data to determine RP reliably. To determine whether the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for copper, monitoring for copper is being required. This permit contains a reopener provision should monitoring results indicate that the discharge has the reasonable potential to cause or contribute an exceedance of water quality objectives and effluent limitations are required.

i. **Chlorodibromomethane.** The CTR includes a chlorodibromomethane criterion of 0.41 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. The MEC for chlorodibromomethane was 46 µg/L. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for chlorodibromomethane.

No dilution is allowed due to periods of no flow in the receiving water. An AMEL and MDEL for chlorodibromomethane of 0.41 µg/L and 0.82 µg/L, respectively, are included in this Order based on based on the CTR criterion for the protection of human health (See Attachment F for WQBEL calculations). The Discharger is unable to comply with these limitations. Section 2.1 of the SIP allows for compliance schedules within the permit for existing discharges where it is demonstrated that it is infeasible for a Discharger to achieve immediate compliance with a CTR criterion. Using the statistical methods for calculating interim effluent limitations described in Attachment F, Section IV.E.1., an interim performance-based maximum daily limitation of 143 µg/L was calculated.

As noted under bromoform, Section 2.1 of the SIP provides allowance for a time schedule unless certain conditions, which the Discharger complied with.

As also noted under bromoform, the proposed installation of the UV system should eliminate the generation of chlorodibromomethane. This Order imposes the final chlorodibromomethane limitation, effective 1 November 2008, with a provision that would allow the Executive Officer to suspend the limitation and monitoring once the Discharger proves that the UV system has eliminated the current reasonable potential to violate a water quality objective.

j. **Chlorine Residual.** The Discharger uses chlorine for disinfection, which is extremely toxic to aquatic organisms. The Discharger uses a sulfur dioxide process to dechlorinate the effluent prior to discharge to the FID Central Canal. Due to the existing chlorine use and the potential for chlorine to be discharged, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

The USEPA Technical Support Document for Water Quality-Based Toxics Control [EPA/505/2-90-001] contains statistical methods for converting chronic (four-day) and acute (one-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will be monitored continuously, an average one-hour limitation is considered more appropriate than an average daily limitation. Average one-hour and four-day limitations for chlorine, based on these criteria, are included in this Order. The Discharger can immediately comply with these new effluent limitations for chlorine residual.

k. **Cyanide.** The CTR includes maximum 1-hour average and 4-day average cyanide concentrations of 22 µg/L and 5.2 µg/L, respectively, for the protection of freshwater aquatic life. The MEC for cyanide was 9.9 µg/L, based on two samples. To determine if the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for cyanide, monitoring for cyanide is being required. This permit contains a reopener provision should monitoring results indicate that the discharge has the

reasonable potential to cause or contribute an exceedance of water quality objectives and effluent limitations be required.

l. **Diazinon.** Results from monitoring conducted by the Discharger indicate that the MEC for diazinon is 0.41 µg/L. Insufficient information is available to determine whether diazinon in the discharge has reasonable potential to cause or contribute to an in-stream excursion above applicable water quality criteria or objectives. There is only one effluent data point available, and the data point has been estimated as DNQ. Instead of limitations, additional monitoring has been established for diazinon with a reopener provision should monitoring results indicate that the discharge has the reasonable potential to cause or contribute an exceedance of water quality objectives.

m. **Dichlorobromomethane.** The CTR includes a dichlorobromomethane criterion of 0.56 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. The MEC for dichlorobromomethane was 8 µg/L. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for dichlorobromomethane.

No dilution is allowed due to periods of no flow in the receiving water. An AMEL and MDEL for dichlorobromomethane of 0.56 µg/L and 1.1 µg/L, respectively, are included in this Order based on based on the CTR criterion for the protection of human health (See Attachment F for WQBEL calculations). The Discharger is unable to comply with these limitations. Section 2.1 of the SIP allows for compliance schedules within the permit for existing discharges where it is demonstrated that it is infeasible for a Discharger to achieve immediate compliance with a CTR criterion. Using the statistical methods for calculating interim effluent limitations described in Attachment F, Section IV.E.1., an interim performance-based maximum daily limitation of 162 µg/L was calculated.

As noted under bromoform, Section 2.1 of the SIP provides allowance for a time schedule unless certain conditions, which the Discharger complied with.

As also noted under bromoform, the proposed installation of the UV system should eliminate the generation of dichlorobromomethane. This Order imposes the final dichlorobromomethane limitation, effective 1 November 2008, with a provision that would allow the Executive Officer to suspend the limitation and monitoring once the Discharger proves that the UV system has eliminated the current reasonable potential to violate a water quality objective.

n. **Electrical Conductivity**. (see Subsection r. Salinity)

o. **Fluoride.** *Water Quality for Agriculture,* Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985), recommends that the fluoride concentration in waters used for agricultural irrigation not exceed 1000 µg/L. Applying the Basin Plan "Policy for Application of Water Quality Objectives", the numeric standard

that implements the narrative objective is the Agricultural Water Quality Goal of 1000 µg/L. The Primary Maximum Contaminant Level (MCL) for fluoride is 2000 µg/L.

The MEC for fluoride was 1300 µg/L, based on two samples. To determine whether the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the criteria for fluoride, monitoring is being required. This permit contains a reopener provision should monitoring results indicate that the discharge has the reasonable potential to cause or contribute an exceedance of water quality objectives and effluent limitations be required.

p. **Pathogens**. To protect identified beneficial uses from pathogens the wastewater must be adequately treated. The principal infectious agents (pathogens) that may be present in raw sewage are classified into three broad groups: bacteria, parasites, and viruses. Treatment, consisting of chemical coagulation, sedimentation, and filtration, will remove approximately 99.5% of pathogens. Disinfection of the tertiary effluent ensures greater removal.

The California Department of Public Health (DPH) reclamation criteria in 22 CCR, Division 4, Chapter 3 (Title 22) is intended to insure that reuse of wastewater does not pose unacceptable health risks in various use situations. Title 22 requires that, for sprinkler irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, the recycled water must be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 ml as a 7-day median. It defines this as "disinfected tertiary treatment." Title 22 requires that recycled water supplying non-restricted recreational impoundments be subjected to "disinfected tertiary treatment." A non-restricted recreational impoundment is defined as "*…an impoundment of recycled water, in which no limitations are imposed on body-contact water recreational activities.*"

It is not practical or necessary to be exact in quantifying pathogens in this circumstance as they are living and mobile, multiply exponentially and are impractical to quantify exactly and regulate by weekly average limitations. Tests for detection and enumeration of indicator organisms, rather than of pathogens, are used. The accepted general indicator for pathogenic bacteria is coliform bacteria and its population has been authenticated as a reliable standard. Test results allow prediction of coliform organisms populations as a most probable number and limitations typically are specified in terms of daily maximum and a 7-day median. Hence, a total coliform population of 2.2 MPN/100 ml, in the opinion of the DPH, ensures the risk of disease from pathogenic bacteria is at an acceptable level for any of the identified direct uses.

To ensure that other pathogen groups are successfully reduced requires a high degree of filtration as well as achieving the disinfection level described above. Filtration ensures a higher quality effluent by removing finer organic material and it increases the effectiveness and reliability of the disinfection process. The performance standard for effective filtration is measured in turbidity. Tertiary

treatment technology can consistently achieve an average daily turbidity of 2 nephelometric turbidity units. A disinfected tertiary effluent that achieves this turbidity and the total coliform density previously described ensures that the risk of disease from all pathogen groups is at an acceptable level for any of the identified direct uses.

Title 22 only applies to direct reuse. In indirect use situations where human exposure is or will be similar, it is reasonable to conclude that the health risk will be acceptable if the treatment process and results are the same as, or comparable to, what Title 22 requires for the same exposure in direct reuse. The receiving water is used for irrigation of agricultural land and for contact (i.e., unrestricted) recreation purposes. Disinfected tertiary treatment is also recommended in DPH's "*Uniform Guidelines for the Disinfection of Wastewater*" for surface water discharges under conditions similar to those described herein. As these indirect uses are similar to the direct uses where Title 22 specifies a minimum of "disinfected tertiary treatment," the Regional Water Board concludes that "disinfected tertiary treatment" is appropriate for Discharge Point D-001. The method of treatment is not prescribed by this Order but the Order does specify that wastewater must be treated using a process and to a level the same as or equivalent to that of Title 22.

Monitoring turbidity allows immediate detection of filter failure that enables rapid corrective action. Coliform testing requires several hours or days to identify high coliform concentrations.

To ensure the Facility achieves appropriate disinfected tertiary treatment, this Order contains effluent limitations reflecting a tertiary level of treatment and disinfection, or fail-safe equivalent, and associated monitoring for Disposal Point D-001 compliance.

q. **pH.** Effluent Limitations for pH are included in this Order to ensure the Basin Plan objective for pH is met in the receiving water when no dilution is available.

r. **Salinity.** The effluent limits for EC, boron and chloride specified by the Basin Plan are considered to be water quality based. They are thus incorporated directly into the Order.

s. **Settleable Solids.** For inland surface waters, the Basin Plan states that "[w]ater shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses." This Order contains average monthly and maximum daily effluent limitations for settleable solids.

Because the amount of settleable solids is measured in terms of volume per volume without a mass component, it is impracticable to calculate mass limitations for inclusion in this Order. A daily maximum effluent limitation for settleable solids is included in the Order, in lieu of a weekly average, to ensure that the treatment works operate in accordance with design capabilities.

t. **Total Trihalomethanes (THMs).** Information submitted by the Discharger indicates that the effluent contains THMs. The Basin Plan contains the narrative "chemical constituent" objective that requires, at a minimum, that waters with a designated MUN use not exceed California MCLs. In addition, the chemical constituent objective prohibits chemical constituents in concentrations that adversely affect beneficial uses. The California primary MCL for total THMs is 100 µg/L. The USEPA primary MCL for total THMs is 80 µg/L, which was effective on January 1, 2002 for surface water systems that serve more than 10,000 people. Pursuant to the Safe Drinking Water Act, DHS must revise the current total THMs MCL in Title 22, to be as low or lower than the USEPA MCL. Total THMs include bromoform, dichlorobromomethane, chloroform, and chlorodibromomethane. The Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA) published the Toxicity Criteria Database, which contains cancer potency factors for chemicals, including chloroform, that have been used as a basis for regulatory actions by the regional boards, departments, and offices within Cal/EPA. This cancer potency factor is equivalent to a chloroform concentration in drinking water of 1.1 µg/L (ppb) at the 1-in-a-million cancer risk level with an average daily consumption of two liters of drinking water over a 70-year lifetime. This risk level is consistent with that used by the DHS to set de minimis risks from involuntary exposure to carcinogens in drinking water in developing MCLs and Action Levels, and by OEHHA to set negligible cancer risks in developing Public Health Goals for drinking water. The one-in-a-million cancer risk level is also mandated by USEPA in applying human health protective criteria contained in the NTR and the CTR to priority toxic pollutants in California surface waters.

No known drinking water intakes exist in the Central Canal downstream of the discharge, and chloroform is a non-conservative pollutant. The installation of the UV system will eliminate THMs and chloroform effective 1 November 2008.

u. **Toxicity.** See Section IV.C.5. of the Fact Sheet regarding whole effluent toxicity.

4. WQBEL Calculations

a. Effluent limitations for ammonia, bromoform, dibromochloromethane, and bromodichloromethane were calculated in accordance with section 1.4 of the SIP. The following paragraphs describe the methodology used for calculating effluent limitations.

b. **Effluent Limitation Calculations.** In calculating maximum effluent limitations, the effluent concentration allowances were set equal to the criteria/standards/objectives.

$$ECA_{acute} = CMC \qquad ECA_{chronic} = CCC$$

For the human health, agriculture, or other long-term criterion/objective, a dilution credit can be applied. The ECA is calculated as follows:

$ECA_{HH} = HH + D(HH - B)$

where:

ECA_{acute} = effluent concentration allowance for acute (one-hour average) toxicity criterion

$ECA_{chronic}$ = effluent concentration allowance for chronic (four-day average) toxicity criterion

ECA_{HH} = effluent concentration allowance for human health, agriculture, or other long-term criterion/objective

CMC = criteria maximum concentration (one-hour average)

CCC = criteria continuous concentration (four-day average, unless otherwise noted)

HH = human health, agriculture, or other long-term criterion/objective

D = dilution credit

B = maximum receiving water concentration

Acute and chronic toxicity ECAs were then converted to equivalent long-term averages (LTA) using statistical multipliers and the lowest is used. Additional statistical multipliers were then used to calculate the maximum daily effluent limitation (MDEL) and the average monthly effluent limitation (AMEL).

Human health ECAs are set equal to the AMEL and a statistical multiplier is used to calculate the MDEL.

$$AMEL = mult_{AMEL}\left[\min\left(M_A ECA_{acute}, M_C ECA_{chronic}\right)\right]$$

$$MDEL = mult_{MDEL}\left[\min\left(M_A ECA_{acute}, M_C ECA_{chronic}\right)\right]$$

LTA_{acute} and $LTA_{chronic}$

$$MDEL_{HH} = \left(\frac{mult_{MDEL}}{mult_{AMEL}}\right) AMEL_{HH}$$

where: $mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL
$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL
M_A = statistical multiplier converting CMC to LTA
M_C = statistical multiplier converting CCC to LTA

Water quality-based effluent limitations were calculated for ammonia, dichlorobromomethane, and chlorodibromomethane as follows in Tables F-7 through F-10, below.
(1)

Table F-7. WQBEL Calculations for Ammonia (November - April)

	Acute	Chronic (30-day)	Chronic (4-day)
pH [1]	8.3	9	N/A
Temperature °C[2]	N/A	22.1	N/A
Criteria (mg/L)[3]	3.15	0.3	0.75
Dilution Credit	No Dilution	No Dilution	No Dilution
ECA	3.15	0.3	0.75
ECA Multiplier	0.45	0.85	0.65
LTA[4]	1.42	0.26	0.49
AMEL Multiplier (95th%)	[5]	1.35	[5]
AMEL (mg/L)	[5]	0.4	[5]
MDEL Multiplier (99th%)	[5]	2.24	[5]
MDEL (mg/L)	[5]	0.6	[5]

[1] Acute design pH = 8.3 (max. allowed pH), Chronic design pH =9 (max. effluent pH).
[2] Temperature = the maximum observed running 30-day average effluent temperature.
[3] USEPA Ambient Water Quality Criteria.
[4] LTA developed based on Acute and Chronic ECA Multipliers calculated at 99th percentile level per sections 5.4.1 and 5.5.4 of TSD.
[5] Limitations based on chronic LTA.

Table F-8. WQBEL Calculations for Ammonia (May - October)

	Acute	Chronic (30-day)	Chronic (4-day)
pH [1]	8.3	8.2	N/A
Temperature °C[2]	N/A	29.4	N/A
Criteria (mg/L)[3]	3.15	0.69	1.73
Dilution Credit	No Dilution	No Dilution	No Dilution
ECA	3.15	0.69	1.73
ECA Multiplier	0.54	0.89	0.72
LTA[4]	1.7	0.61	11.25
AMEL Multiplier (95th%)	[5]	1.25	[5]
AMEL (mg/L)	[5]	0.8	[5]
MDEL Multiplier (99th%)	[5]	1.86	[5]
MDEL (mg/L)	[5]	1.1	[5]

[1] Acute design pH = 8.3 (max. allowed pH), Chronic design pH =8.2 (max. effluent pH).
[2] Temperature = the maximum observed running 30-day average effluent temperature.
[3] USEPA Ambient Water Quality Criteria.
[4] LTA developed based on Acute and Chronic ECA Multipliers calculated at 99th percentile level per sections 5.4.1 and 5.5.4 of TSD.
[5] Limitations based on acute LTA.

Table F-9 WQBEL Calculations for Chlorodibromomethane

	Human Health
Criteria (µg/L)	0.41
Dilution Credit	No Dilution
ECA (µg/L)	0.41
AMEL (µg/L)	**0.41**
MDEL Multiplier (99th%)	2.01
MDEL (µg/L)	**0.82**

Table F-10 WQBEL Calculations for Dichlorobromomethane

	Human Health
Criteria (µg/L)	0.56
Dilution Credit	No Dilution
ECA (µg/L)	0.56
AMEL (µg/L)	**0.56**
MDEL Multiplier (99th%)	2.01
MDEL (µg/L)	**1.1**

Table F-11. Summary of Water Quality-based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
pH	standard units	--	--	--	6.5	8.3
Priority Pollutants						
Bromoform	µg/L	4.3	--	8.6	--	--
Chlorodibromomethane (Dibromochloromethane)	µg/L	0.41	--	0.82	--	--
Dichlorobromomethane (Bromodichloromethane)	µg/L	0.56	--	1.1	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N) (May-October)	mg/L	0.8	--	1.1	--	--
	lbs/day[1]	3.0	--	4.1	--	--
Ammonia Nitrogen, Total (as N) (November-April)	mg/L	0.4	--	0.6	--	--
	lbs/day[1]	1.5	--	2.3	--	--
Boron	mg/L	--	--	1.0	--	--
Chloride	mg/L	--	--	175	--	--

1. Based on a design flow of 0.45 mgd

5. Whole Effluent Toxicity (WET)

For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E, Section V.). This Order also contains effluent limitations for acute toxicity and

requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

a. **Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, “All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” (Basin Plan at III-6) The Basin Plan also states that, “…effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate…”. USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc." Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

> **Acute Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:
>
> For any one bioassay ---------- 70%
>
> Median for any three or more consecutive bioassays --------- 90%

b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, “All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” (Basin Plan at III-6) Adequate WET data is not available to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan’s narrative toxicity objective. Attachment E of this Order requires quarterly chronic WET monitoring for demonstration of compliance with the narrative toxicity objective.

In addition to WET monitoring, Special Provisions VI.C.2.a. requires the Discharger to submit to the Regional Water Board an Initial Investigative TRE Work Plan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity is demonstrated.

D. Final Effluent Limitations

1. Mass-based Effluent Limitations.

Title 40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g. CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations were calculated based upon the permitted average daily discharge flow allowed in Section IV.A.1. of the Limitations and Discharge Requirements.

2. Averaging Periods for Effluent Limitations.

Title 40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, the US EPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. "*First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed.*" (TSD, pg. 96) This Order utilizes maximum daily effluent limitations in lieu of average weekly effluent limitations for ammonia, bromoform, chlorodibromomethane, dichlorobromomethane, and chloride as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for BOD, TSS, pH, coliform, and turbidity, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in Attachment F, Section IV.C.3., above.

3. Satisfaction of Anti-Backsliding Requirements.

Some effluent limitations in this Order are less stringent that those in the previous Order. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations. WDRs Order No. 99-100 specifies effluent limitations for sodium and carbonate + bicarbonate. These constituents have no technology basis and no potential to exceed a water quality objective. Apparently both were included as performance-based limits when the

salinity of the discharge was poorly managed. As noted elsewhere, salinity is effectively regulated by EC, boron and chloride effluent limitations.

4. **Satisfaction of Antidegradation Policy**

The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16. This Order provides for an increase in the volume and mass of pollutants discharged at Discharge Point D-001. The increase will not have significant impacts on aquatic life, which is the beneficial use most likely affected by the pollutants discharged (BOD, suspended solids, chlorine residual, temperature, and metals) as limits are applied at end of pipe. The increase will not cause a violation of water quality objectives. The total flow allowed remains the same and allows wastewater utility service necessary to accommodate housing and economic expansion in the area, and is considered to be a benefit to the people of the State. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge.

5. **Summary of Final Effluent Limitations-Tertiary Treatment**

a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point D-001:

Table F-12. Summary of Final Effluent Limitations Discharge Point D-001

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand (BOD) (5 day @ 20ºC)	mg/L	10	15	30	--	--
	lbs/day[1]	38	56	113	--	--
Total Suspended Solids (TSS)	mg/L	10	15	30	--	--
	lbs/day[1]	38	56	113	--	--
Settleable Solids (SS)	ml/L	0.1		0.2		
pH	standard units	--	--	--	6.5	8.3
Priority Pollutants						
Bromoform	µg/L	4.3	--	8.6	--	--
Chlorodibromomethane (Dibromochloromethane)	µg/L	0.41	--	0.82	--	--
Dichlorobromomethane (Bromodichloromethane)	µg/L	0.56	--	1.1	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N) (May-October)	mg/L	0.8	--	1.1	--	--
	lbs/day[1]	3.0	--	4.1	--	--
Ammonia Nitrogen, Total (as N) (November-April)	mg/L	0.4	--	0.6	--	--
	lbs/day[1]	1.5	--	2.3	--	--

Table F-12. Summary of Final Effluent Limitations Discharge Point D-001						
Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Boron	mg/L	--	--	1.0	--	--
Chloride	mg/L	--	--	175	--	--
Turbidity	NTU	2	--	5[2]	--	10

1. Based on a design flow of 0.45 mgd
2. More than 5% of the time in the 24-hour period

b. **Percent Removal:** The average monthly percent removal of BOD 5-day 20°C and total suspended solids shall not be less than 90 percent.

c. **Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

i. 70% for any one bioassay; and

ii. 90% as the median for any three consecutive bioassays.

d. **Maximum Daily Discharge Flow.** The average monthly daily discharge flow from Discharge Point 001 shall not exceed 0.45 mgd.

e. **Total Residual Chlorine.** Effluent total residual chlorine shall not exceed:

i. 0.01 mg/L, as a 4-day average

ii. 0.02 mg/L, as a 1-hour average;

f. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:

i. 2.2 most probable number (MPN) per 100 ml, as a 7-day median; and

ii. 23 MPN/100 ml more than once in any month.

iii. 240 MPN/100 ml at any time.

g. **Electrical Conductivity.** The monthly average of EC in the discharge shall not exceed the flow-weighted average of EC in the source water plus 500 µmhos/cm, or a total of 1,000 µmhos/cm, whichever is more stringent.

E. Interim Effluent Limitations

1. **Ammonia, Bromoform, Chlorodibromomethane, and Dichlorobromomethane.** The SIP, section 2.2.1, requires that if a compliance schedule is granted for a CTR or NTR constituent, the Regional Water Board shall establish interim requirements and dates for their achievement in the NPDES permit. The interim limitations must be based on current treatment plant performance or existing permit limitations,

whichever is more stringent. The State Water Board has held that the SIP may be used as guidance for non-CTR constituents. Therefore, the SIP requirement for interim effluent limitations has been applied to both CTR and non-CTR constituents in this Order.

The interim limitations for ammonia, bromoform, chlorodibromomethane, and dichlorobromomethane in this Order are based on the current treatment plant performance. In developing the interim limitation, where there are ten sampling data points or more, sampling and laboratory variability is accounted for by establishing interim limits that are based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (*Basic Statistical Methods for Engineers and Scientists, Kennedy and Neville, Harper and Row*). Therefore, where there are ten or more data points, the interim limitations in this Order are established as the mean plus 3.3 standard deviations of the available data.

When there are less than ten sampling data points available, the *Technical Support Document for Water Quality- Based Toxics Control* ((EPA/505/2-90-001), TSD) recommends a coefficient of variation of 0.6 be utilized as representative of wastewater effluent sampling. The TSD recognizes that a minimum of ten data points is necessary to conduct a valid statistical analysis. The multipliers contained in Table 5-2 of the TSD are used to determine a maximum daily limitation based on a long-term average objective. In this case, the long-term average objective is to maintain, at a minimum, the current plant performance level. Therefore, when there are less than ten sampling points for a constituent, interim limitations are based on 3.11 times the maximum observed effluent concentration to obtain the daily maximum interim limitation (TSD, Table 5-2).

The Discharger can undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with final effluent limitations cannot be achieved immediately by the existing discharge. Discharge of pollutants in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the final effluent limitation can be achieved.

Table 13 summarizes the calculations of the interim effluent limitations for ammonia, bromoform, chlorodibromomethane, and dichlorobromomethane:

Table F-13. Interim Effluent Limitation Calculation Summary

Parameter	MEC	Mean	Std. Dev.	# of Samples	Interim Limitation
Ammonia	1.83	0.56	0.22	168	1.3
Bromoform	8.9	--	--	2	28
Chlorodibromomethane	46	--	--	2	143
Dichlorobromomethane	52	--	--	2	162

F. Land Discharge Specifications- Disposal Point D-002

1. The Basin Plan requires that wastewater treatment facilities that discharge to land in a manner that waste may infiltrate below the ground surface and degrade ground water must also comply with effluent limits. Limitations for Disposal Point D-002 include the requirement for removal of 80% or reduction to 40 mg/L, whichever is more restrictive, of both 5-day BOD and suspended solids and a maximum EC not to exceed the EC of source water plus 500 umhos/cm. Pond freeboard is to be greater than two feet (measured vertically).

G. Reclamation Specifications – Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

Basin Plan water quality objectives to protect the beneficial uses of surface water and groundwater include numeric objectives and narrative objectives, including objectives for chemical constituents, toxicity, and tastes and odors. The toxicity objective requires that surface water and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the maximum contaminant levels (MCLs) in Title 22, CCR. The tastes and odors objective states that surface water and groundwater shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial use.

A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Regional Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that "*[t]he numerical and narrative water quality objectives define the least stringent standards that the Regional Board will apply to regional waters in order to protect the beneficial uses*." The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains Receiving Surface Water Limitations based directly on the Basin Plan numerical and narrative water quality objectives for biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, turbidity, and electrical conductivity.

   Numeric Basin Plan objectives for bacteria, dissolved oxygen, pH, temperature, and turbidity are applicable to this discharge and have been incorporated as Receiving

Surface Water Limitations. Rational for these numeric receiving surface water limitations are as follows:

a. **Ammonia.** The Basin Plan states that, "waters shall not contain un-ionized ammonia in amounts which adversely affect beneficial uses. In no case shall the discharge of wastes cause concentrations of un-ionized ammonia (NH_3) to exceed 0.025 mg/l (as N) in receiving waters."

b. **Bacteria.** The Basin Plan includes a water quality objective that "In waters designated REC-1, the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml."

c. **Biostimulatory Substances**. The Basin Plan includes a water quality objective that "[W]ater shall not contain biostimulatory substances that promote aquatic growths to the extent such growths cause nuisance or adversely affect beneficial uses."

d. **Color**. The Basin Plan includes a water quality objective that "[W]ater shall be free of discoloration that causes nuisance or adversely affects beneficial uses."

e. **Chemical Constituents**. The Basin Plan includes a water quality objective that "Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses." .

f. **Dissolved Oxygen.** The Central Canal has been designated as having the beneficial use of warm freshwater aquatic habitat (WARM). For water bodies designated as having WARM as a beneficial use, the Basin Plan includes a water quality objective of maintaining a minimum of 5.0 mg/L of dissolved oxygen.

g. **Floating Material**. The Basin Plan includes a water quality objective that "[W]aters shall not contain floating material, including but not limited to solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses."

h. **Oil and Grease**. The Basin Plan includes a water quality objective that "[W]aters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses."

i. **pH.** The Basin Plan includes water quality objective that the pH of water shall not be depressed below 6.5 or raised above 8.3.

j. **Pesticides**. The Basin Plan includes a water quality objective for pesticides beginning on page III-3.

k. **Radioactivity**. The Basin Plan includes a water quality objective that "Radionuclides shall not be present in concentrations that are harmful to human,

plant, animal or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life." The Basin Plan states further that "[A]t a minimum, waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations…"

l. **Sediment.** The Basin Plan includes a water quality objective that "[T]he suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses."

m. **Settleable Material.** The Basin Plan includes a water quality objective that "[W]aters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses."

n. **Suspended Material.** The Basin Plan includes a water quality objective that "Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses

o. **Taste and Odors**. The Basin Plan includes a water quality objective that "[W]aters shall not contain taste- or odor-producing substances in concentrations that cause nuisance, adversely affect beneficial uses, or impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to domestic or municipal water supplies."

p. **Temperature.** The FID Central Canal has the beneficial uses of both COLD and WARM. The Basin Plan includes the objective that "[e]levated temperature wastes shall not cause the temperature of waters designated COLD or WARM to increase by more than 5ºF above natural receiving water temperature."

q. **Toxicity**. The Basin Plan includes a water quality objective that "[A]ll waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life."

r. **Turbidity.** The Basin Plan includes a water quality objective that "[I]ncreases in turbidity attributable to controllable water quality factors shall not exceed the following limits:

- *Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.*

- *Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.*

- *Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.*

- *Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent."*

B. Groundwater

1. The beneficial uses of the underlying ground water are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.

2. Basin Plan water quality objectives include narrative objectives for chemical constituents, tastes and odors, and toxicity of groundwater. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use. The tastes and odors objective prohibits taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan also establishes numerical water quality objectives for chemical constituents and radioactivity in groundwaters designated as municipal supply. These include, at a minimum, compliance with MCLs in Title 22 of the CCR. The bacteria objective prohibits coliform organisms at or above 2.2 MPN/100 ml. The Basin Plan requires the application of the most stringent objective necessary to ensure that waters do not contain chemical constituents, toxic substances, radionuclides, taste- or odor-producing substances, or bacteria in concentrations that adversely affect municipal or domestic supply, agricultural supply, industrial supply or some other beneficial use.

3. Groundwater limitations reflect water quality objectives and will protect the beneficial uses of the underlying groundwater.

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 of 40 CFR requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), Attachment E of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this facility.

A. Influent Monitoring

1. Influent monitoring is required to collect data on the characteristics of the wastewater and to assess compliance with effluent limitations (*e.g.*, BOD and TSS reduction requirements).

B. Effluent Monitoring

1. Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to insure the discharge is not the cause of unreasonable impacts on the receiving stream and groundwater.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Quarterly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.

2. **Chronic Toxicity.** Quarterly chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

D. Receiving Water Monitoring

Section 13267 of the California Water Code states, in part, "(a) A Regional Water Board, in establishing waste discharge requirements… may investigate the quality of any waters of the state within its region" and "(b) (1) In conducting an investigation…, the Regional Water Board may require that any person who… discharges… waste…that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Water Board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports." The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the Regional Water Board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports. The Monitoring and Reporting Program (Attachment E) is issued pursuant to California Water Code Section 13267.

1. **Surface Water**

   Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.

2. **Groundwater**

   This Order requires the Discharger to continue groundwater monitoring and includes a regular schedule of groundwater monitoring in the attached Monitoring and Reporting Program. The groundwater monitoring reports are necessary to evaluate impacts to waters of the State to assure protection of beneficial uses and compliance with Regional Board plans and policies, including Resolution 68-16. Evidence in the record includes effluent monitoring data that indicates the presence of constituents that may degrade groundwater and surface water.

E. Other Monitoring Requirements

1. Biosolids Monitoring

Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements (Special Provisions VI.C.5.b. and c.). Biosolids disposal requirements are imposed pursuant to 40 CFR Part 503 to protect public health and prevent groundwater degradation.

2. Water Supply Monitoring

Water supply monitoring is required to quantify the constituents before use.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42.

Section 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with section 123.25, this Order omits federal conditions that address enforcement authority specified in sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

a. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate, effluent toxicity through a Toxicity Reduction Evaluation (TRE). This Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.

b. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for determining reasonable potential. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

2. Special Studies and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at III-6.) Adequate WET data is not available to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective. Attachment E of this Order requires Quarterly chronic WET monitoring for demonstration of compliance with the narrative toxicity objective.

In addition to WET monitoring, this provision requires the Discharger to submit to the Regional Water Board an Initial Investigative TRE Work Plan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity is demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of > 1 TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does not allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits a pattern of toxicity at 100% effluent.

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is a pattern of toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests in a six week period (i.e. one test every two weeks) using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991* (TSD). The TSD at page 118 states, "EPA recommends if toxicity is repeatedly or

periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required." Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of a pattern of effluent toxicity (i.e. toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

See the WET Accelerated Monitoring Flow Chart (Figure F-1), below, for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

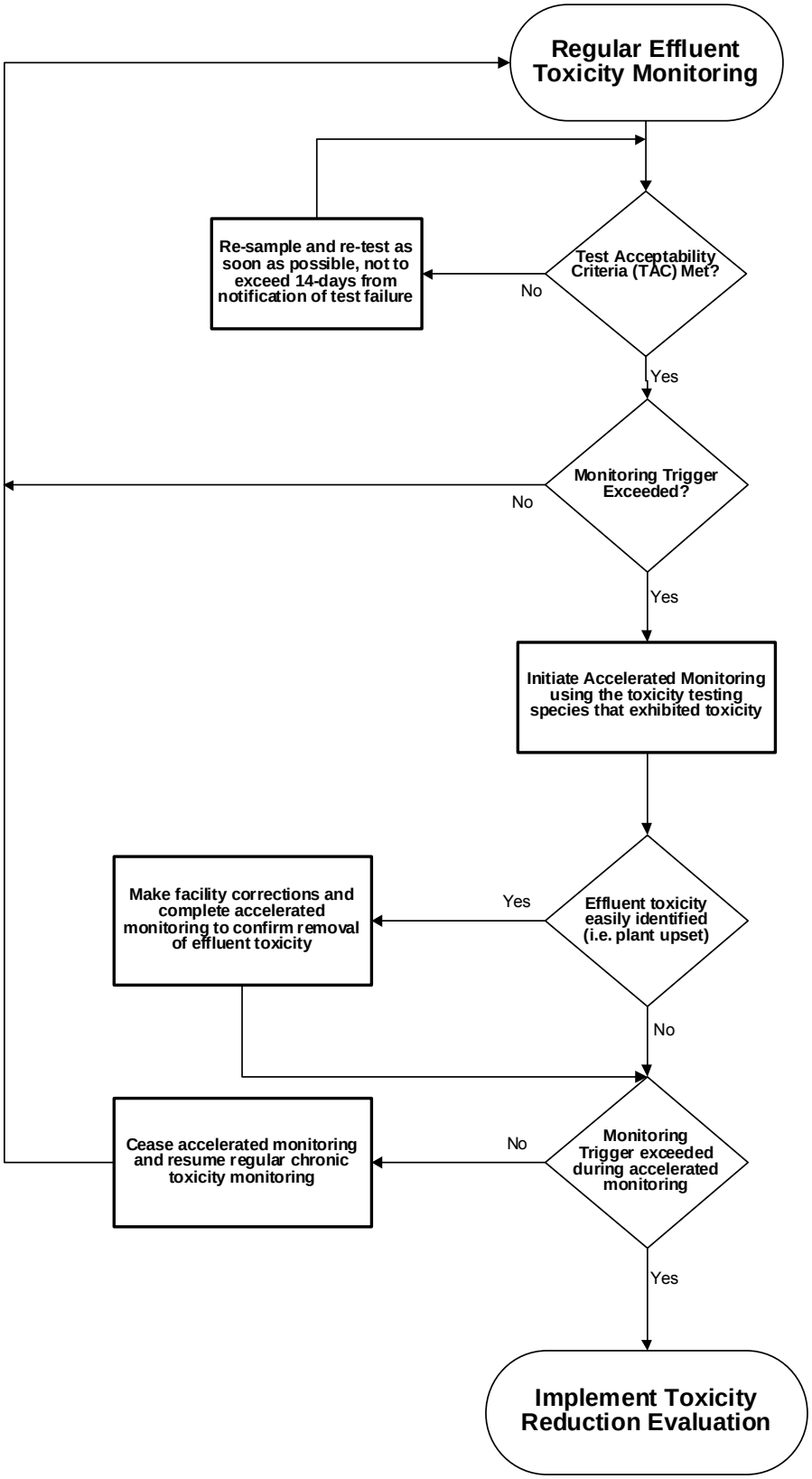
TRE Guidance. The Discharger is required to prepare a TRE Work Plan in accordance with USEPA guidance. Numerous guidance documents are available, as identified below:

- *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants,* (EPA/833B-99/002), August 1999.
- Generalized Methodology for Conducting Industrial TREs*, (EPA/600/2-88/070), April 1989.*
- *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures,* Second Edition, EPA 600/6-91/005F, February 1991.
- *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I*, EPA 600/6-91/005F, May 1992.
- *Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting acute and Chronic Toxicity,* Second Edition, EPA 600/R-92/080, September 1993.
- *Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity*, Second Edition, EPA 600/R-92/081, September 1993.
- *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Fifth Edition, EPA-821-R-02-012, October 2002.

- *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, EPA-821-R-02-013, October 2002.

- *Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991*

Figure F-1
WET Accelerated Monitoring Flow Chart



b. **Groundwater Monitoring (Special Provisions VI.C.2.d.).** To determine compliance with Groundwater Limitations V.B., the Discharger is required to evaluate the adequacy of its groundwater monitoring network. This provision requires the Discharger to evaluate the utility of the groundwater monitoring network for detecting the impacts of every treatment, storage, and disposal unit that does or may release waste constituents to groundwater. Following completion of the evaluation, the Discharger is required to submit a technical report describing the evaluation's results and providing recommendations for necessary modifications (e.g., new monitoring wells and/or modifications to existing wells).

3. **Use Attainability Study**

As noted elsewhere, the Basin Plan does not designate beneficial uses of the Central Canal as it is unlisted and not subject to the tributary rule. However, the primary purpose of the canal, beneficial uses of the downstream waterways, and federal goals for surface waters generally establish the standards for water quality in the canal. The exception is the beneficial use of municipal and domestic water supply (MUN), which the Basin Plan applies to unlisted waters such as the Central Canal. MUN does not currently occur and is not anticipated to occur from water in the Central Canal downstream of the discharge, and MUN may not be attainable.

With the commitment to convert to UV disinfection, there will be no CTR constituents where the effluent limitation is driven by MUN. However, required monitoring of particular constituents that show a possibility of having reasonable potential may yield data that indicates reasonable potential to exceed a water quality objective established to protect MUN. If this is the case, particularly if pollution prevention measures are not sufficient to remove the potential, the Discharger may wish to provide information sufficient to support a use attainability analysis and Regional Water Board consideration of de-designation of MUN. The Order contains a special provision allowing this opportunity.

4. **Construction, Operation, and Maintenance Specifications**

The Order contains four specifications particular to the use of ponds that are essentially standard practice as to preventing mosquitoes and exceedance of capacity.

5. **Special Provisions for Municipal Facilities (POTWs Only)**

a. **Sanitary Sewer Systems**

The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order No. 2006-0003-DWQ (General Order) on May 2, 2006. The General Order requires public agencies that own or operate sanitary sewer systems with greater than one mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order

requires agencies to develop sanitary sewer management plans and report all sanitary sewer overflows (SSOs), among other requirements and prohibitions. The Discharger enrolled as required and must comply with both the General Order and this Order.

The Discharger's collection system is part of the wastewater collection, treatment, and disposal system. Pursuant to federal regulations, the Discharger must properly operate and maintain its collection system [40 CFR 122.41(e)], report any non-compliance [40 CFR 122.41(l)(6) and (7)], and mitigate any discharge from the collection system in violation of this Order [40 CFR section 122.41(d)].

The General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating SSOs. The General Order, however, does not impose federal 24-hour reporting requirements. Accordingly, 24-hour reporting is required by the Order for overflow from the collection system that endangers the public health or environment. To avoid redundancy, all other matters concerning the collection system will be regulated under the General Order.

b. **Pretreatment Requirements.**

i. The Federal Clean Water Act, Section 307(b), and Federal Regulations, 40 CFR Part 403, require publicly owned treatment works to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants that interfere with treatment plant operations or sludge disposal, and prevent pass through of pollutants that exceed water quality objectives, standards or permit limitations. Pretreatment requirements are imposed pursuant to 40 CFR Part 403.

ii. The Discharger has developed a pretreatment program that the Order officially approves. The Discharger must implement and enforce its approved pretreatment program and as an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Regional Water Board, the State Water Board or the U.S. EPA may take enforcement actions against the Discharger and/or an industrial user as authorized by the CWA.

6. **Other Special Provisions**

Special provisions included in this Order include:

a. a requirement for disinfected tertiary treatment for reasons explained elsewhere in this fact sheet.

b. a requirement for notification of transfer of control and provision that transfer is subject to approval of Executive Officer.

c. clarification that clean water from any source allowed into the system cannot compromise compliance with the Order or, as per the Basin Plan, be used for dilution to comply with the Order.

d. a requirement to monitor dissolved oxygen in ponds and maintain at least 1.0 mg/L to manage odors, and to ensure odors that originate at the Facility do not migrate off-site in objectionable concentrations.

e. a requirement for 100-year flood protection.

f. a requirement to control public access to the Facility.

g. a requirement to pay annual fees.

h. a general requirement that facilities comply with accepted design standards and operate in accordance with an up-to-date Operations and Maintenance Manual.

7. **Compliance Schedules**

The use and location of compliances schedules in the permit depends on the Discharger's ability to comply and the source of the applied water quality criteria. This Order establishes a compliance schedule for the new, final, water quality-based effluent limitations for ammonia and requires full compliance by **18 May 2010**. It also imposes a schedule, consistent with a previous commitment by the Discharger to convert to UV disinfection to achieve compliance with effluent limitations for all the trihalomethane pollutants.

VIII. PUBLIC PARTICIPATION

The Regional Water Board is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for Malaga County Water District. As a step in the WDR adoption process, the Regional Water Board staff developed and circulated for comment tentative WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Regional Water Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and provided them with an opportunity to submit their written comments and recommendations on tentative WDRs. Notification was provided through the Fresno Bee on 21 December 2007 and the Regional Water Board's web site.

B. Written Comments

The staff determinations of appropriate requirements are tentative when circulated and posted for comment. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by

mail to the Office of the Regional Water Board at the address on the cover page of this Order.

To be fully responded to by staff and considered by the Regional Water Board, written comments must be received at the Regional Water Board offices **by noon on 22 January 2008**

C. Public Hearing

The Regional Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: 13/14 March 2008
Time: 8:30 am
Location: Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Dr., Suite #200
Rancho Cordova, CA 95670

Interested persons are invited to attend. At the public hearing, the Regional Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is http://www.waterboards.ca.gov/rwqcb5/ where you can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

E. Information and Copying

The Report of Waste Discharge (RWD), related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Regional Water Board by calling 559- 445-5116.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Regional Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this Order should be directed to Debra Bates at 559-445-6281.

Appendix L – Exhibit 25 of the James Irrigation District Comment Letter

California Regional Water Quality Control Board

Central Valley Region

1685 E Street, Fresno, CA 93706
(559) 445-5116 • Fax (559) 445-5910
http://www.waterboards.ca.gov/centralvalley

Linda S. Adams
Secretary for Environmental Protection

Arnold Schwarzenegger
Governor

ORDER NO. R5-2006-0080
NPDES NO. CA0083429

The following Discharger is authorized to discharge in accordance with the conditions set forth in this Order:

Discharger	Chevron Environmental Management Company, ChevronTexaco, Incorporated; and SECOR International Incorporated
Name of Facility	Purity Oil Sales Superfund Site
Facility Address	3281 South Maple Avenue
	Malaga, CA 93725
	Fresno County

The Discharger is authorized to discharge from the following discharge points as set forth below:

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Treated Groundwater	36 º, 41', 13" N	119 º, 44', 49" W	Fresno Irrigation District North Central Canal
002	Treated Groundwater	36 º, 41', 06" N	119 º, 44', 39" W	Fresno Irrigation District Central Canal

This Order was adopted by the Regional Water Board on:	**3 August 2006**
This Order shall become effective on:	**3 August 2006**
This Order shall expire on:	**3 August 2011**
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Board have classified this discharge as a minor discharge.	
The Discharger shall file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, not later than 180 days in advance of the Order expiration date as application for issuance of new waste discharge requirements.	

IT IS HEREBY ORDERED, that Order No. 5-00-008 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in Division 7 of the California Water Code (CWC) and regulations adopted thereunder, and the provisions of the federal Clean Water Act (CWA), and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

I, Pamela C. Creedon, Executive Officer, do hereby certify the following is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 3 August 2006.

PAMELA C. CREEDON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
REGION 5, CENTRAL VALLEY REGION

TABLE OF CONTENTS

I. FACILITY INFORMATION

The following Discharger is authorized to discharge in accordance with the conditions set forth in this Order:

Discharger	Chevron Environmental Management Company, ChevronTexaco, Incorporated; and SECOR International Incorporated
Name of Facility	Purity Oil Sales Superfund Site
Facility Address	3281 South Maple Avenue
	Malaga, CA 93725
	Fresno County
Facility Contact, Title, and Phone	Frank Gegunde, Project Geologist, (559) 271-2650
Mailing Address	SAME
Type of Facility	Groundwater Cleanup Project
Facility Design Flow	0.542 million gallons per day (mgd)

II. FINDINGS

The California Regional Water Quality Control Board, Central Valley Region (hereinafter Regional Water Board), finds:

A. **Background.** Chevron Environmental Management Company, ChevronTexaco, Incorporated; and SECOR International Incorporated (hereinafter Discharger) are currently discharging under Waste Discharge Requirements (WDRs) Order No. 5-00-008 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0083429. The Discharger submitted a Report of Waste Discharge, dated January 17, 2005 and applied for a NPDES permit renewal to discharge up to 0.542 mgd of treated groundwater from the Purity Oil Sales Superfund Site, hereinafter Facility. The application was complete on 17 February 2005.

B. **Facility Description.** The Discharger operates a groundwater cleanup project. The groundwater treatment system (GWTS) consists of groundwater extraction wells, a groundwater feed tank, a potassium permanganate chemical feed system, greensand catalytic oxidizer/filters, and an air stripper column. Wastewater is discharged from Discharge Points 001 and 002 (see table on cover page) to the Fresno Irrigation District (FID) North Central Canal and FID Central Canal (canals), respectively, waters of the United States within the South Valley Floor Hydrologic Unit, Fresno Hydrologic Area (No. 551.30). The canals discharge to Fresno Slough and during periods of heavy rain Fresno Slough drains to the San Joaquin River, both of which are waters of the United States. Attachment B provides a topographic map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

C. **Legal Authorities.** This Order is issued pursuant to section 402 of the Federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and Chapter 5.5, Division 7 of the California Water Code (CWC). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as WDRs pursuant to Article 4, Chapter 4 of the CWC for discharges that are not subject to regulation under CWA section 402.

D. **Background and Rationale for Requirements**. The Regional Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and through special studies. Attachments A through G, which contain background information and rationale for Order requirements, are hereby incorporated into this Order and, thus, constitute part of the Findings for this Order.

E. **California Environmental Quality Act (CEQA).** This action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.) in accordance with Section 13389 of the CWC.

F. **Technology-based Effluent Limitations.** The Code of Federal Regulations (CFR) at 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards. This Order includes technology-based effluent limitations based on Best Professional Judgment (BPJ) in accordance with 40 CFR 125.3. A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet (Attachment F).

G. **Water Quality-based Effluent Limitations.** Section 122.44(d) of 40 CFR requires that permits include water quality-based effluent limitations (WQBELs) to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water. Where numeric water quality objectives have not been established, 40 CFR 122.44(d) specifies that WQBELs may be established using USEPA criteria guidance under CWA section 304(a), proposed State criteria or a State policy interpreting narrative criteria supplemented with other relevant information, or an indicator parameter.

H. **Water Quality Control Plans.** The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition* (hereinafter Basin Plan) designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, State Water Resources Control Board (State Water Board) Resolution No. 88-63 requires that, with certain exceptions, the Regional Water Board assign the municipal and domestic supply (MUN) use to water bodies that do not have beneficial uses listed in the Basin Plan, therefore, this designation applies to the FID canals. As described above, the FID canals discharge to Fresno Slough, a Valley Floor Water. The Basin Plan designates the beneficial uses of Valley Floor Waters as: agricultural supply (AGR); industrial service supply (IND); industrial process supply (PRO); water contact recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (including spawning) (WARM); wildlife habitat (WILD); support of rare, threatened, or endangered species (RARE); and groundwater recharge (GWR). Discharges from the groundwater cleanup system to the FID canals must be protective of the beneficial uses of Fresno Slough. Therefore, for purposes of this Order the beneficial uses of Fresno Slough are considered applicable to the FID canals; along with the MUN designation in accordance with State Water Board Resolution No. 88-63. Beneficial uses applicable to the FID canals are as follows:

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	FID North Central Canal	MUN, AGR, IND, PRO, REC-1, REC-2, WARM, WILD, RARE, and GWR.
002	FID Central Canal	MUN, AGR, IND, PRO, REC-1, REC-2, WARM, WILD, RARE, and GWR.

Requirements of this Order specifically implement the applicable Water Quality Control Plans.

I. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on December 22, 1992, which was amended on May 4, 1995 and November 9, 1999, and the CTR on May 18, 2000, which was amended on February 13, 2001. These rules include water quality criteria for priority pollutants and are applicable to this discharge.

J. **State Implementation Policy.** On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on April 28, 2000, with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Boards in their basin plans, with the exception of the provision on alternate test procedures for individual

discharges that have been approved by USEPA Regional Administrator. The alternate test procedures provision was effective on May 22, 2000. The SIP became effective on May 18, 2000. The SIP was amended by the State Water Board on February 24, 2005. The SIP includes procedures for determining the need for and calculating WQBELs and requires dischargers to submit data sufficient to do so.

K. **Compliance Schedules and Interim Requirements.** Section 2.1 of the SIP provides that, based on a discharger's request and demonstration that it is infeasible for an existing discharger to achieve immediate compliance with an effluent limitation derived from a CTR criterion, compliance schedules may be allowed in an NPDES permit. Unless an exception has been granted under Section 5.3 of the SIP, a compliance schedule may not exceed 5 years from the date that the permit is issued or reissued, nor may it extend beyond 10 years from the effective date of the SIP (or May 18, 2010) to establish and comply with CTR criterion-based effluent limitations. Where a compliance schedule for a final effluent limitation exceeds 1 year, the Order must include interim numeric limitations for that constituent or parameter. Where allowed by the Basin Plan, compliance schedules and interim effluent limitations or discharge specifications may also be granted to allow time to implement a new or revised water quality objective. This Order does include compliance schedules and interim effluent limitations. A detailed discussion of the basis for the compliance schedule(s) and interim effluent limitation(s) is included in the Fact Sheet (Attachment F).

L. **Antidegradation Policy.** Section 131.12 of 40 CFR requires that State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16, which incorporates the requirements of the federal antidegradation policy. Resolution 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. As discussed in detail in the Fact Sheet (Attachment F) the permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16.

M. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. All effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order.

N. **Monitoring and Reporting.** Section 122.48 of 40 CFR requires that all NPDES permits specify requirements for recording and reporting monitoring results. Sections 13267 and 13383 of the CWC authorize the Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. This Monitoring and Reporting Program is provided in Attachment E.

O. **Standard and Special Provisions.** Standard Provisions, which in accordance with 40 CFR 122.41 and 122.42, apply to all NPDES discharges and must be included in every NPDES permit, are provided in Attachment D. The Regional Water Board has also included in this Order

special provisions applicable to the Discharger. A rationale for the special provisions contained in this Order is provided in the attached Fact Sheet (Attachment F).

P. **Notification of Interested Parties.** The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet (Attachment F) of this Order.

Q. **Consideration of Public Comment.** In a public meeting, all comments pertaining to the discharge were heard and considered. Details of the Public Hearing are provided in the Fact Sheet (Attachment F) of this Order.

R. **Applicable Plans, Policies, and Regulations.** On March 30, 2000, USEPA revised its regulation that specifies when new and revised State and Tribal water quality standards (WQS) become effective for CWA purposes (40 CFR 131.21, 65 FR 24641, April 27, 2000). Under USEPA's new regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

S. **Finding for No More Stringent than Federal Law**. This Order contains restrictions on individual pollutants that are no more stringent than required by the federal Clean Water Act. Individual pollutant restrictions consist of technology-based restrictions and water quality-based effluent limitations. The permit's technology-based pollutant restrictions are no more stringent than required by the Clean Water Act. Water quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant water quality-based effluent limitations were derived from the California Toxics Rule, the California Toxics Rule is the applicable standard pursuant to 40 CFR 131.38. The scientific procedures for calculating the individual water quality-based effluent limitations are based on the CTR-SIP, which was approved by USEPA on May 1, 2001. Beneficial uses and water quality objectives contained in the Basin Plan which were used in the development of water quality-based effluent limitations were approved under state law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the [Clean Water] Act" pursuant to 40 CFR 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the technology-based requirements of the Clean Water Act and the applicable water quality standards for purposes of the Clean Water Act.

III. DISCHARGE PROHIBITIONS

A. Discharge of wastewater at a location or in a manner different from that described in the Findings is prohibited.

B. The bypass or overflow of untreated wastewater or wastes to surface waters or surface water drainage courses is prohibited, except as allowed in Standard Provision I.G of Attachment D, Federal Standard Provisions.

C. The discharge or treatment that creates a nuisance as defined in Section 13050 of the CWC is prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Points 001 and 002

1. Final Effluent Limitations – Discharge Points 001 and 002

a. The discharge of treated groundwater shall maintain compliance with the following effluent limitations at Discharge Points 001 and 002 with compliance measured at Monitoring Locations M-001 or M-002 as described in the attached Monitoring and Reporting Program (Attachment E):

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Flow	mgd	0.432	0.542	--	--
pH	standard units	--	--	6.5	8.3
Arsenic (total recoverable)	µg/L	--	10	--	--
	lbs/day	--	0.05	--	--
Copper (total recoverable)	µg/L	0.8	1.6	--	--
	lbs/day	3.6×10^{-3}	7.2×10^{-3}	--	--
Lead (total recoverable)	µg/L	0.11	0.3	--	--
	lbs/day	4.8×10^{-4}	1.4×10^{-3}	--	--
Nickel (total recoverable)	µg/L	4	11	--	--
	lbs/day	0.02	0.05	--	--
Boron (total recoverable)	mg/L	--	1.0	--	--
	lbs/day	--	4.5	--	--
Chloride	mg/L	--	175	--	--
	lbs/day	--	790	--	--
EC at 25° C	µmhos/cm	--	1000	--	--
Iron (total recoverable)	µg/L	--	300	--	--
	lbs/day	--	1.4	--	--
Manganese (total recoverable)	µg/L	--	50	--	--
	lbs/day	--	0.23	--	--
Dichloromethane	µg/L	--	<0.5	--	--
	lbs/day	--	--	--	--
1,2-Dichlorobenzene	µg/L	--	<0.5	--	--
	lbs/day	--	--	--	--

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
1,4-Dichlorobenzene	µg/L	--	<0.5	--	--
	lbs/day	--	--	--	--
TCE	µg/L	--	<0.5	--	--
	lbs/day	--	--	--	--
1,1-DCA	µg/L	--	<0.5	--	--
	lbs/day	--	--	--	--
1,2-DCA	µg/L	0.38	<0.5	--	--
	lbs/day	$1.7x10^{-3}$	--	--	--
1,1-DCE	µg/L	0.057	0.11	--	--
	lbs/day	$2.6x10^{-4}$	$5.2x10^{-4}$	--	--
cis-1,2-DCE	µg/L	--	<0.5	--	--
	lbs/day	--	--	--	--
trans-1,2-DCE	µg/L	--	<0.5	--	--
	lbs/day	--	--	--	--
Benzene	µg/L	--	<0.5	--	--
	lbs/day	--	--	--	--
Chlorobenzene	µg/L	--	<0.5	--	--
	lbs/day	--	--	--	--
Vinyl chloride	µg/L	--	<0.5	--	--
	lbs/day	--	--	--	--
MEK	µg/L	--	<0.5	--	--
	lbs/day	--	--	--	--
4-Methyl-2-pentanone	µg/L	--	<0.5	--	--
	lbs/day	--	--	--	--
Total Xylene Isomers	µg/L	--	<0.5	--	--
	lbs/day	--	--	--	--
Other VOCs	µg/L	--	Nondetectable[a]	--	--
	lbs/day	--	--	--	--

a. Based on minimum levels in Appendix 4 of the SIP and detection limits for purposes of reporting in Title 22, section 64445.1 of the California Code of Regulations.

b. Survival of aquatic organisms in 96-hour bioassays of undiluted waste at Monitoring Location M-001 or M-002 shall be no less than:

Minimum for any one bioassay -70%
Median for any three or more consecutive bioassays - - - - - 90%

2. Interim Effluent Limitations

a. During the period beginning **3 August 2006** and ending on **18 May 2010**, the discharge of treated domestic wastewater shall maintain compliance with the following limitations at Discharge Point 001, with compliance measured at Monitoring Location M-001 as described in the attached Monitoring and Reporting Program (Attachment E). These interim effluent limitations shall apply in lieu of the corresponding final effluent limitations specified for the same parameters during the time period indicated in this provision.

Parameter	Units	Interim Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Min	Instantaneous Max
Copper (total recoverable)	µg/L	--	--	50	--	--
	lbs/day	--	--	0.2	--	--
Lead (total recoverable)	µg/L	--	--	7	--	--
	lbs/day	--	--	0.03	--	--
Nickel (total recoverable)	µg/L	--	--	70	--	--
	lbs/day	--	--	0.3	--	--

B. Land Discharge Specifications – Not Applicable

C. Reclamation Specifications – Not Applicable

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

Receiving water limitations are based on water quality objectives contained in the Basin Plan and are a required part of this Order. The discharge shall not cause the following in the FID canals:

1. Un-ionized ammonia to be present in amounts that adversely affect beneficial uses or that exceed 0.025 mg/L (as N).

2. Biostimulatory substances to be present in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

3. Bacteria: The fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml.

4. Dissolved Oxygen: Concentrations of dissolved oxygen to fall below 5.0 mg/L. The monthly median dissolved oxygen concentrations in the main water mass (at centroid of flow) of streams to fall below 85 percent of saturation concentration, and the 95 percentile concentration to fall below 75 percent of saturation concentration.

5. Oil and Grease: Oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the water surface or on objects in the water, or otherwise adversely affect beneficial uses.

6. Color: Discoloration that causes nuisance or adversely affects beneficial uses.

7. pH: The pH of water to fall below 6.5, exceed 8.3, or changed at any time more than 0.3 units from normal ambient pH.

8. Temperature: The natural receiving water temperature to increase more than 5°F.

9. Settleable Material: Substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

10. Radioactivity: Radionuclides to be present in concentrations that are harmful to human, plant, animal or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life. Concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations.

11. Toxicity: Toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.

12. Floating Material: Floating material in amounts that cause nuisance or adversely affect beneficial uses.

13. Sediment: Suspended sediment load and suspended sediment discharge rate altered in such a manner to cause nuisance or adversely affect beneficial uses.

14. Suspended Material: Suspended material concentrations that cause nuisance or adversely affect beneficial uses.

15. Taste and Odor: Taste- or odor-producing substances in concentrations that cause nuisance, adversely affect beneficial uses, or impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to domestic or municipal water supplies.

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

17. Turbidity: Changes in turbidity that cause nuisance or adversely affect beneficial uses. Turbidity attributable to controllable water quality factors to exceed the following:

    a. More than 1 Nephelometric Turbidity Units (NTUs) where natural turbidity is between 0 and 5 NTUs.

    b. More than 20 percent where natural turbidity is between 5 and 50 NTUs.

    c. More than 10 NTUs where natural turbidity is between 50 and 100 NTUs.

    d. More than 10 percent where natural turbidity is greater than 100 NTUs.

18. Pesticides:

    a. Pesticides in individual or combined concentrations that adversely affect beneficial uses.

    b. Pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses.

    c. Concentrations exceeding the Maximum Contaminant Levels set forth in California Code of Regulations, Title 22, Division 4, Chapter 15.

19. Violation of any applicable water quality standard for receiving waters adopted by the Regional Water Board or the State Water Board pursuant to the Clean Water Act and regulations adopted thereunder.

B. Groundwater Limitations

Release of waste constituents from any storage, treatment, or disposal component associated with the Facility shall not, in combination with other sources of the waste constituents, cause groundwater within influence of the Facility and discharge area(s) to contain waste constituents in concentrations in excess of natural background quality.

VI. PROVISIONS

A. Standard Provisions

1. **Federal Standard Provisions.** The Discharger shall comply with all Standard Provisions included in Attachment D of this Order.

   The Regional Water Board is authorized to enforce the terms of this permit under several provisions of the CWC, including, but not limited to, sections 13385, 13386, and 13387.

2. **Regional Water Board Standard Provisions.** The Discharger shall comply with the following provisions:

   a. If the Discharger's wastewater treatment plant is publicly owned or subject to regulation by the California Public Utilities Commission, it shall be supervised and operated by persons possessing certificates of appropriate grade according to Title 23, CCR, Division 3, Chapter 14.

   b. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:

      i. violation of any term or condition contained in this Order;

      ii. obtaining this Order by misrepresentation or by failing to disclose fully all relevant facts;

      iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and

      iv. a material change in the character, location, or volume of discharge.

      The causes for modification include:

      i. New regulations. New regulations have been promulgated under Section 405(d) of the Clean Water Act, or the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued.

ii. Land application plans. When required by a permit condition to incorporate a land application plan for beneficial reuse of sewage sludge, to revise an existing land application plan, or to add a land application plan.

iii. Change in sludge use or disposal practice. Under 40 Code of Federal Regulations (CFR) 122.62(a)(1), a change in the Discharger's sludge use or disposal practice is a cause for modification of the permit. It is cause for revocation and reissuance if the Discharger requests or agrees.

The Regional Water Board may review and revise this Order at any time upon application of any affected person or the Regional Water Board's own motion.

c. If a toxic effluent standard or prohibition (including any scheduled compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the CWA, or amendments thereto, for a toxic pollutant that is present in the discharge authorized herein, and such standard or prohibition is more stringent than any limitation upon such pollutant in this Order, the Regional Water Board will revise or modify this Order in accordance with such toxic effluent standard or prohibition.

The Discharger shall comply with effluent standards and prohibitions within the time provided in the regulations that establish those standards or prohibitions, even if this Order has not yet been modified.

d. This Order shall be modified, or alternately revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 04(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:

i. contains different conditions or is otherwise more stringent than any effluent limitation in the Order; or

ii. controls any pollutant limited in the Order.

The Order, as modified or reissued under this paragraph, shall also contain any other requirements of the CWA then applicable.

e. The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.

f. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by USEPA under Section 307 of the CWA, or amendment thereto, for any discharge to the municipal system.

g. The discharge of any radiological, chemical or biological warfare agent or high-level, radiological waste is prohibited.

h. A copy of this Order shall be maintained at the discharge facility and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.

i. Neither the treatment nor the discharge shall create a condition of nuisance or pollution as defined by the CWC, Section 13050.

j. Safeguard to electric power failure:

   i. The Discharger shall provide safeguards to assure that, should there be reduction, loss, failure of electric power, the discharge shall comply with the terms and conditions of this Order.

   ii. Upon written request by the Regional Water Board the Discharger shall submit a written description of safeguards. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures experienced over the past five years on effluent quality and on the capability of the Discharger to comply with the terms and conditions of the Order. The adequacy of the safeguards is subject to the approval of the Regional Water Board.

   iii. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Board not approve the existing safeguards, the Discharger shall, within ninety days of having been advised in writing by the Regional Water Board that the existing safeguards are inadequate, provide to the Regional Water Board and USEPA a schedule of compliance for providing safeguards such that in the event of reduction, loss, or failure of electric power, the Discharger shall comply with the terms and conditions of this Order. The schedule of compliance shall, upon approval of the Regional Water Board, become a condition of this Order.

k. The Discharger, upon written request of the Regional Water Board, shall file with the Regional Water Board a technical report on its preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events.

   The technical report shall:

   i. Identify the possible sources of spills, leaks, untreated waste by-pass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.

   ii. Evaluate the effectiveness of present facilities and procedures and state when they became operational.

iii. Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

The Regional Water Board, after review of the technical report, may establish conditions, which it deems necessary to control accidental discharges and to minimize the effects of such events. Such conditions shall be incorporated as part of this Order, upon notice to the Discharger.

l. The Discharger shall file with the Regional Board a Report of Waste Discharge at least 180 days before making any material change in the character, location, or volume of the discharge. A material change includes, but is not limited to, the following:

i. Adding a major industrial waste discharge to a discharge of essentially domestic sewage, or adding a new process or product by an industrial facility resulting in a change in the character of the waste.

ii. Significantly changing the disposal method or location, such as changing the disposal to another drainage area or water body.

iii. Significantly changing the method of treatment.

iv. Increasing the discharge flow beyond that specified in the Order.

m. A publicly owned treatment works (POTW) whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment and disposal facilities. The projections shall be made in January, based on the last three years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in four years, the Discharger shall notify the Regional Water Board by **January 31.** A copy of the notification shall be sent to appropriate local elected officials, local permitting agencies and the press. Within 120 days of the notification, the Discharger shall submit a technical report showing how it will prevent flow volumes from exceeding capacity or how it will increase capacity to handle the larger flows. The Regional Water Board may extend the time for submitting the report.

n. The Discharger shall submit technical reports as directed by the Executive Officer.

o. Chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. In the event a certified laboratory is not available to the Discharger, analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program must be kept in the laboratory and shall be available for inspection by Regional

Water Board staff. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Regional Water Board.

i. Unless otherwise specified, all metals shall be reported as Total Metals.

ii. Acute bioassays shall be performed in accordance with guidelines approved by the Regional Water Board and the Department of Fish and Game or in accordance with methods described in USEPA's manual for measuring acute toxicity of effluents (EPA-821-R-02-012 and subsequent amendments).

iii. Short-term chronic bioassays shall be performed in accordance with USEPA guidelines (EPA-821-R-02-013 and subsequent amendments).

p. Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Regional Water Board and USEPA.

q. The Discharger shall conduct analysis on any sample provided by USEPA as part of the Discharge Monitoring Quality Assurance (DMQA) program. The results of any such analysis shall be submitted to USEPA's DMQA manager.

r. Effluent samples shall be taken downstream of the last addition of wastes to the treatment or discharge works where a representative sample may be obtained prior to mixing with the receiving waters. Samples shall be collected at such a point and in such a manner to ensure a representative sample of the discharge.

s. All monitoring and analysis instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary, at least yearly, to ensure their continued accuracy.

t. The Discharger shall file with the Regional Water Board technical reports on self-monitoring performed according to the detailed specifications contained in the Monitoring and Reporting Program attached to this Order.

u. The results of all monitoring required by this Order shall be reported to the Regional Water Board, and shall be submitted in such a format as to allow direct comparison with the limitations and requirements of this Order. Unless otherwise specified, discharge flows shall be reported in terms of the monthly average and the daily maximum discharge flows.

v. Upon written request of the Regional Water Board, the Discharger shall submit a summary monitoring report to the Regional Water Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year(s).

w. The Discharger shall take all reasonable steps to minimize any adverse effects to waters of the State or users of those waters resulting from any discharge or sludge use or

disposal in violation of this Order. Reasonable steps shall include such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or sludge use or disposal.

x. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this Order shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or be imprisoned for not more than two years per violation, or by both.

B. Monitoring and Reporting Program Requirements

The Discharger shall comply with the Monitoring and Reporting Program, and future revisions thereto, in Attachment E of this Order.

C. Special Provisions

1. Reopener Provisions

a. Upon adoption of any applicable water quality standard for receiving waters by the Regional Water Board or the State Water Board pursuant to the CWA and regulations adopted thereunder, this permit may be reopened and receiving water limitations added.

b. If chronic toxicity testing specified in Section VI.C.2.a indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the water quality objective for toxicity, this Order shall be reopened and a chronic toxicity limitation included and/or a limitation for the specific toxicant identified in the TRE included. Additionally, if a chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened and a limitation based on that objective included.

c. If after review of effluent monitoring results or the study results specified in Sections VI.C.2.a and VI.C.2.b, it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective, this Order will be reopened and effluent limitations added for the subject constituents.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. The Discharger shall conduct the chronic toxicity testing specified in the Monitoring and Reporting Program. If the testing indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the water quality objective for toxicity, the Discharger shall initiate a Toxicity Identification Evaluation (TIE) to identify the causes of toxicity. Upon completion of the TIE, the Discharger shall submit a workplan to conduct a Toxicity Reduction Evaluation (TRE) and, after Regional Water Board evaluation, conduct the TRE.

b. In a February 27, 2001 letter from the Regional Water Board, the Discharger was directed under section 13267 of the CWC to conduct a receiving water and effluent priority pollutant monitoring study in accordance with the requirements of section 1.2 of the SIP. The letter required the Discharger to analyze the discharge and receiving water upstream of the discharge twice for priority pollutants. The Discharger sampled the effluent twice, but has sampled the upstream receiving water only once for priority pollutants. The Discharger shall comply with the following time schedule in conducting a study of these constituents potential effect in surface waters:

Task	Description	Due Date
i.	Submit Workplan and Time Schedule to sample the upstream receiving water once for priority pollutants.	**3 November 2006**
ii.	Begin Sampling	**2 February 2007**
iii.	Complete Sampling	**3 August 2007**
iv.	Submit Study Report	**3 October 2007**

The Discharger shall submit to the Regional Water Board on or before each due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Water Board by letter when it returns to compliance with the time schedule.

3. Best Management Practices and Pollution Prevention – Not Applicable

4. Compliance Schedules

Section IV.C.3 of the attached Fact Sheet (Attachment F) indicates that copper, lead, and nickel concentrations in the discharge have a reasonable potential to cause or contribute to an in stream excursion above water quality criteria. The Discharger shall comply with the following:

Task	Description	Due Date
a.	Submit a technical report containing a compliance schedule justification sufficient to satisfy SIP Section 2.1, paragraph 3. The report shall include: (1) documentation that diligent efforts have been made to quantify pollutant (copper, lead, and nickel) levels in the discharge and the sources of the pollutant in the waste stream; (2) documentation of source control measures and/or pollution minimization measures efforts currently underway or completed; (3) a proposal, including an implementation schedule, for additional or future source control measures, pollutant minimization	**18 September 2006**.

Task	Description	Due Date
	actions, or waste treatment (i.e. GWTS upgrades or operational modifications); and (4) a demonstration that the proposed schedule is short as possible.	
b.	If approved, begin implementation of the items identified in Task a, above. If rejected, comply immediately with Final Effluent Limitations IV.A.1.a.	Within 30 days of approval or rejection of the technical report by the Executive Officer.
c.	Submit Quarterly Progress Reports	1st day of the second month following the close of each calendar quarter.
d.	Comply fully with Final Effluent Limitations IV.A.1.a.	By the deadline approved by the Executive Officer but no later than **18 May 2010.**

5. Construction, Operation and Maintenance Specifications

Each greensands filter shall be cleaned by backflushing with approximately 5,070 gallons of uncontaminated water after treating approximately 35,000 gallons of groundwater.

6. Special Provisions for Municipal Facilities (POTWs Only) – Not Applicable

7. Other Special Provisions

a. Any proposed change in greensands filter backwash water disposal practice from that described in section II.A of Attachment F shall be reported to the Regional Water Board Executive Officer at least 90 days in advance of the change.

b. Prior to making any change in the discharge point, place of use, or purpose of use of the wastewater, the Discharger shall obtain approval of, or clearance from the State Water Board (Division of Water Rights).

c. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office.

To assume operation under this Order, the succeeding owner or operator must apply in writing to the Regional Water Board Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Regional Water Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision V.B, Attachment D, and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Regional Water Board Executive Officer.

d. All technical reports required herein that involve planning, investigation, evaluation, design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, Sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, Sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional(s) responsible for the work.

VII. COMPLIANCE DETERMINATION

Compliance with the effluent limitations contained in Section IV of this Order will be determined as specified below:

A. Average Monthly Effluent Limitation (AMEL).
If the average of daily discharges over a calendar month exceeds the AMEL for a given parameter, an alleged violation will be flagged and the discharger will be considered out of compliance for each day of that month for that parameter (e.g., resulting in 31 days of non-compliance in a 31-day month). The average of daily discharges over the calendar month that exceeds the AMEL for a parameter will be considered out of compliance for that month only. If only a single sample is taken during the calendar month and the analytical result for that sample exceeds the AMEL, the discharger will be considered out of compliance for that calendar month. For any one calendar month during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar month.

B. Maximum Daily Effluent Limitation (MDEL).
If a daily discharge exceeds the MDEL for a given parameter, an alleged violation will be flagged and the discharger will be considered out of compliance for that parameter for that 1 day only within the reporting period. For any 1 day during which no sample is taken, no compliance determination can be made for that day.

C. Instantaneous Minimum Effluent Limitation.
If the analytical result of a single grab sample is lower than the instantaneous minimum effluent limitation for a parameter, a violation will be flagged and the discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both are lower than the instantaneous minimum effluent limitation would result in two instances of non-compliance with the instantaneous minimum effluent limitation).

D. Instantaneous Maximum Effluent Limitation.
If the analytical result of a single grab sample is higher than the instantaneous maximum effluent limitation for a parameter, a violation will be flagged and the discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both exceed the instantaneous maximum effluent limitation would result in two instances of non-compliance with the instantaneous maximum effluent limitation).

ATTACHMENT A – DEFINITIONS

Average Monthly Effluent Limitation (AMEL): the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Daily Discharge: Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Instantaneous Maximum Effluent Limitation: the highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

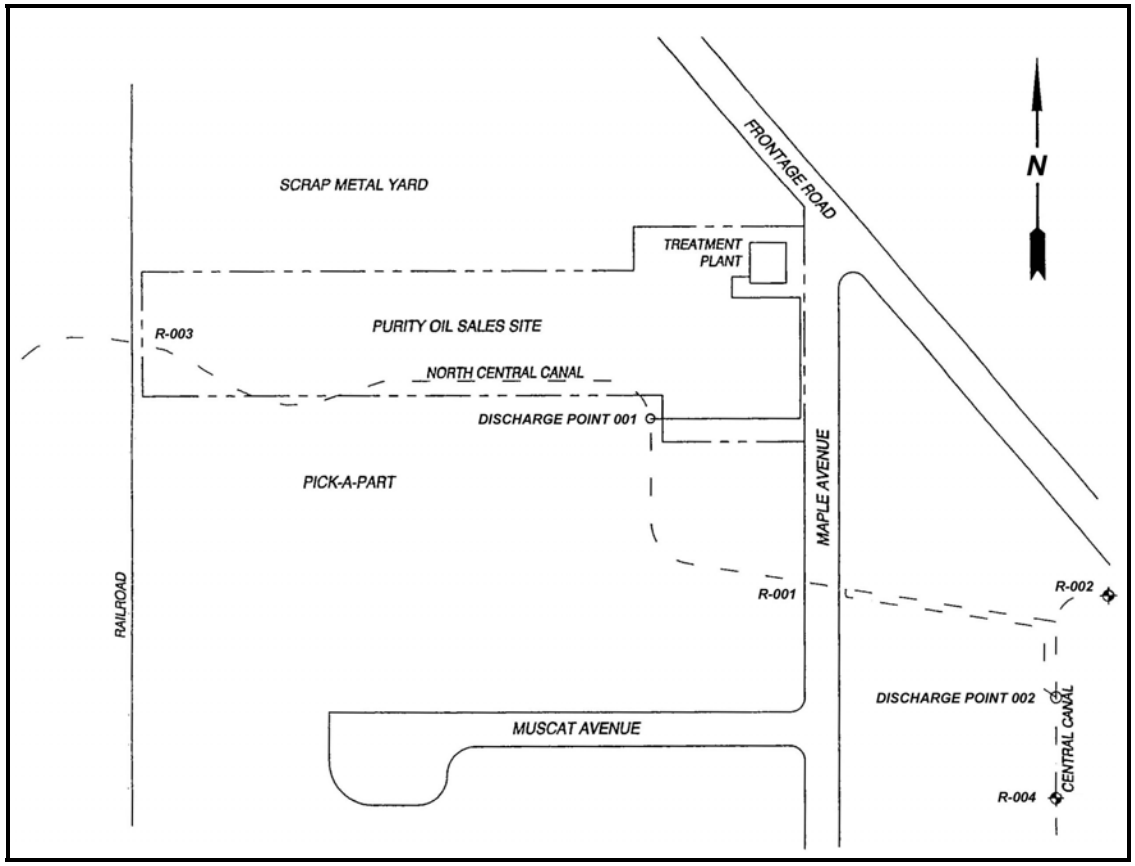
Instantaneous Minimum Effluent Limitation: the lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Maximum Daily Effluent Limitation (MDEL): the highest allowable daily discharge of a pollutant.

Method Detection Limit (MDL): is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in 40 CFR 136, Appendix B.

Minimum Level (ML): is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

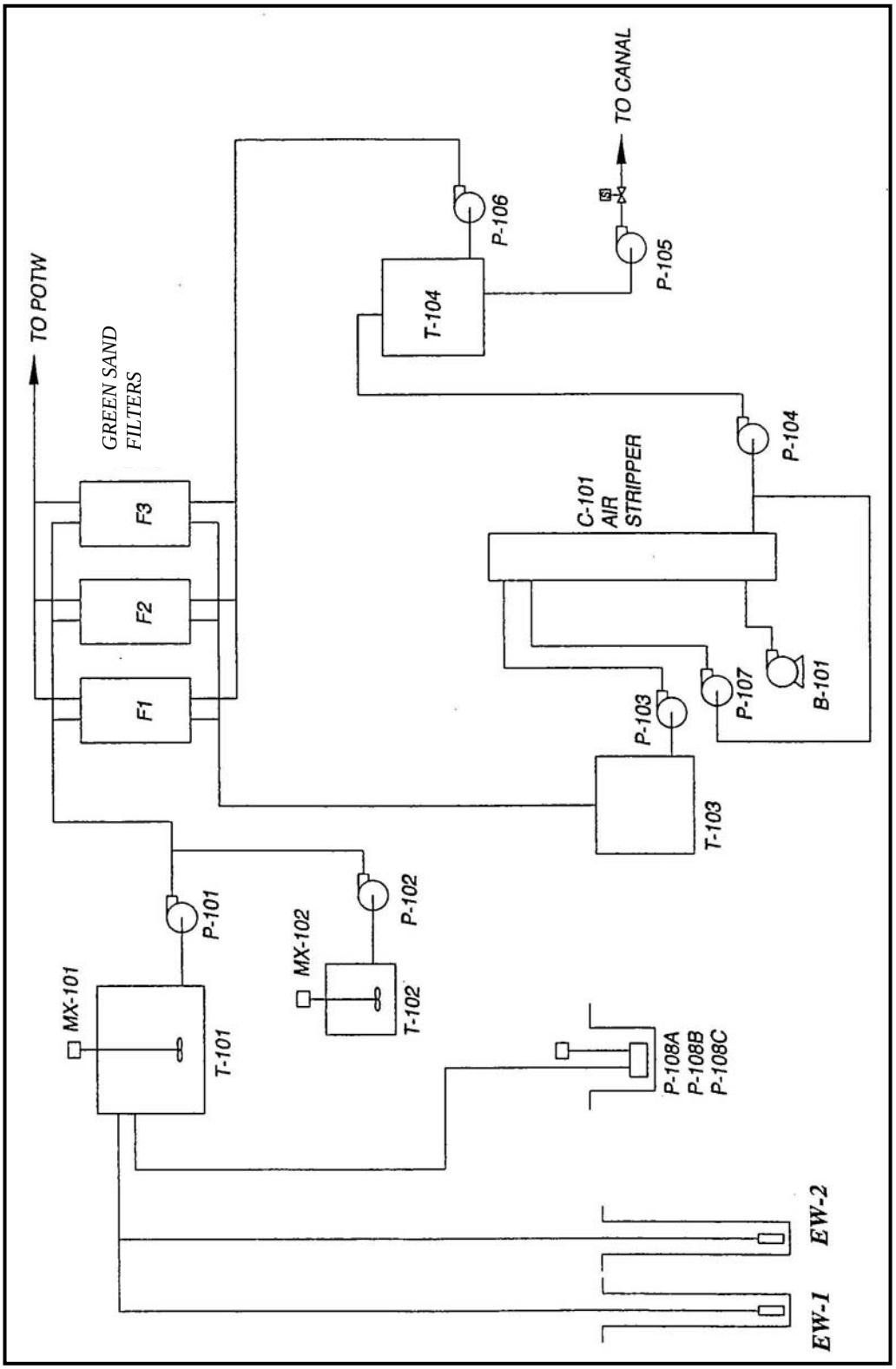
ATTACHMENT B –MAP



SITE MAP

CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
CHEVRONTEXACO, INCORPORATED
SECOR INTERNATIONAL INCORPORATED
PURITY OIL SALES SUPERFUND SITE
Malaga – Fresno County
Facility Location - Latitude 36º 41’ 16” N, Longitude 119º 44’ 46” W
Section 25, T14S, R20E, MDB&M

ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT D – FEDERAL STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code (CWC) and is grounds for enforcement action, for permit termination, revocation and reissuance, or denial of a permit renewal application [*40 CFR 122.41(a)*].

2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not been modified to incorporate the requirement [*40 CFR 122.41(a)(1)*].

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order [*40 CFR 122.41(c)*].

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment [*40 CFR 122.41(d)*].

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order [*40 CFR 122.41(e)*].

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges [*40 CFR 122.41(g)*].

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations [*40 CFR 122.5(c)*].

F. Inspection and Entry

The Discharger shall allow the Regional Water Quality Control Board (RWQCB), State Water Resources Control Board (SWRCB), United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to [*40 CFR 122.41(i)*] [*CWC 13383(c)*]:

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order [*40 CFR 122.41(i)(1)*];

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order [*40 CFR 122.41(i)(2)*];

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order [*40 CFR 122.41(i)(3)*];

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the CWC, any substances or parameters at any location [*40 CFR 122.41(i)(4)*].

G. Bypass

1. Definitions

   a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility [*40 CFR 122.41(m)(1)(i)*].

   b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production [*40 CFR 122.41(m)(1)(ii)*].

2. Bypass not exceeding limitations – The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3 and I.G.5 below [*40 CFR 122.41(m)(2)*].

3. Prohibition of bypass – Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless [*40 CFR 122.41(m)(4)(i)*]:

    a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage [*40 CFR 122.41(m)(4)(A)*];

    b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance [*40 CFR 122.41(m)(4)(B)*]; and

    c. The Discharger submitted notice to the Regional Water Board as required under Standard Provision – Permit Compliance I.G.5 below [*40 CFR 122.41(m)(4)(C)*].

4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above [*40 CFR 122.41(m)(4)(ii)*].

5. Notice

    a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass [*40 CFR 122.41(m)(3)(i)*].

    b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below [*40 CFR 122.41(m)(3)(ii)*].

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation [*40 CFR 122.41(n)(1)*].

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph H.2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review [*40 CFR 122.41(n)(2)*].

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that [*40 CFR 122.41(n)(3)*]:

   a. An upset occurred and that the Discharger can identify the cause(s) of the upset [*40 CFR 122.41(n)(3)(i)*];

   b. The permitted facility was, at the time, being properly operated [*40 CFR 122.41(n)(3)(i)*];

   c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b [*40 CFR 122.41(n)(3)(iii)*]; and

   d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above [*40 CFR 122.41(n)(3)(iv)*].

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof [*40 CFR 122.41(n)(4)*].

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition [*40 CFR 122.41(f)*].

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit [*40 CFR 122.41(b)*].

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the CWC [*40 CFR 122.41(l)(3)*] [*40 CFR 122.61*].

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity [*40 CFR 122.41(j)(1)*].

B. Monitoring results must be conducted according to test procedures under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in

40 CFR Part 503 unless other test procedures have been specified in this Order [*40 CFR 122.41(j)(4)*] [*40 CFR 122.44(i)(1)(iv)*].

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time [*40 CFR 122.41(j)(2)*].

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements [*40 CFR 122.41(j)(3)(i)*];
2. The individual(s) who performed the sampling or measurements [*40 CFR 122.41(j)(3)(ii)*];
3. The date(s) analyses were performed [*40 CFR 122.41(j)(3)(iii)*];
4. The individual(s) who performed the analyses [*40 CFR 122.41(j)(3)(iv)*];
5. The analytical techniques or methods used [*40 CFR 122.41(j)(3)(v)*]; and
6. The results of such analyses [*40 CFR 122.41(j)(3)(vi)*].

C. Claims of confidentiality for the following information will be denied [*40 CFR 122.7(b)*]:

1. The name and address of any permit applicant or Discharger [*40 CFR 122.7(b)(1)*]; and
2. Permit applications and attachments, permits and effluent data [*40 CFR 122.7(b)(2)*].

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, SWRCB, or USEPA within a reasonable time, any information which the Regional Water Board, SWRCB, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, SWRCB, or USEPA copies of records required to be kept by this Order [*40 CFR 122.41(h)*] [*CWC 13267*].

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, SWRCB, and/or USEPA shall be signed and certified in accordance with paragraph (2.) and (3.) of this provision [*40 CFR 122.41(k)*].

2. All permit applications shall be signed as follows:

   a. For a corporation: By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures [*40 CFR 122.22(a)(1)*];

   b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively [*40 CFR 122.22(a)(2)*]; or

   c. For a municipality, State, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA) [*40 CFR 122.22(a)(3)*].

3. All reports required by this Order and other information requested by the Regional Water Board, SWRCB, or USEPA shall be signed by a person described in paragraph (b) of this provision, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described in paragraph (2.) of this provision [*40 CFR 122.22(b)(1)*];

   b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental

matters for the company (a duly authorized representative may thus be either a named individual or any individual occupying a named position) [*40 CFR 122.22(b)(2)*]; and

c. The written authorization is submitted to the Regional Water Board, SWRCB, or USEPA [*40 CFR 122.22(b)(3)*].

4. If an authorization under paragraph (3.) of this provision is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (3.) of this provision must be submitted to the Regional Water Board, SWRCB or USEPA prior to or together with any reports, information, or applications, to be signed by an authorized representative [40 CFR 122.22(c)].

5. Any person signing a document under paragraph (2.) or (3.) of this provision shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations" [*40 CFR 122.22(d)*].

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program in this Order [*40 CFR 122.41(l)(4)*].

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or SWRCB for reporting results of monitoring of sludge use or disposal practices [*40 CFR 122.41(l)(4)(i)*].

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board [*40 CFR 122.41(l)(4)(ii)*].

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order [*40 CFR 122.41(l)(4)(iii)*].

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date [*40 CFR 122.41(l)(5)*].

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance [*40 CFR 122.41(l)(6)(i)*].

2. The following shall be included as information that must be reported within 24 hours under this paragraph [*40 CFR 122.41(l)(6)(ii)*]:

    a. Any unanticipated bypass that exceeds any effluent limitation in this Order [*40 CFR 122.41(l)(6)(ii)(A)*].

    b. Any upset that exceeds any effluent limitation in this Order [*40 CFR 122.41(l)(6)(ii)(B)*].

    c. Violation of a maximum daily discharge limitation for any of the pollutants listed in this Order to be reported within 24 hours [*40 CFR 122.41(l)(6)(ii)(C)*].

3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours [*40 CFR 122.41(l)(6)(iii)*].

F. Planned Changes

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when [*40 CFR 122.41(l)(1)*]:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b) [*40 CFR 122.41(l)(1)(i)*]; or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in this Order nor to notification requirements under 40 CFR Part 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1) [*40 CFR 122.41(l)(1)(ii)*].

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan [*40 CFR 122.41(l)(1)(iii)*].

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or SWRCB of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements [*40 CFR 122.41(l)(2)]*.

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting E.3, E.4, and E.5 at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E [*40 CFR 122.41(l)(7)*].

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, SWRCB, or USEPA, the Discharger shall promptly submit such facts or information [*40 CFR 122.41(l)(8)*].

VI. STANDARD PROVISIONS – ENFORCEMENT – NOT APPLICABLE

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Non-Municipal Facilities

Existing manufacturing, commercial, mining, and silvicultural dischargers shall notify the Regional Water Board as soon as they know or have reason to believe [*40 CFR 122.42(a)*]:

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" [*40 CFR 122.42(a)(1)*]:

   a. 100 micrograms per liter (µg/L) [*40 CFR 122.42(a)(1)(i)*];

   b. 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony [*40 CFR 122.42(a)(1)(ii)*];

c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge [*40 CFR 122.42(a)(1)(iii)*]; or

d. The level established by the Regional Water Board in accordance with 40 CFR 122.44(f) [*40 CFR 122.42(a)(1)(iv)*].

2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" [*40 CFR 122.42(a)(2)*]:

a. 500 micrograms per liter (µg/L) [*40 CFR 122.42(a)(2)(i)*];

b. 1 milligram per liter (mg/L) for antimony [*40 CFR 122.42(a)(2)(ii)*];

c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge [*40 CFR 122.42(a)(2)(iii)*]; or

d. The level established by the Regional Water Board in accordance with 40 CFR 122.44(f) [*40 CFR 122.42(a)(2)(iv)*].

B. Publicly-Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the Regional Water Board of the following [*40 CFR 122.42(b)*]:

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to Sections 301 or 306 of the CWA if it were directly discharging those pollutants [*40 CFR 122.42(b)(1)*]; and
2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order [*40 CFR 122.42(b)(2)*].

Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW [*40 CFR 122.42(b)(3)*].

Attachment E – Monitoring and Reporting Program – Table of Contents

ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations (CFR) at 40 CFR 122.48 requires that all NPDES permits specify monitoring and reporting requirements. California Water Code (CWC) sections 13267 and 13383 also authorize the Regional Water Board to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements which implement the federal and State regulations.

I. GENERAL MONITORING PROVISIONS

A. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring locations shall not be changed without notification to and the approval of this Regional Water Board.

B. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ±10 percent from true discharge rates throughout the range of expected discharge volumes. Guidance in selection, installation, calibration and operation of acceptable flow measurement devices can be obtained from the following references:

1. "A Guide to Methods and Standards for the Measurement of Water Flow," U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 96 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by SD Catalog No. C13.10:421.)
2. "Water Measurement Manual," U.S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U.S. Government Printing Office, Washington D.C. 20402. Order by Catalog No. 172.19/2:W29/2, Stock No. S/N 24003-0027.)
3. "Flow Measurement in Open Channels and Closed Conduits," U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Services (NTIS) Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST.)
4. "NPDES Compliance Sampling Manual," U.S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-51, 1977, 140 pp. (Available from the General Services Administration (8FFS), Centralized Mailing Lists Services, Building 41, Denver Federal Center, CO 80225.)

C. All analyses shall be performed in a laboratory certified to perform such analyses by the California Department of Health Services.

D. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their

continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.

E. Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.

F. If a discharge is intermittent rather than continuous, the Discharger shall monitor and record data for all of the constituents listed below on the first day of each intermittent discharge and thereafter the frequencies in the schedules shall apply. In no event shall the Discharger be required to monitor and record data more often than twice the frequencies listed in the schedules.

G. If results of the monitoring a pollutant appear to violate effluent limitations, but the monitoring frequency is not sufficient to validate the violation, the frequency of sampling shall be increased immediately to confirm the magnitude and duration of the violation.

H. If a monitoring result appears to violate an effluent limitation for VOCs, as indicated by the results from a single sample, the Discharger shall immediately collect at least two grab samples and analyze both for the constituent(s) showing noncompliance. If one or both of the re-sampling results indicate continued noncompliance, the Discharger must cease the discharge immediately after receiving the results confirming non-compliance, and submit a work plan and schedule within 30 days thereafter to achieve compliance. The work plan must be prepared by a California registered professional engineer experienced in the design of wastewater treatment facilities. Discharge from the groundwater treatment system may resume only after the work plan is implemented, and only after at least one additional monitoring result demonstrates that the VOC violation problem has been corrected.

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
001	M-001	Representative sample of total effluent wastewater flow after all treatment operations, at the last connection prior to discharge from Discharge Point 001.
002	M-002	Representative sample of total effluent wastewater flow after all treatment operations, at the last connection prior to discharge from Discharge Point 002.
--	R-001	600 feet upstream from Discharge Point 001 in Fresno Irrigation District (FID) North Central Canal.
--	R-002	300 feet upstream from Discharge Point 002 in FID Central Canal.
--	R-003	1050 feet downstream from Discharge Point 001 in FID North Central Canal.
--	R-004	300 feet downstream from Discharge Point 002 in FID Central Canal.

III. INFLUENT MONITORING REQUIREMENTS – NOT APPLICABLE

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location M-001 or M-002

1. The Discharger shall monitor treated groundwater at M-001 or M-002 (depending on where the effluent is discharged) as follows:

Parameter	Units	Sample Type	Minimum Sampling[1] Frequency	Required Analytical Test Method
Flow	mgd	Metered	1 / month	--
pH	s.u.	Grab	1 / month	[2]
Copper (total recoverable)	µg/L	Grab	1 / month	[2]
Lead (total recoverable)	µg/L	Grab	1 / month	[2]
Nickel (total recoverable)	µg/L	Grab	1 / month	[2]
Boron (total recoverable)	mg/L	Grab	1 / month	[2]
Chloride	mg/L	Grab	1 / month	[2]
EC at 25ºC	µmhos/cm	Grab	1 / month	[2]
Iron (total recoverable)	µg/L	Grab	1 / month	[2]
Manganese (total recoverable)	µg/L	Grab	1 / month	[2]
Dichloromethane	µg/L	Grab	1 / month	[2]
1,2-Dichlorobenzene	µg/L	Grab	1 / month	[2]
1,4-Dichlorobenzene	µg/L	Grab	1 / month	[2]
TCE	µg/L	Grab	1 / month	[2]
1,1-DCA	µg/L	Grab	1 / month	[2]
1,2-DCA	µg/L	Grab	1 / month	[2]
1,1-DCE	µg/L	Grab	1 / month	[2]
cis-1,2-DCE	µg/L	Grab	1 / month	[2]
trans-1,2-DCE	µg/L	Grab	1 / month	[2]
Benzene	µg/L	Grab	1 / month	[2]

Parameter	Units	Sample Type	Minimum Sampling[1] Frequency	Required Analytical Test Method
Chlorobenzene	µg/L	Grab	1 / month	[2]
Vinyl chloride	µg/L	Grab	1 / month	[2]
MEK	µg/L	Grab	1 / month	[2]
4-Methyl-2-pentanone	µg/L	Grab	1 / month	[2]
Total Xylene Isomers	µg/L	Grab	1 / month	[2]
Other VOCs	µg/L	Grab	1 / quarter	[2]
Arsenic (Total Recoverable	µg/L	Grab	1 / month	[2]
Acute Toxicity[3]	% survival	Grab	1 / year	[2]

[1] If any monthly sample contains detectable concentrations of volatile organic compounds the Discharger shall immediately resample and reanalyze the effluent for the detected constituent(s) and shall continue sampling the effluent on a daily basis until the constituent(s) concentrations are ND for two consecutive monitoring events.

[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR 136; for priority pollutants the methods must meet the lowest minimum levels (MLs) specified in Attachment 4 of the SIP. For other pollutants the methods must meet the lowest detection limits for reporting (DLRs) in California Code of Regulations, Title 22, section 64445.1, and where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board.

[3] All acute toxicity bioassays shall be performed according to EPA-821-R-02-012 Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, October 2002 (or latest edition) using *Pimephales promelas* with no pH adjustment, with exceptions granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP). Temperature and pH shall be recorded at the time of bioassay sample collection.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

Chronic toxicity monitoring shall be conducted to determine whether the effluent is contributing toxicity to the receiving water. The testing shall be conducted as specified in EPA-821-R-02-013, *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, October 2002. Twenty-four hour composite samples shall be representative of the volume and quality of the discharge. Time of collection of samples shall be recorded. Control waters shall be provided by the laboratory or collected from the potable water supply at the Facility. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each bioassay and reported with the test results. Both the reference toxicant and effluent test must meet all test acceptability criteria as specified in the chronic manual. If the test acceptability criteria are not achieved, then the Discharger must re-sample and re-test within 14 days.

Species: *Pimephales promelas, Ceriodaphnia dubia and Selenastrum capriconicutum*

Frequency: One time no more than 365 days and no less than 180 days prior to expiration of this Order

Dilution Series:

	Dilutions (%)					Controls	
	100	**50**	**25**	**12.5**	**6.25**	**Irrigation Canal Water**	**Lab Water**
% Effluent	100	50	25	12.5	6.25	0	0
% Dilution Water[1]	0	50	75	87.5	93.75	100	0
% Lab Water[2]	0	0	0	0	0	0	100

[1] Dilution water may be uncontaminated receiving water, a standard synthetic (reconstituted) water, or another acceptable dilution water as defined in Section 7 of EPA/821/R-02/013. The dilution series may be altered upon approval of Regional Water Board staff.

[2] Lab water shall meet USEPA protocol requirements

VI. LAND DISCHARGE MONITORING REQUIREMENTS – NOT APPLICABLE

VII. RECLAMATION MONITORING REQUIREMENTS – NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS

A. Monitoring Locations R-001 and R-003 or R-002 and R-004

1. Samples shall be obtained from Monitoring Locations R-001 and R-003 when effluent is discharged to the FID North Central Canal and from R-002 and R-004 when effluent is discharged to the FID Central Canal. If discharge does not occur during the monitoring period, samples are not required to be collected. The Discharger shall monitor FID North Central Canal and FID Central Canal at R-001 and R-003 or at R-002 and R-004 respectively as follows:

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	mgd	Metered	1 / month	[1]
EC at 25ºC	µmhos/cm	Grab	1 / month	[1]
Turbidity	NTU	Grab	1 / month	[1]

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR 136; for priority pollutants the methods must meet the lowest minimum levels (MLs) specified in Attachment 4 of the SIP, where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board.

2. In conducting the receiving water sampling, a log shall be kept of the upstream and downstream receiving water conditions. Attention shall be given to the presence of:

a. Floating or suspended matter
b. Discoloration
c. Bottom deposits
d. Aquatic life
e. Visible films, sheens coatings
f. Fungi, slimes, or objectionable growths
g. Potential nuisance conditions

Notes on receiving water conditions shall be summarized in the monitoring reports.

IX. OTHER MONITORING REQUIREMENTS

A. Priority Pollutants

The State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP). The SIP states that the Regional Water Boards will require periodic monitoring for pollutants for which criteria or objectives apply and for which no effluent limitations have been established. Accordingly, the Regional Water Board is requiring, as part of this Monitoring and Reporting Program, that the Discharger conduct effluent and receiving water monitoring for priority pollutants one time no more than **365 days and no less than 180 days prior to expiration of this Order**. Priority pollutants are defined as USEPA Priority Pollutants and consist of the constituents listed in the most recent National Toxics Rule and California Toxics Rule. The Discharger must analyze effluent and receiving water pH and hardness at the same time as priority pollutants.

All analyses shall be performed at a laboratory certified by the California Department of Health Services. The laboratory is required to submit the Minimum Level (ML) and the Method Detection Limit (MDL) with the reported results for each constituent. The MDL should be as close as practicable to the USEPA MDL determined by the procedure found in 40 CFR Part 136. The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols required in Section 2.4.4 of the SIP:

1. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

2. Sample results less than the reported ML, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

3. For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (+ a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

4. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

The Discharger shall report to the Regional Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986.

B. Self Monitoring Reports (SMRs)

1. At any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit SMRs. Until such notification is given, the Discharger shall submit SMRs in accordance with the requirements described below.

2. The Discharger shall submit monthly and annual SMRs including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order. Monthly reports shall be due on the 1st day of the second month following the end of each calendar month. Annual reports shall be due on February 1 following each calendar year.

3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
1 / month	First day of calendar month following permit effective date or on permit effective date if that date is first day of the month	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1 / quarter	Closest of January 1, April 1, July 1, or October 1 following (or on) permit effective date	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31	May 1 August 1 November 1 February 1
1 / year	January 1 following (or on) permit effective date	January 1 through December 31	February 1

4. The Discharger shall report with each sample result the applicable Minimum Level (ML) and the current Method Detection Limit (MDL), as determined by the procedure in 40 CFR Part 136.

5. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the Facility is operating in compliance with interim and/or final effluent limitations.

6. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective actions taken or

planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.

7. SMRs must be submitted to the Regional Water Board, signed and certified as required by the standard provisions (Attachment D), to the address listed below:

Submit monitoring reports to:
Central Valley Regional Water Quality Control Board Fresno Branch Office 1685 "E" Street Fresno, CA 93706

C. Discharge Monitoring Reports (DMRs)

1. When requested by USEPA, the Discharger shall complete and submit DMRs. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program for Discharger SMRs.

2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharger shall submit the original DMR and one copy of the DMR to the address listed below:

Submit DMRs to:
State Water Resources Control Board Discharge Monitoring Report Processing Center Post Office Box 671 Sacramento, CA 95812

3. All discharge monitoring results must be reported on the official USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated or modified cannot be accepted.

D. Other Reports

1. Annual Report (1/Year):

   By **February 1 of each year**, the Discharger shall submit a written report to the Executive Officer containing the following:

   a. The names and general responsibilities of all persons employed at the groundwater treatment system who have responsibility for the subject discharges.

   b. The names and telephone numbers of persons to contact regarding the groundwater treatment system for emergency and routine situations.

c. A statement certifying when monitoring instruments and devices for purposes of assuring compliance with this Order were last calibrated including identification of who performed the calibration.

2. Upon notice, the Discharger may also be requested to submit an annual report (1/Year) to the Regional Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

Attachment F – Fact Sheet – Table of Contents

ATTACHMENT F – FACT SHEET

As described in Section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

Scope of Permit. This renewed Order regulates the discharge of up to 0.542 million gallons per day (mgd) of groundwater treatment system effluent from the Purity Oil Sales Superfund Site groundwater cleanup project. This Order includes effluent and surface water limitations, monitoring and reporting requirements, additional study requirements, and reopener provisions for effluent constituents.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

WDID	5D102120001
Discharger	Chevron Environmental Management Company, ChevronTexaco, Incorporated; and SECOR International Incorporated
Name of Facility	Purity Oil Sales Superfund Site
Facility Address	3281 South Maple Avenue
	Malaga, CA 93725
	Fresno County
Facility Contact, Title and Phone	Frank Gegunde, Project Geologist, (559) 271-2650
Authorized Person to Sign and Submit Reports	Robert D. Mihalovich, Senior Superfund Specialist, (925) 842-1341
Mailing Address	6001 Bollinger Canyon Road, San Ramon, CA 94583
Billing Address	c/o SECOR International Inc., 3475 West Shaw Avenue, Suite #104, Fresno, CA 93711
Type of Facility	Groundwater Cleanup Project
Major or Minor Facility	Minor
Threat to Water Quality	3
Complexity	B
Pretreatment Program	Not Applicable
Reclamation Requirements	Not Applicable
Facility Permitted Flow	0.542 million gallons per day (mgd)
Facility Design Flow	0.542 mgd
Watershed	South Valley Floor Hydrologic Unit (551.00)
Receiving Waters	Fresno Irrigation District North Central Canal, Fresno Irrigation District Central Canal
Receiving Water Type	Irrigation Canal

A. Chevron Environmental Management Company and ChevronTexaco, Incorporated; are the owner and operator of Purity Oil Sales Superfund Site (hereinafter Facility) a groundwater cleanup project. SECOR International Incorporated (SECOR) is responsible for the operation of

the Facility's groundwater treatment system. Together Chevron Environmental Management Company, ChevronTexaco, Incorporated; and SECOR are hereinafter referred to as Discharger.

B. The Facility discharges wastewater to the Fresno Irrigation District (FID) North Central Canal and FID Central Canal (canals), which discharge to Fresno Slough and during periods of heavy rainfall, Fresno Slough drains to the San Joaquin River; all are waters of the United States. The discharge is currently regulated by Waste Discharge Requirements (WDRs) Order 5-00-008 which was adopted on January 28, 2000 and was to expire on January 28, 2005. The terms of the existing Order automatically continued in effect after the permit expiration date.

C. The Discharger filed a report of waste discharge and submitted an application for renewal of its WDRs and National Pollutant Discharge Elimination System (NPDES) permit on January 17, 2005. A site visit was conducted on November 16, 2004 to observe operations and collect additional data to develop permit limitations and conditions.

II. FACILITY DESCRIPTION

The Discharger owns and operates the Facility and provides groundwater cleanup under the U.S. Environmental Protection Agency (USEPA) Superfund Program. The groundwater cleanup involves extracting groundwater, removing contaminants, and discharging the treated groundwater to the FID North Central Canal or the FID Central Canal. The Discharger has operated the project's groundwater extraction and treatment system under the limitations of a NPDES permit since 1994.

The 6.86-acre "Site" where the Facility is located is in Section 25, T14S, R20E, MDB&M as shown on Attachment B. The State of California acquired the Facility property (Assessor's Parcel No. 330-060-04) for non-payment of property taxes and owned it between 1973 and 1978. The State sold the Facility property in 1978, but it is currently in tax status default and the owner is unknown.

On March 25, 1994, the Regional Water Board adopted WDRs Order No. 94-066 (NPDES Permit No. CA0083429) for the Purity Oil Sales Site Steering Committee, an unincorporated California association and its members (comprised of the potentially responsible parties named in the USEPA Unilateral Administrative Order), for the discharge of treated groundwater into the Central Canal and/or North Central Canal. The Discharger assumed control of the groundwater extraction and treatment system following a legal settlement.

Site History

The Site was occupied between 1934 and 1975 by an oil recycling facility, where crankcase drainage and other waste oils were stored, processed and recycled. During this period, oily acidic liquids and sludges were spilled and disposed of on the Site. In February 1974, a Regional Water Board staff inspection of the Site disclosed the discharges of wastes to unlined sumps. On January 7, 1975 the Regional Water Board issued a Cleanup and Abatement Order to the Facility. The Facility owner filed for bankruptcy and shut down its operations in 1975.

Site investigations conducted by USEPA, the California Department of Health Services (DHS), and the Regional Water Board during 1980, 1981, and 1982 revealed high to extremely high surface soil

concentrations of oil and grease, lead, zinc, copper, soluble sulfur, volatile organic compounds (VOCs), and polychlorinated biphenyls. Soil samples indicated that, in addition to waste oil, chlorinated solvents and other materials not directly associated with the waste oil reprocessing operation were handled at the Site. Additional investigation revealed that groundwater at the Site was contaminated with VOCs, iron, and manganese. Groundwater samples also contained nickel at concentrations of up to 90 parts per billion. Various site-specific USEPA documents note that iron, manganese, and nickel are naturally occurring.

The waste areas identified at the Site include three ponds, one pit, and eight sumps, all of which were unlined. In addition, seven above-ground steel tanks, several of which evidenced seepage of contaminants, were removed from the Site in 1991. The western three quarters of the Site is mounded 8 to 10 feet above natural grade because a former large pond area, which had contained a tar-like material, was filled with construction debris in 1974.

USEPA placed the Site on the National Priority List in December 1982 and became the lead agency for the site in 1986. On September 26, 1989, USEPA signed a Record of Decision (ROD) selecting extraction wells, air stripping technology, and the greensand process for the removal of contaminants from groundwater. The ROD establishes cleanup goals, which in this case, are equal to the State Maximum Contaminant Levels (MCLs) for some VOCs, iron, and manganese.

Site Conditions

Site soils are comprised of sand and silty sands, interspersed with layers of lower-permeability silt. Groundwater is generally encountered at depths of 50 feet below ground surface (bgs). Groundwater flow is to the northwest with a gradient of about 0.002 foot-per-foot.

Annual precipitation in the area is about 10.5 inches and the average evaporation is about 66 inches.

A. Description of Treatment or Controls

1. Groundwater is pumped from two onsite extraction wells (EW-1 and EW-2) and fed to the groundwater treatment system (GWTS) at an average influent flow rate of less than 2 gallons per minute (gpm). The GWTS removes volatile organic compounds (VOCs), iron, and manganese to below State MCLs. The GWTS consists of groundwater extraction wells, groundwater feed tank, potassium permanganate chemical feed system, three greensand catalytic oxidizer/filters connected in parallel (iron and manganese removal), and an air stripper column (VOCs removal). The treatment capacity of the GWTS is 542,000 gallons per day (gpd).

2. Treated groundwater is used for system reconditioning and greensand filter backwash. In accordance with an agreement between former Purity Oil Sales Site Steering Committee and the Malaga County Water District (MCWD), the filter backwash water containing precipitated iron, manganese, and suspended solids is discharged to the MCWD sewer system.

B. Discharge Points and Receiving Waters

1. The Discharger discharges to the FID North Central Canal (Discharge Point 001) under normal operations. When the FID North Central Canal is unavailable, due to maintenance or repair activities, the discharge is to the FID Central Canal (Discharge Point 002). The canals are owned and operated by the FID. The former Purity Oil Sales Site Steering Committee and the FID have entered into a formal agreement for the discharge. Discharge Points 001 and 002 are in Section 25, T14S, R20E, MDB&M.

2. The North Central and Central canals bifurcate approximately 1,800 feet to the southeast of the Facility and flow in a westerly direction, recombining approximately five miles to the west. From there, FID directs the combined canal to either: (a) a 240-acre infiltration parcel approximately eight miles southwest of the Site, or (b) Fresno Slough approximately 16 miles southwest of the property. During years of heavy rainfall, water drains from the Fresno Slough to Mendota Pool along the San Joaquin River.

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

1. Effluent limitations contained in the existing Order for discharges from Discharge Points 001 and 002 (Monitoring Locations M-001 and M-002 respectively) and representative effluent monitoring data from the term of the previous Order are as follows:

Parameter (units)	Effluent Limitation		Effluent Monitoring Data (January 2000 – September 2004)	
	30-Day Median	Maximum Daily	Highest 30-Day Median Discharge	Highest Daily Discharge
Flow (gpd)	432,000[a]	542,000	6,820[b]	37,940
Iron (µg/L)	--	300	--	1500
Manganese (µg/L)	--	50	--	220
Trichloroethene (µg/L)	<0.5	5	ND	ND
1,1-Dichloroethane (µg/L)	<0.5	5	ND	ND
1,2- Dichloroethane (µg/L)	<0.5	5	ND	ND
1,1-Dichloroethene (µg/L)	<0.5	5	ND	ND
cis-1,2-Dichloroethene (µg/L)	<0.5	5	ND	ND
trans-1,2-Dichloroethene (µg/L)	<0.5	5	ND	ND
Benzene (µg/L)	<0.5	5	ND	ND

Parameter (units)	Effluent Limitation		Effluent Monitoring Data (January 2000 – September 2004)	
	30-Day Median	Maximum Daily	Highest 30-Day Median Discharge	Highest Daily Discharge
Chlorobenzene (µg/L)	<0.5	5	0.59	0.59
1,2-Dichlorobenzene (µg/L)	<0.5	5	ND	ND
Vinyl chloride (µg/L)	<0.5	1	ND	ND
Other volatile organic compounds (µg/L)	--	Nondetectable	--	--
Dichloromethane (µg/L)	--	Nondetectable	4.4	4.4
4-Methyl-2-pentanone (µg/L)	--	Nondetectable	5.2	5.2
Methyl Tert Butyl Ether (µg/L)	--	Nondetectable	0.47 DNQ	0.47 DNQ
pH (standard unit)	--	6.0 – 9.0[c]	--	7.1 – 8.4[c]

[a] Average monthly effluent limitation

[b] Highest average monthly discharge

[c] Instantaneous minimum-maximum range

2. Representative GWTS influent monitoring data from the period of January 2000 – September 2004 are as follows (table summarizes detected influent data):

Parameter	Units	Maximum	Long-term Average[a]
Iron	mg/L	14	1.8
Manganese	mg/L	0.8	0.4
1,1-Dichloroethane	µg/L	1.1	0.65
1,2-Dichlorobenzene	µg/L	2.4	1.2
1,2-Dichloroethane	µg/L	2.1	0.82
1,4-Dichlorobenzene	µg/L	0.51	0.51
Benzene	µg/L	0.64	0.64
Chlorobenzene	µg/L	3.1	1.1
cis-1,2-Dichloroethene	µg/L	34	10
Total Xylene Isomers	µg/L	1.4	1.0
Trichloroethene	µg/L	0.32	0.32
Vinyl chloride	µg/L	0.31	0.31
Methyl Ethyl Ketone	µg/L	17	17
4-Methyl-2-pentanone	µg/L	1.1	1.1

[a] Averages based on detected values only.

D. Compliance Summary

1. During the monitoring period of January 2000 – September 2004 the Discharger violated the following effluent limitations established by Order No. 5-00-008:

Parameter (units)	Effluent Limitations		Number of Exceedances	
	30-Day Median	Maximum Daily	30-Day Median	Maximum Daily
Iron (µg/L)	--	300	--	1
Manganese (µg/L)	--	50	--	1
Chlorobenzene (µg /L)	<0.5	5	1	--
Dichloromethane (µg/L)	--	Nondetectable	--	2
4-Methyl-2-pentanone (µg/L)	--	Nondetectable	--	1
"The sum of the concentrations of the VOC constituents …in the discharge shall not exceed 5 µg/l …"			3	

E. Planned Changes – Not Applicable

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in the proposed Order are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order is issued pursuant to section 402 of the Federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and Chapter 5.5, Division 7 of the California Water Code (CWC). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to Article 4, Chapter 4 of the CWC for discharges that are not subject to regulation under CWA section 402.

B. California Environmental Quality Act (CEQA)

This action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.) in accordance with Section 13389 of the CWC.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** The Regional Water Board adopted a *Water Quality Control Plan for the Tulare Lake Basin, Second Edition* (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, State Water Resources Control Board (State Water Board) Resolution No. 88-63 requires that, with certain exceptions, the Regional Water Board assign the municipal and domestic supply (MUN) use to water bodies that do not have beneficial uses listed in the Basin Plan, therefore this designation applies to the FID canals. As described above, the FID canals discharge to Fresno Slough, a Valley Floor Water. The Basin Plan designates the beneficial uses of Valley Floor Waters as: agricultural supply (AGR); industrial service supply (IND); industrial process supply (PRO); water contact recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (including spawning) (WARM); wildlife habitat (WILD); support of rare, threatened, or endangered species (RARE); and groundwater recharge (GWR). Discharges from the groundwater cleanup system to the FID canals must be protective of the beneficial uses of Fresno Slough. Therefore, for purposes of this Order the beneficial uses of Fresno Slough are considered applicable to the FID canals; along with the MUN designation in accordance with State Water Board Resolution No. 88-63. Beneficial uses applicable to the FID canals are as follows:

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	FID North Central Canal	Existing: MUN, AGR, IND, PRO, REC-1, REC-2, WARM, WILD, RARE, and GWR.
002	FID Central Canal	Existing: MUN, AGR, IND, PRO, REC-1, REC-2, WARM, WILD, RARE, and GWR.

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on December 22, 1992, which was amended on May 4, 1995 and November 9, 1999, and the CTR on May 18, 2000, which was amended on February 13, 2001. These rules include water quality criteria for priority pollutants and are applicable to this discharge.

3. **State Implementation Policy.** On March 2, 2000, State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on April 28, 2000, with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Boards in their basin plans, with the exception of the provision on alternate test procedures for individual discharges that have been approved by USEPA Regional Administrator. The alternate test procedures provision was effective on May 22, 2000. The SIP became effective on May 18, 2000. The SIP was amended by the State Water Board on February 24, 2005. The SIP includes procedures for determining the need for and calculating water quality-based effluent limitations (WQBELs), and requires dischargers to submit data sufficient to do so.

4. **Antidegradation Policy.** Section 131.12 of 40 CFR requires that State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16, which is consistent with the requirements of the federal antidegradation policy. Resolution 68-16 requires that existing water quality is maintained unless degradation is justified based on specific findings. As discussed in detail in this Fact Sheet, the permitted discharge is consistent with the antidegradation provision of 40 CFR 131.12 and State Water Board Resolution 68-16.

5. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. All effluent limitations in the Order are at least as stringent as the effluent limitations in the previous Order.

6. **Monitoring and Reporting Requirements.** Section 122.48 of 40 CFR requires that all NPDES permits specify requirements for recording and reporting monitoring results. Sections 13267 and 13383 of the CWC authorize the Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program (MRP) establishes monitoring and reporting requirements to implement federal and State requirements. This MRP is provided in Attachment E.

7. **Storm Water Requirements.** USEPA promulgated Federal Regulations for storm water on November 16, 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program does not regulate storm water discharges from groundwater cleanup facilities.

D. Impaired Water Bodies on CWA 303(d) List

The FID North Central and Central Canals are not listed as impaired water bodies.

E. Other Plans, Polices and Regulations – Not Applicable

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act (CWA) and amendments thereto that are applicable to the discharge are contained herein.

The federal Clean Water Act (CWA) mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law. (33 U.S.C., section 1311(b)(1)(C); 40 CFR 122.44(d)(1)). NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to 40 CFR 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants

that "are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality." 40 CFR 122.44(d)(1)(vi), further provides that "[w]here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits."

The Basin Plan, at page IV-17.00, contains an implementation policy ("Policy for Application of Water Quality Objectives") that specifies that the Regional Water Board "will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives." This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Regional Water Board must establish effluent limitations using one or more of three specified sources, including USEPA's published water quality criteria, a proposed state criterion (i.e., water quality objective), or an explicit state policy interpreting its narrative water quality criteria (i.e., the Regional Water Board's "Policy for Application of Water Quality Objectives")(40 CFR 122.44(d)(1) (vi) (A), (B) or (C)). The Basin Plan contains a narrative objective requiring that: "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life". The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances that adversely affect beneficial uses. The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The Basin Plan also limits chemical constituents in concentrations that adversely affect surface water beneficial uses. For waters designated as MUN, the Basin Plan specifies that, at a minimum, waters shall not contain concentrations of constituents that exceed Maximum Contaminant Levels (MCLs) of California Code of Regulations (CCR) Title 22. The Basin Plan further states that, to protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs. When a reasonable potential exists for exceeding a narrative objective, federal regulations mandate numerical effluent limitations and the Basin Plan narrative criteria clearly establish a procedure for translating the narrative objectives into numerical effluent limitations.

Chapter 4 of the Basin Plan contains a policy for application of water quality objectives that specifies a method for evaluating the cumulative cancer risk from multiple chemicals found together in water. As of July 9, 2004, the following constituents detected in the Facility's discharge are considered to be carcinogens as defined by The Safe Drinking Water & Toxic Enforcement Act of 1986:

Arsenic	1,1-DCA	Benzene
Chromium VI	1,2-DCA	1,4-Dichlorobenzene
Lead	TCE	Dichloromethane
Nickel	Vinyl chloride	

According to the Basin Plan, for carcinogenic constituents, the additive toxicity of the sum of the constituents is determined by dividing the concentration of each carcinogen in the discharge by its

toxicological limit. The Basin Plan assumes an additive toxicity problem does not exist if the summation of the ratios is less than 1.0. If the summation of the ratios is equal to or greater than 1.0, the combination of constituents is assumed to present an unacceptable level of toxicologic risk.

The Basin Plan describes additive toxicity by the following formula:

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

The GWTS was designed to provide groundwater cleanup for up to its design flow of 0.542 mgd. This Order establishes a daily maximum effluent flow limitation of 0.542 mgd, based on the design flow. Order No. 5-00-008 included a 30-day average effluent flow limit of 0.432 mgd. This Order continues the 30-day average effluent flow limit as a monthly average effluent flow limitation of 0.432 mgd.

Mass-based effluent limitations were calculated by multiplying the concentration limitation by the design flow (0.542 mgd) and the appropriate unit conversion factors.

A. Discharge Prohibitions

1. As stated in Section I.G of Attachment D, Federal Standard Provisions, this Order prohibits bypass from any portion of the treatment facility.

B. Technology-Based Effluent Limitations (TBELs)

1. Scope and Authority

a. The SIP defines Minimum Level (ML) as the concentration at which the entire analytical system must give recognizable signal and calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all method specified sample weights, volumes, and processing steps have been followed.

b. The SIP defines Method Detection Limit (MDL) as the concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in 40 CFR 136, Appendix B, revised as of 14 May 1999.

c. The SIP requires the Discharger to report with each sample result the corresponding applicable ML and the laboratory's current MDL.

d. CWA section 301(b)(1) requires NPDES permits to include effluent limitations that achieve technology-based standards and any more stringent limitations necessary to meet water quality standards. Water quality standards include the Basin Plan's beneficial uses and narrative and numeric water quality objectives, State Water Board adopted standards and federal standards including NTR and CTR. These standards include the Basin Plan's toxicity objective and Resolution 68-16. Under the Clean Water Act, the applicable

technology-based standard is "best available technology economically achievable/best conventional pollutant control technology" or BAT/BCT. Because there are no promulgated effluent limitations for VOCs in groundwater extracted for cleanup, technology-based effluent limitations are established based upon consideration of the Regional Water Board staff's best professional judgment (BPJ). This Regional Water Board has a long history of regulating cleanup of VOCs in groundwater and has consistently imposed effluent limits at less than minimum levels (MLs) for VOCs in groundwater (see Attachment A for a definition of MLs). With respect to the specific discharges permitted herein, and particularly the air stripper, the following have been considered; as required by 40 CFR 125 for establishing BAT based upon BPJ:

- **Appropriate technology for category or class of discharges** – Air Stripping treatment systems are commonly used to remove VOCs from extracted groundwater at cleanup sites. Systems are designed to remove VOCs to nondetectable concentrations. Properly operated and maintained systems perform reliably and ensure essentially complete removal of VOCs. The Discharger employs an air stripper system.

- **Unique factors relating to the applicant –** The Discharger has not identified any unique factors that would justify discharges equaling or exceeding quantifiable concentrations of VOCs.

- **Age of equipment –** The GWTS was constructed in 1994. The first water was extracted, treated, and discharged in December 1994. There have been no significant upgrades to any of the system components since 1994.

- **Non-water quality environmental impacts, including energy requirements and cost of achieving proposed effluent reduction** – The system currently in place reliably removes VOCs to nondetectable concentrations of less than 0.5 µg/L, therefore, implementation of the proposed limits would not create additional non-water quality impacts, or financial costs for the Discharger.

- **Influent and effluent data** – The monitoring data provided by the Discharger indicates that most of the time its air stripper effluent VOC concentrations are below detection limits of 0.5 µg/L. Out of the seven hundred eight effluent samples tested, consisting of seventeen different VOCs, only three samples exceeded the 0.5 µg/L detection limit while most were not detected. Therefore, the Facility is capable of meeting the proposed effluent limits.

Air stripping systems are appropriate technologies for complete VOC removal from extracted groundwater. The above supports a conclusion that the limits of less than 0.5 µg/L as a daily maximum reflects best practicable treatment control technology (BPTC)/BAT. Additionally, the Discharger must properly operate and maintain its treatment systems. As the Discharger is already meeting the effluent limitations, continued proper operation and maintenance will achieve these effluent limits and not impose additional costs on the Discharger.

e. CWA Section 301 requires implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state law. Applicable state water quality standards include Resolution 68-16.

f. Resolution No. 68-16 requires implementation of BPTC to ensure that the highest water quality is maintained consistent with the maximum benefit to the people of the State. BPTC for groundwater cleanup of VOCs provides that the pollutants should be discharged at concentrations no higher than quantifiable levels for each pollutant. BPTC is equivalent to BAT and for VOCs subject to this Order requires meeting effluent limits set at less than MLs. Several dischargers in the Central Valley Region have implemented BPTC groundwater treatment systems and have been able to consistently treat VOCs in the wastewater to concentrations below the MLs. The MLs for VOC constituents of concern are listed below:

Parameter	Units	ML
Trichloroethene (TCE)	µg/L	0.5[1]
1,1-Dichloroethane (1,1-DCA)	µg/L	0.5[1]
1,2-Dichloroethane (1,2-DCA)	µg/L	0.5[1]
1,1-Dichloroethene (1,1-DCE)	µg/L	0.5[1]
cis-1,2-Dichloroethene (cis-1,2-DCE)	µg/L	0.5[2]
trans-1,2-Dichloroethene (trans-1,2-DCE)	µg/L	0.5[1]
Benzene	µg/L	0.5[1]
Chlorobenzene	µg/L	0.5[1]
1,2-Dichlorobenzene (o-Dichlorobenzene)	µg/L	0.5[1]
Vinyl chloride	µg/L	0.5[1]
Dichloromethane	µg/L	0.5[1]
1,4-Dichlorobenzene	µg/L	0.5[1]
Methyl tert butyl ether (MTBE)	µg/L	3[2]
Methyl ethyl ketone (MEK)	µg/L	0.5[2]
4-methyl-2-pentanone	µg/L	0.5[2]
Total Xylene Isomers	µg/L	0.5[2]

[1] Based on MLs listed in Appendix 4 of the SIP.

[2] The SIP does not include MLs for these constituents; these values are based on California Department of Health Services Detection Limits for purposes of Reporting (DLRs) codified in Title 22, CCR, section 64445.1.

2. Applicable Technology-Based Effluent Limitations

a. Order No. 5-00-008 established effluent limitations for iron and manganese, which are technology-based effluent limitations (TBELs) for the iron and manganese precipitation and greensands filtration portion of the GWTS. The iron and manganese limitations were developed using best professional judgment. The existing TBELs are protective of Basin Plan beneficial uses. To ensure continued attainment of beneficial uses, this Order carries over the TBELs for iron and manganese established by the Order No. 5-00-008 with

additional mass-based effluent limitations. Order No. 5-00-008 did not establish mass-based effluent limitations for iron or manganese.

b. Volatile Organic Compounds

i. According to the SIP, if no ML value is below the effluent limitation, the applicable ML value shall be the lowest ML value listed in Appendix 4 of the SIP. VOC concentrations below the MLs are generally considered unquantifiable. Therefore, application of TBELs for VOCs at ground water cleanup sites requires effluent to be below MLs.

ii. Order No. 5-00-008 established 30-day median effluent imitations of less than current MLs (<0.5 µg/L) and daily maximum effluent limitations of 5 µg/L for TCE, 1,1-DCA, 1,2-DCA, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, benzene, chlorobenzene, 1,2-dichlorobenzene, and vinyl chloride, which are TBELs based on BPJ. In accordance with federal Antibacksliding provisions, this Order assigns maximum daily TBELs for these VOCs, except water quality based effluent limitations (WQBELs) are being established for 1,1-DCE. WQBELs are more stringent than applicable TBELs for 1,1-DCE; see section IV.C of this Fact Sheet for further discussion. The maximum daily TBELs established by this Order are less than current MLs, consistent with BPJ based BAT limitations for VOCs removal using air strippers.

iii. Order No. 5-00-008 established a daily maximum effluent limitation of "nondetectable" for other VOCs. This Order continues the "nondetectable" limitation for other VOCs.

iv. Order No. 5-00-008 includes the following effluent limitation: "For any sample event, the sum of the concentrations of the VOC constituents…in the discharge shall not exceed 5 µg/L (nondetectables shall be considered equal to zero)." Order No. 5-00-008's summation of VOCs limitation described above would allow the discharge of VOCs in detectable amounts up to a total of 5 µg/L. Discharge of VOCs in detectable amounts does not comply with BPTC requirements for removal of VOCs established by this Order. Therefore, this Order does not continue the previous Order's summation of VOCs limitation.

v. Analysis of Discharger Self Monitoring Reports for the period of January 2000 – September 2004 and CTR priority pollutant scans (see section II.C and Table F-2 of this Fact Sheet) indicate that the following VOCs, in addition to those already assigned TBELs (see paragraph ii.) have been detected in influent and/or treatment system effluent at levels greater than the effluent limitations contained in Order No. 5-00-008: dichloromethane, 1,4-dichlorobenzene, MEK, 4-methyl-2-pentanone, and total xylene isomers. Because these VOCs have been detected in influent and/or treatment system effluent at concentrations exceeding the limitations in Order No. 5-00-008, TBELs consistent with BPJ based BAT limitations for VOCs removal using air strippers have been included in this permit.

Dichloromethane and 1,4-dichlorobenzene are priority pollutants with MLs listed in Appendix 4 of the SIP. Concentrations of these VOCs less than the corresponding MLs (0.5 µg/L) are considered unquantifiable; therefore TBELs for dichloromethane and 1,4-dichlorobenzene are set at <0.5 µg/L.

MEK, 4-methyl-2-pentanone, and total xylene isomers are not priority pollutants. California Department of Health Services lists DLRs for numerous organic chemicals. The DLRs are codified in Title 22, CCR, section 64445.1. The DLRs for MEK, 4-methyl-2-pentanone, and total xylene isomers are summarized below:

Parameter	DLR (µg/L)
MEK	0.5
4-methyl-2-pentanone	0.5
total xylene isomers	0.5

Concentrations below Title 22 DLRs are considered unquantifiable. BPTC is capable of removing MEK, 4-methyl-2-pentanone, and total xylene isomers to concentrations below the DLRs. Therefore, this Order assigns TBELs equivalent to less than the above DLRs for MEK, 4-methyl-2-pentanone, and total xylene isomers. These limitations are consistent with BPJ based BAT limitations for VOCs removal using air strippers.

3. Final Technology-Based Effluent Limitations

Table F-1 summarizes the final technology-based effluent limitations established in this Order.

Table F-1
Summary of Technology-based Effluent Limitations
Discharge Points 001 and 002

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Flow	mgd	0.432	0.542	--	--
Iron (total recoverable)	µg/L	--	300	--	--
	lbs/day	--	1.4	--	--
Manganese (total recoverable)	µg/L	--	50	--	--
	lbs/day	--	0.23	--	--
Dichloromethane	µg/L	--	<0.5	--	--
1,2-Dichlorobenzene	µg/L	--	<0.5	--	--
1,4-Dichlorobenzene	µg/L	--	<0.5	--	--
TCE	µg/L	--	<0.5	--	--
1,1-DCA	µg/L	--	<0.5	--	--
1,2-DCA	µg/L	--	<0.5	--	--
cis-1,2- DCE	µg/L	--	<0.5	--	--
trans-1,2- DCE	µg/L	--	<0.5	--	--
Benzene	µg/L	--	<0.5	--	--
Chlorobenzene	µg/L	--	<0.5	--	--
Vinyl Chloride	µg/L	--	<0.5	--	--
MEK	µg/L	--	<0.5	--	--
4-Methyl-2-pentanone	µg/L	--	<0.5	--	--
Total Xylene Isomers	µg/L	--	<0.5	--	--
Other VOCs	µg/L	--	Nondetectable[a]	--	--

a. Based on minimum levels in Appendix 4 of the SIP and detection limits for purposes of reporting in Title 22, section 64445.1 of the California Code of Regulations.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

As specified in 40 CFR 122.44(d)(1)(i), permits are required to include WQBELs for pollutants (including toxicity) that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an excursion above any state water quality standard. The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other State plans and policies, or water quality criteria contained in the CTR and NTR.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

a. There may be assimilative capacity within the receiving waters (FID canals) for the Facility's discharge, however, section 1.4.2.2 of the SIP requires that the Discharger's permit application include the information needed by the Regional Water Board to make a determination on allowing a mixing zone, including the calculations for deriving the appropriate receiving water and effluent flows, and/or the results of a mixing zone study. Without the mixing zone study and flow information, it is impossible for the Regional Water Board to assess the assimilative capacity of the receiving waters. Therefore, the Regional Water Board has evaluated the need for WQBELs for pollutants without benefit of dilution in this Order. These water quality-based effluent limitations are based on the application of water quality criteria or objectives at the point of discharge to the FID canals (Discharge Points 001 and 002).

b. The minimum receiving water hardness was used to develop hardness dependent WQBELs. The worst-case or minimum observed value has been chosen to protect the beneficial uses of the receiving water and is shown below:

Parameter	Units	Minimum Receiving Water Concentration
Hardness	mg/L	10

3. Determining the Need for WQBELs

a. Reasonable potential (RP) was determined by calculating the projected MEC (maximum effluent concentration) for each constituent and comparing it to applicable water quality criteria; if a criterion was exceeded, the discharge was determined to have reasonable potential to exceed a water quality objective for that constituent. The projected MEC is determined by multiplying the observed MEC by a factor that accounts for statistical variation. The multiplying factor is determined (for 99% confidence level and 99% probability basis) using the number of results available and the coefficient of variation (standard deviation divided by the mean) of the sample

results. In accordance with the SIP, non-detect results were counted as one-half the detection level when calculating the mean. For all constituents for which the source of the applicable water quality standard is the CTR or NTR, the multiplying factor is 1. Reasonable potential evaluation was based on the methods used in the SIP and the USEPA Technical Support Document for Water Quality-Based Toxics Control [EPA/505/2-90-001] (TSD).

b. According to Section 1.2 of the SIP, the Discharger must report data for all the priority pollutants listed in the CTR. The data are used to determine the reasonable potential for these constituents to cause or contribute to an exceedance of applicable water quality criteria and to calculate effluent limitations. The Discharger was issued a 13267 Order directing it to conduct a receiving water and effluent monitoring study in accordance with the SIP. The Discharger has not submitted all of the required monitoring data for the receiving water. This Order contains provisions that:

   i. Require the Discharger to conduct a study to provide information as to whether the levels of NTR and CTR constituents, USEPA priority pollutants, in the discharge have the reasonable potential to cause or contribute to an in-stream excursion above a water quality standard, including Basin Plan numeric and narrative objectives and water quality standards, objectives, and criteria;

   ii. If the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard, require the Discharger to submit sufficient information to calculate effluent limitations for those constituents; and

   iii. Allow the Regional Water Board to reopen this Order and include effluent limitations for those constituents.

c. Section 1.2 of the SIP requires the Regional Water Board to use all available, valid, relevant, representative data and information to implement the requirements of the SIP. In addition to effluent and receiving water quality data, analysis of groundwater quality data is a valid and relevant means of determining the requirements of this Order.

d. Although the Discharger's GWTS has performed reliably, similar systems have experienced failures or operational errors that have resulted in pass through of untreated or partially treated effluent resulting in exceedances of permit limits. A failure of the GWTS or operational errors could result in a similar discharge of partially treated or untreated effluent exceeding applicable water quality criteria. Therefore groundwater quality data or influent data and effluent data were used to determine the need for additional effluent limitations in this Order.

e. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs the Regional Water Board finds that the

discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for arsenic, copper, lead, nickel, iron, manganese, conductivity at 25 ºC, 1,2-DCA, and cis-1,2-DCE. Effluent limitations for these constituents are included in this Order.

f. The SIP, at Section 1.4 states, in part, "…calculated water quality based effluent limitations shall be compared to the technology-based effluent limitations for the pollutant, and the most protective of the two types of limitations shall be included in the permit." 40 CFR 122.44 requires the same comparison and the application of the more stringent limitations.

g. The reasonable potential analysis for detected constituents is summarized below in Table F-2. Background data for the receiving water have not been summarized because no data are available.

Table F-2
Reasonable Potential Analysis Summary for Detected Constituents
Discharge Points 001 and 002

Parameter	Units	n[1]	CV[2]	Multiplier	MEC[3]	MIC[4]	99th MEC[3]	WQO / WQC[5]	Sources	RP[6]
Antimony (total recoverable)	µg/L	2	0.6	7.4	0.3	NA	2.22	6	California Primary MCL	N
Arsenic (total recoverable)	µg/L	2	0.6	7.4	4	NA	29.6	10	USEPA Primary MCL	Y[7]
Chromium (III)	µg/L	2	0.6	1	3.4	NA	3.4	31 / 260	National Toxic Rule	N
Chromium (VI)	µg/L	2	0.6	1	1.1	NA	1.1	11 / 16	California Toxics Rule	N
Copper (total recoverable)	µg/L	2	0.6	1	6.4	NA	6.4	1.3 / 1.6	California Toxics Rule	Y
Lead (total recoverable)	µg/L	3	0.6	1	1.3	NA	1.3	0.17 / 4	California Toxics Rule	Y
Mercury	µg/L	2	0.6	1	0.0012	NA	0.0012	0.05	California Toxics Rule	N
Nickel (total recoverable)	µg/L	2	0.6	1	9.3	NA	9.3	7 / 70	California Toxics Rule	Y
Selenium	µg/L	2	0.6	1	1	NA	1	5 / 20	National Toxics Rule	N
Thallium (total recoverable)	µg/L	2	0.6	1	0.09	NA	0.09	1.7	National Toxics Rule	N
Zinc (total recoverable)	µg/L	2	0.6	1	3	NA	3	17 / 17	California Toxics Rule	N
Chlorobenzene	µg/L	47	0.6	1.75	0.59	3.1	1.0325	20	USEPA Ambient WQ Criteria	N
Dichloromethane	µg/L	46	0.6	1	4.4	ND	4.4	4.7	California Toxics Rule	N
Iron (total recoverable)	µg/L	34	0.6	1.93	1500	14000	2895	300	California Secondary MCL	Y
Manganese (total recoverable)	µg/L	32	0.6	1.97	220	800	433.4	50	California Secondary MCL	Y
Electrical Conductivity at 25° C (EC)	µmhos/cm	2	0.6	7.4	850	NA	6290	1000	Basin Plan	Y
4-Methyl-2-pentanone	µg/L	6	0.6	3.8	5.2	1.1	19.76	120	California DHS Action Level	N

Parameter	Units	n[1]	CV[2]	Multiplier	MEC[3]	MIC[4]	99th MEC[3]	WQO / WQC[5]	Sources	RP[6]
MTBE	µg/L	45	0.6	1.77	0.47	ND	0.8319	5	California Secondary MCL	N
Benzene	µg/L	29	0.6	--	ND	0.64	--	1	California Primary MCL	N
1,1-DCA	µg/L	29	0.6	--	ND	1.1	--	5	California Primary MCL	N
1,2-DCA	µg/L	29	1.1	--	ND	2.1	--	0.38	National Toxics Rule	Y[8]
TCE	µg/L	29	0.6	--	ND	0.32	--	2.7	California Toxics Rule	N
Vinyl Chloride	µg/L	29	0.6	--	ND	0.31	--	0.5	California Primary MCL	N
1,2-Dichlorobenzene	µg/L	29	0.3	--	ND	2.4	--	24	Odor Threshold	N
1,4-Dichlorobenzene	µg/L	29	0.6	--	ND	0.51	--	5	California Primary MCL	N
cis-1,2-DCE	µg/L	29	0.6	--	ND	34	--	6	California Primary MCL	Y[8]
Xylene(s)	µg/L	29	0.6	--	ND	1.4	--	17	Taste & Odor Threshold	N
MEK	µg/L	2	0.6	--	ND	17	--	4,200	USEPA IRIS Reference Dose	N

1 n: number of parameter samples.
2 CV: coefficient of variation.
3 MEC: maximum effluent concentration. 99th MEC: maximum predicted effluent concentration using 99th percentile multiplier. Note that multiplier is equal to "1" when applying CTR criteria. NA: Not Available. ND: Not Detectable.
4 MIC: maximum influent concentration. Note that 99th percentile multipliers were not used to determine a projected maximum influent concentration. The TSD RPA procedures for the determination of projected maximum effluent concentrations may be applicable for the determination of projected maximum influent concentrations; however, the TSD approach indicates that facility effluent concentrations should be used with the multipliers when determining the need for WQBELs.
5 WQO: water quality objective. WQC: water quality criteria.
6 Reasonable potential.
7 RP based on groundwater monitoring and extraction well data. Not enough data to base reasonable potential on effluent concentrations.
8 RP based on influent concentration.

h. **Arsenic.** CTR freshwater aquatic life criteria for arsenic are 150 µg/L (as a four-day average) and 340 µg/L (as a one-hour average). For waters with the designated beneficial use of MUN, the Basin Plan prohibits discharges that contain chemicals in concentrations that exceed California drinking water MCLs. The California DHS Primary MCL for arsenic is 50 µg/L. On 31 October 2001, USEPA adopted a new federal Primary MCL for arsenic of 10 µg/L. The Safe Drinking Water Act requires California DHS to adopt a Primary MCL at least as low as the USEPA Primary MCL. To protect potential MUN, it is reasonable to require compliance with the USEPA Primary MCL for arsenic. The drinking water standards for arsenic are lower than the aquatic life CTR criteria.

There are only two effluent results for arsenic (3.6 µg/L on 8 February 2005 and 4 µg/L on 5 May 2005). Regional Water Board staff do not believe the limited data is sufficient to determine whether the discharge has reasonable potential to cause or contribute to an in-stream excursion above applicable water quality objectives for arsenic. However, review of groundwater monitoring data and extraction well data indicate that the influent to the GWTS could exceed the USEPA Primary MCL of 10 µg/L. Analytical results for two groundwater monitoring wells less than 200 feet from extraction well EW-1 show dissolved arsenic concentrations to be 9.9 µg/L or greater since May 2005 and as high as 22.9 µg/L. Extraction well EW-1 supplies the largest fraction of the influent to the GWTS. Dissolved arsenic concentrations in EW-1 have been reported as high as 15.1 µg/L (18 March 2005). When combined with the flow from extraction well EW-2 (dissolved concentrations from 1.4 µg/L to 9.3 µg/L), it is reasonable to conclude that, at times, the influent to the GWTS can exceed the USEPA Primary MCL of 10 µg/L. Given that the GWTS's arsenic removal efficiency is undetermined at this time and GWTS sometimes fail, there is a reasonable potential that the effluent arsenic concentrations could exceed the USEPA Primary MCL of 10 µg/L during periods of no receiving water dilution. Therefore, to protect potential MUN, this Order includes a maximum daily effluent limitation of 10 µg/L for arsenic based on the Basin Plan chemical constituent objective.

i. **Copper**. The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. WARM is a beneficial use of the receiving water. The criteria for copper are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total recoverable concentrations. The conversion factors for copper in freshwater are 0.960 for both the acute and the chronic criteria. Using the worst-case (lowest receiving water) measured hardness of 10 mg/L, the corresponding criteria are 1.6 µg/L and 1.3 µg/L for the acute and chronic criteria, respectively. The maximum observed effluent copper concentration was 6.4 µg/L. The maximum observed upstream receiving water copper concentration was 2.5 µg/L. Both the effluent and receiving water concentrations have exceeded the chronic criterion; therefore, effluent limitations for copper are included in this Order. The effluent limitations for copper are presented in total recoverable concentrations, and are based on CTR criteria for the protection of freshwater aquatic life. A review of effluent monitoring data indicates that the Discharger will not be able

to immediately comply with these new effluent limitations for copper. This Order includes interim limitations and a compliance schedule for copper.

j. **Lead.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for lead. WARM is a beneficial use of the receiving water. The standards for lead are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total recoverable concentrations. The conversion factors for lead in freshwater are 1.13 for both the acute and the chronic criteria. Using the worst-case (lowest receiving water) measured hardness of 10 mg/L, the corresponding criteria are 4 µg/L and 0.17 µg/L for the acute and chronic criteria, respectively. The maximum observed effluent lead concentration was 1.3 µg/L. The maximum observed upstream receiving water lead concentration was 1.5 µg/L. Both the effluent and receiving water concentrations have exceeded the chronic criterion; therefore, effluent limitations for lead are included in this Order. The effluent limitations for lead are presented in total recoverable concentrations, and are based on the CTR standards for the protection of freshwater aquatic life. A review of effluent monitoring data indicates that the Discharger will not be able to immediately comply with these new effluent limitations for lead. This Order includes interim limitations and a compliance schedule for lead.

k. **Nickel.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for nickel. WARM is a beneficial use of the receiving water. The standards for metals are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total recoverable concentrations. The conversion factors for nickel in freshwater are 0.998 and 0.997 for acute and the chronic criteria, respectively. Using the worst-case (lowest receiving water) measured hardness of 10 mg/L, the corresponding criteria are 70 µg/L and 7 µg/L for the acute and chronic criteria, respectively. The maximum observed effluent nickel concentration was 9.3 µg/L. The maximum observed upstream receiving water nickel concentration was 3.4 µg/L. The effluent water concentration has exceeded the chronic criterion; therefore, the effluent limitations for nickel are included in this Order. The effluent limitations for nickel are presented in total recoverable concentrations, and are based on the CTR standards for the protection of freshwater aquatic life. A review of effluent monitoring data indicates that the Discharger will not be able to immediately comply with these new effluent limitations for nickel. This Order includes interim limitations and a compliance schedule for nickel.

l. **Conductivity at 25° C (EC), Boron, and Chloride.** Page IV-9, Discharges to Navigable Waters of the Basin Plan, requires at a minimum, dischargers to surface waters to comply with the following effluent limits:

- Maximum EC not to exceed the quality of the source water plus 500 µmhos/cm or 1,000 µmhos/cm, whichever is more stringent, and
- Discharges shall not exceed a chloride content of 175 mg/l or a boron content of 1.0 mg/l.

To comply with Basin Plan requirements, this Order includes EC, boron, and chloride limitations as maximum daily effluent limitations. The GWTS does not add EC, chloride, or boron. Therefore the effluent EC, chloride, and boron concentrations should be the same as the influent concentrations. This Order assigns EC, chloride, and boron limitations and monitoring to gather information, and may be reopened to reconsider EC, chloride, and boron limitations should future monitoring indicate the need.

m. **pH.** The Basin Plan includes numeric water quality objectives that the pH "…not be depressed below 6.5, raised above 8.3, or changed at any time more than 0.3 units from normal ambient pH." Because there is no available assimilative capacity, this Order requires that effluent pH be within the limits of 6.5 to 8.3 units.

n. As shown in Table F-2, WQBELs are necessary for arsenic, copper, lead, nickel, iron, manganese, 1,2-DCA, and cis-1,2-DCE, however, the SIP and 40 CFR 122.33 require NPDES permits to consider both TBELs and WQBELs, and that the more stringent of the two must be implemented to protect water quality. The following table summarizes applicable TBELs, WQBELs, and the final effluent limitations for constituents of concern (i.e. constituents with TBELs shown in Table F-1 and constituents requiring WQBELs-as shown in Table F-2):

Constituent	Units	WQBEL			TBEL	More Stringent WQBEL / TBEL	Final Effluent Limits	
		AMEL	MDEL	Source	MDEL		AMEL	MDEL
Arsenic (total recoverable)	µg/L	--	10	USEPA Primary MCL	--	WQBEL	--	10
Copper (total recoverable)	µg/L	0.8	1.6	CTR Aquatic Life	--	WQBEL	0.8	1.6
Lead (total recoverable)	µg/L	0.11	0.3	CTR Aquatic Life	--	WQBEL	0.11	0.3
Nickel (total recoverable)	µg/L	4	11	CTR Aquatic Life	--	WQBEL	4	11
Iron (total recoverable)	µg/L	300	--	California Secondary MCL	300	TBEL	--	300
Manganese (total recoverable)	µg/L	50	--	California Secondary MCL	50	TBEL	--	50
Dichloromethane	µg/L	4.7	9.5	CTR HH	<0.5	TBEL	--	<0.5
1,2-Dichlorobenzene	µg/L	24	--	Odor Threshold	<0.5	TBEL	--	<0.5
1,4-Dichlorobenzene	µg/L	5	--	California Primary MCL	<0.5	TBEL	--	<0.5
TCE	µg/L	2.7	5.4	CTR HH	<0.5	TBEL	--	<0.5
1,1-DCA	µg/L	5	--	California Primary MCL	<0.5	TBEL	--	<0.5
1,2-DCA	µg/L	0.38	1.0	NTR HH	<0.5	WQBEL / TBEL	0.38	<0.5
1,1-DCE	µg/L	0.057	0.11	NTR HH	<0.5	WQBEL	0.057	0.11
cis-1,2-DCE	µg/L	6	--	California Primary MCL	<0.5	TBEL	--	<0.5
trans-1,2-DCE	µg/L	10	--	California Primary MCL	<0.5	TBEL	--	<0.5
Benzene	µg/L	1	--	California Primary MCL	<0.5	TBEL	--	<0.5
Chlorobenzene	µg/L	70	--	California Primary MCL	<0.5	TBEL	--	<0.5
Vinyl Chloride	µg/L	0.5	--	California Primary MCL	<0.5	TBEL	--	<0.5
MEK	µg/L	4200	--	USEPA IRIS	<0.5	TBEL	--	<0.5
4-Methyl-2-pentanone	µg/L	120	--	DHS Action Level	<0.5	TBEL	--	<0.5
Total Xylene Isomers	µg/L	17	--	Taste and Odor	<0.5	TBEL	--	<0.5

4. WQBEL Calculations

a. The Discharger conducted monitoring for priority and non-priority pollutants. The analytical results of two comprehensive sampling events were submitted to the Regional Water Board. The results of these sampling events, along with effluent and receiving water monitoring conducted during the term of Order No. 5-00-008 were used in developing the requirements of this Order. Effluent limitations are included in the Order to protect the beneficial uses of the receiving water and to ensure that the discharge complies with the Basin Plan objective that toxic substances not be discharged in toxic amounts.

b. Effluent Limitations for WQBELs were calculated in accordance with Section 1.4 of the SIP and the TSD. The following paragraphs describe the general methodology used for calculating effluent limitations.

c. **WQBELs Calculation Example.** Using copper as an example, the following demonstrates how WQBELs were established for this Order. The process for developing these limits is in accordance with Section 1.4 of the SIP. Attachment G summarizes the development and calculation of all WQBELs for this Order using the process described below.

Step 1: For each constituent requiring an effluent limit, identify the applicable water quality criteria or objective. For each criterion determine the effluent concentration allowance (ECA) using the following steady state equation:

ECA = C + D (C-B) when C > B, and
ECA = C when C <= B,

Where: C = The priority pollutant criterion/objective, adjusted if necessary for hardness, pH and translators. In this Order a hardness value of 10 mg/L (as $CaCO_3$) was used for development of hardness-dependant criteria.
D = The dilution credit, and
B = The ambient background concentration

As discussed in Section IV.C.2.a of this Fact Sheet, dilution credits have not been considered in this Order; therefore:

ECA = C

For copper, the applicable water quality criteria are:

ECA_{acute} = 1.6 µg/L
$ECA_{chronic}$ = 1.3 µg/L
$ECA_{human\ health}$ = 1000 µg/L

Step 2: For each ECA based on aquatic life criterion/objective, determine the long-term average discharge condition (LTA) by multiplying the ECA by a factor (multiplier). The multiplier is a statistically based factor that adjusts the ECA to account for effluent variability. The value of the multiplier varies depending on the coefficient of variation (CV) of the data set and whether it is an acute or chronic criterion/objective. Table 1 of the SIP provides pre-calculated values for the multipliers based on the value of the CV. Equations to develop the multipliers in place of using values in the tables are provided in Section 1.4, Step 3 of the SIP and will not be repeated here.

$LTA_{acute} = ECA_{acute} \times Multiplier_{acute}$

$LTA_{chronic} = ECA_{chronic} \times Multiplier_{chronic}$

The CV for the data set must be determined before the multipliers can be selected and will vary depending on the number of samples and the standard deviation of a data set. If the data set is less than 10 samples, or at least 80% of the samples in the data set are reported as non-detect, the CV shall be set equal to 0.6.

For copper, the following data were used to develop the acute and chronic LTA using Table 1 of the SIP:

No. of Samples	CV	$Multiplier_{acute}$	$Multiplier_{chronic}$
2	0.6	0.32	0.53

$LTA_{acute} = 1.6\ \mu g/L \times 0.32 = 0.51\ \mu g/L$

$LTA_{chronic} = 1.3\ \mu g/L \times 0.53 = 0.69\ \mu g/L$

Step 3: Select the most limiting (lowest) of the LTAs.

$LTA =$ most limiting of LTA_{acute} or $LTA_{chronic}$

For copper, the most limiting LTA was the LTA_{acute}

$LTA = 0.51\ \mu g/L$

Step 4: Calculate the water quality based effluent limits by multiplying the LTA by a factor (multiplier). Water quality-based effluent limits are expressed as Average Monthly Effluent Limitations (AMELs) and Maximum Daily Effluent Limitations (MDELs). The multiplier is a statistically based factor that adjusts the LTA for the averaging periods and exceedance frequencies of the criteria/objectives and the effluent limitations. The value of the multiplier varies depending on the probability basis, the coefficient of variation (CV) of the data set, the number of samples (for AMEL) and whether it is monthly or daily limit. Table 2 of the SIP provides pre-calculated values for the multipliers based on the value of the CV and the number of samples. Equations

to develop the multipliers in place of using values in the tables are provided in Section 1.4, Step 5 of the SIP and will not be repeated here.

$AMEL_{aquatic\ life} = LTA \times AMEL_{multiplier}$

$MDEL_{aquatic\ life} = LTA \times MDEL_{multiplier}$

AMEL multipliers are based on a 95th percentile occurrence probability, and the MDEL multipliers are based on the 99th percentile occurrence probability. If the number of samples is less than four (4), the default number of samples to be used is four (4).

For copper, the following data were used to develop the AMEL and MDEL for aquatic life using Table 2 of the SIP:

No. of Samples	CV	$Multiplier_{MDEL}$	$Multiplier_{AMEL}$
2	0.6	3.11	1.55

$AMEL_{aquatic\ life} = 0.51 \times 1.55 = 0.80\ \mu g/L$

$MDEL_{aquatic\ life} = 0.51 \times 3.11 = 1.60\ \mu g/L$

Step 5: For the ECA based on human health, set the AMEL equal to the $ECA_{human\ health}$

$AMEL_{human\ health} = ECA_{human\ health}$

For copper:

$AMEL_{human\ health} = 1000\ \mu g/L$

Step 6: Calculate the MDEL for human health by multiplying the AMEL by the ratio of the $Multiplier_{MDEL}$ to the $Multiplier_{AMEL}$. Table 2 of the SIP provides pre-calculated ratios to be used in this calculation based on the CV and the number of samples.

$MDEL_{human\ health} = AMEL_{human\ health} \times (Multiplier_{MDEL} / Multiplier_{AMEL})$

For copper, the following data were used to develop the $MDEL_{human\ health}$:

No. of Samples	CV	$Multiplier_{MDEL}$	$Multiplier_{AMEL}$	Ratio
2	0.6	3.11	1.55	2.01

$MDEL_{human\ health} = 1000\ \mu g/L \times 2.01 = 2010\ \mu g/L$

Step 7: Select the lower of the AMEL and MDEL based on aquatic life and human health as the water-quality based effluent limit for the Order.

For copper:

$AMEL_{aquatic\ life}$	$MDEL_{aquatic\ life}$	$AMEL_{human\ health}$	$MDEL_{human\ health}$
0.80 µg/L	1.60 µg/L	1000 µg/L	2010 µg/L

The lowest (most restrictive) effluent limits are based on aquatic toxicity and were incorporated into this Order. These limits will be protective of aquatic life.

Mass-based Limitations. Mass-based effluent limitations, or mass emission rates (MERs), for WQBELs applicable to Discharge Point 001 are calculated as follows:

MER = 8.34 (lb-L/mg-Mgal) x (AMEL or MDEL) x 0.542 mgd

d. **Final WQBELs.** Table F-3 summarizes the final WQBELs contained in this Order

Table F-3
Summary of Water Quality-based Effluent Limitations
Discharge Points 001 and 002

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
pH	standard unit	--	--	6.5	8.3
Arsenic (total recoverable)	µg/L	--	10	--	--
	lbs/day	--	0.05	--	--
Copper (total recoverable)	µg/L	0.8	1.6	--	--
	lbs/day	3.6×10^{-3}	7.2×10^{-3}	--	--
Lead (total recoverable)	µg/L	0.11	0.3	--	--
	lbs/day	4.8×10^{-4}	1.4×10^{-3}	--	--
Nickel (total recoverable)	µg/L	3.56	11.4	--	--
	lbs/day	0.02	0.05	--	--
Boron (total recoverable)	mg/L	--	1.0	--	--
	lbs/day	--	4.5	--	--
Chloride	mg/L	--	175	--	--
	lbs/day	--	790	--	--
EC at 25° C	µmhos/cm	--	1000	--	--
1,2-DCA	µg/L	0.38	--	--	--
	lbs/day	1.7×10^{-3}	--	--	--
1,1-DCE	µg/L	0.057	0.11	--	--
	lbs/day	2.6×10^{-4}	5.2×10^{-4}	--	--

5. Whole Effluent Toxicity (WET)

a. **Acute Toxicity.** In order to comply with Basin Plan narrative toxicity requirements, this Order includes the following acute toxicity limitation: the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival.

b. **Chronic Toxicity.** The Basin Plan specifies a narrative objective for toxicity, requiring that all waters be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental response on aquatic organisms. Detrimental response includes but is not limited to decreased growth rate, decreased reproductive success of resident or indicator species, and/or significant alterations in population, community ecology, or receiving water biota.

D. Final Effluent Limitations

1. 40 CFR 122.45 states that:

> "…All pollutants limited in permits shall have limitations…expressed in terms of mass except…[f]or pH, temperature, radiation, or other pollutants which cannot appropriately be expressed by mass…Pollutants limited in terms of mass additionally may be limited in terms of other units of measurement, and the permit shall require the permittee to comply with both limitations."

2. Over the past several years, the air-stripper has consistently removed the pollutants to the proposed effluent limits. The proposed effluent limitations consider the BPJ factors in section IV B.1, above, historical performance of the on-site BAT/BPTC systems, receiving water conditions, USEPA method detection limits, and are less than or equal to California Primary Maximum Contaminant Levels, California Toxics Rule and National Toxics Rule criteria, and limits which implement applicable water quality objectives.

3. Application of BAT/BCT to achieve the effluent limits will also result in compliance with WQBELs, consistent with the requirement of Resolution 68-16 that discharges meet BPTC. Possible exceptions are the WQBELs for 1,2-DCA and 1,1-DCE. However, given that the limitations for these constituents are below the applicable MLs, it is appropriate to assume that the results of <0.5 µg/L also represent compliance with the WQBEL and BPTC. The permitted discharge is consistent with the anti-degradation provisions of 40 CFR 131.12 and Resolution No. 68-16. BPTC for cleanup of groundwater polluted by volatile organic constituents is removal of VOCs to a level at or below corresponding analytical quantitation limits. Some resulting degradation of the receiving water could occur if VOCs were present at concentrations below the quantitation limit, but such degradation would not be quantifiable. The Discharger has not submitted an analysis to the Regional Water Board demonstrating that degradation resulting from discharges of VOCs at concentrations in excess of quantifiable levels would be consistent with the maximum benefit of the people of the state and Resolution No. 68-18. The continued remediation of polluted groundwater

and the discharge of the treated groundwater to the FID canals benefit the people of the state.

4. Table F-4 summarizes the final technology-based and water quality-based effluent limits established in this Order.

Table F-4
Summary of Final Effluent Limitations
Discharge Points 001 and 002

Parameter	Units	Effluent Limitations				Basis
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Flow	mgd	0.432	0.542	--	--	Previous Order No. 5-00-008, Antibacksliding
pH	standard units	--	--	6.5	8.3	Basin Plan
Arsenic (total recoverable)	µg/L	--	10	--	--	Basin Plan
	lbs/day	--	0.05	--	--	
Copper (total recoverable)	µg/L	0.8	1.6	--	--	CTR
	lbs/day	3.6×10^{-3}	7.2×10^{-3}	--	--	
Lead (total recoverable)	µg/L	0.11	0.3	--	--	CTR
	lbs/day	4.8×10^{-4}	1.4×10^{-3}	--	--	
Nickel (total recoverable)	µg/L	3.56	11.4	--	--	CTR
	lbs/day	0.02	0.05			
Boron (total recoverable)	mg/L	--	1.0	--	--	Basin Plan
	lbs/day	--	4.5	--	--	
Chloride	mg/L	--	175	--	--	Basin Plan
	lbs/day	--	790	--	--	
EC at 25° C	µmhos/cm	--	1000	--	--	Basin Plan
Iron (total recoverable)	µg/L	--	300	--	--	Previous Order No. 5-00-008, Antibacksliding
	lbs/day	--	1.4	--	--	
Manganese (total recoverable)	µg/L	--	50	--	--	Previous Order No. 5-00-008, Antibacksliding
	lbs/day	--	0.23	--	--	
Dichloromethane	µg/L	--	<0.5	--	--	BPJ
	lbs/day	--	--	--	--	
1,2-Dichlorobenzene	µg/L	--	<0.5	--	--	BPJ
	lbs/day	--	--	--	--	
1,4-Dichlorobenzene	µg/L	--	<0.5	--	--	BPJ
	lbs/day	--	--	--	--	

Parameter	Units	Effluent Limitations				Basis
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
TCE	µg/L	--	<0.5	--	--	BPJ
	lbs/day	--	--	--	--	
1,1-DCA	µg/L	--	<0.5	--	--	BPJ
	lbs/day	--	--	--	--	
1,2-DCA	µg/L	0.38	<0.5	--	--	NTR, BPJ
	lbs/day	$1.7x10^{-3}$	--	--	--	
1,1-DCE	µg/L	0.057	0.11	--	--	NTR
	lbs/day	$2.6x10^{-4}$	$5.2x10^{-4}$	--	--	
cis-1,2-DCE	µg/L	--	<0.5	--	--	BPJ
	lbs/day	--	--	--	--	
trans-1,2-DCE	µg/L	--	<0.5	--	--	BPJ
	lbs/day	--	--	--	--	
Benzene	µg/L	--	<0.5	--	--	BPJ
	lbs/day	--	--	--	--	
Chlorobenzene	µg/L	--	<0.5	--	--	BPJ
	lbs/day	--	--	--	--	
Vinyl chloride	µg/L	--	<0.5	--	--	BPJ
	lbs/day	--	--	--	--	
MEK	µg/L	--	<0.5	--	--	BPJ
	lbs/day	--	--	--	--	
4-Methyl-2-pentanone	µg/L	--	<0.5	--	--	BPJ
	lbs/day	--	--	--	--	
Total Xylene Isomers	µg/L	--	<0.5	--	--	BPJ
	lbs/day	--	--	--	--	
Other VOCs	µg/L	--	Nondetectable[a]	--	--	BPJ
	lbs/day	--	--	--	--	

a. Based on minimum levels in Appendix 4 of the SIP and detection limits for purposes of reporting in Title 22, section 64445.1 of the California Code of Regulations.

E. Interim Effluent Limitations

1. As stated in Finding II.I of this Order, the USEPA adopted the NTR and the CTR, which contain promulgated water quality criteria applicable to this discharge and the State Water Resources Control Board adopted the SIP, which contains guidance on implementation of the NTR and CTR. CTR and NTR criteria along with beneficial use designations contained the Basin Plan and antidegradation policies constitute water quality standards pursuant to the Clean Water Act. The SIP, Section 2.2.1, requires that if a compliance schedule is granted for a CTR or NTR constituent, the Regional Water Board shall establish interim requirements and dates for their achievement in the NPDES permit. The interim limitations must: be based on current GWTS performance or existing permit limitations, whichever is more stringent; include interim compliance dates separated by no more than one year, and; be included in the Provisions. The interim limitations in this Order are based on current GWTS performance. In developing the interim limitations, where there are ten or more sampling data points available, sampling and laboratory variability are accounted for by establishing interim limits that are based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (*Basic Statistical Methods for Engineers and Scientists*, Kennedy and Neville). Therefore, the interim limitations in this Order are established as the mean plus 3.3 standard deviations of the available data. Where actual sampling shows an exceedance of the proposed 3.3 standard deviations interim limit, the maximum detected concentration has been established as the interim limitation. When there are less than ten sampling data points available, the *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001) (TSD) recommends a coefficient of variation of 0.6 be utilized as representative of wastewater effluent sampling. The TSD recognizes that a minimum of ten data points is necessary to conduct a valid statistical analysis. Therefore, when there are less than ten sampling results for a constituent, the interim limitation is based on the corresponding multiplier from Table 3.1 of the TSD multiplied by the maximum observed sampling point. Interim limitations are established when compliance with NTR and CTR-based effluent limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the final effluent limitations can be achieved.

2. The following interim limitations establish an enforceable maximum effluent concentration until compliance with the final effluent limitations can be achieved:

Parameter	Units	Interim Effluent Limitations
		Maximum Daily
Copper (total recoverable)	µg/L	50
	lbs/day	0.2
Lead (total recoverable)	µg/L	7
	lbs/day	0.03
Nickel (total recoverable)	µg/L	70
	lbs/day	0.3

F. Land Discharge Specifications – Not Applicable

G. Reclamation Specifications – Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

1. The Clean Water Act, Section 303(a-c), required states to adopt numeric criteria where they are necessary to protect designated uses. The Regional Water Board adopted numeric criteria in the Basin Plan. The Basin Plan is a regulatory reference for meeting the state and federal requirements for water quality control (40 CFR 131.20). State Water Board Resolution No. 68-16, the Antidegradation Policy, does not allow changes in water quality less than that prescribed in Water Quality Control Plans (Basin Plans). The Basin Plan states that; "The numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses." This Order contains Receiving Water Limitations based on the Basin Plan numerical and narrative water quality objectives for Biostimulatory Substances, Chemical Constituents, Color, Dissolved Oxygen, Floating Material, Oil and Grease, pH, Pesticides, Radioactivity, Salinity, Sediment, Settleable Material, Suspended Material, Tastes and Odors, Temperature, Toxicity and Turbidity.

2. **Fecal Coliform.** The receiving waters have been designated as having the beneficial use of contact recreation (REC-1). For water bodies designated as having REC-1 as a beneficial use, the Basin Plan includes a water quality objective limiting the "…fecal coliform concentration based on a minimum of not less than five samples for any 30-day period…" to a maximum geometric mean of 200 MPN/100 ml. The objective also states that "…[no] more than ten percent of the total number of samples taken during any 30-day period [shall] exceed 400/100 ml." This objective is included in the Order as a receiving water limitation.

3. **Dissolved Oxygen.** The receiving waters have been designated as having the beneficial use of warm freshwater aquatic habitat (WARM). For water bodies designated as having WARM as a beneficial use, the Basin Plan includes a water quality objective of maintaining a minimum of 5.0 mg/L of dissolved oxygen. Since the beneficial use of

WARM does apply to the FID canals, a receiving water limitation of 5.0 mg/L for dissolved oxygen was included in the Order.

The Basin Plan also includes the water quality objective that "Waste discharges shall not cause the monthly median dissolved oxygen concentrations (DO) in the main water mass (at centroid of flow) of streams and above the thermocline in lakes to fall below 85 percent of saturation concentration, and the 95 percentile concentration to fall below 75 percent of saturation concentration." This objective was included as a receiving water limitation in the Order.

4. **pH.** For all surface water bodies in the Tulare Lake Basin, the Basin Plan includes water quality objectives stating that "The pH of water shall not be depressed below 6.5, raised above 8.3, or changed at any time more than 0.3 units from normal ambient pH." The Order includes receiving water limitations for both pH range and pH change.

5. **Temperature.** The receiving waters have the beneficial use of WARM. The Basin Plan includes the objective that "Elevated temperature wastes shall not cause the temperature of waters designated COLD or WARM to increase by more than 5°F above natural receiving water temperature." This Order includes a receiving water limitation based on this objective.

6. **Turbidity.** The Basin Plan includes the following objective: "Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:

   a. Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.

   b. Where natural turbidity is between 5 and 10 NTUs, increases shall not exceed 20 percent.

   c. Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTU.

   d. Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent."

B. Groundwater

1. The Basin Plan designates the beneficial uses of groundwater in the discharge area as MUN, AGR, industrial service supply (IND), industrial process supply (PRO), REC-1, and REC-2.

2. The following Groundwater Limitation in this Order is based on the State Antidegradation Policy, State Water Board Resolution 68-16: Release of waste constituents from any storage, treatment, or disposal component associated with the Facility shall not, in combination with other sources of the waste constituents, cause groundwater within

influence of the Facility and discharge area(s) to contain waste constituents in concentrations in excess of natural background quality. The GWTS is a closed system and there is no reason for a release of waste that would affect groundwater.

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 of 40 CFR requires all NPDES permits to specify recording and reporting of monitoring results. Sections 13267 and 13383 of the California Water Code authorize the Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program, Attachment E of this Order, establishes monitoring and reporting requirements to implement federal and State requirements. The following provides the rationale for the monitoring and reporting requirements contained in the Monitoring and Reporting Program for this facility.

A. Influent Monitoring – Not Applicable

B. Effluent Monitoring

Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Table F-5 summarizes the monitoring required and the rationale for assigning the monitoring.

Table F-5
Summary of Effluent Monitoring
Discharge Points 001 and 002

Parameter(s)	Monitoring Frequency	Rationale
Flow	1/month	Determine compliance daily maximum and monthly average flow limitation.
Copper, Lead, Nickel	1/month	Determine compliance with effluent limitations.
Iron, Manganese	1/month	Determine compliance with effluent limitations.
TCE; 1,1-DCA; 1,2-DCA; 1,1-DCE; cis-1,2-DCE; trans-1,2-DCE; Benzene; Chlorobenzene; Dichloromethane; 1,2-Dichlorobenzene; 1,4-Dichlorobenzene; Vinyl chloride; MEK; 4-Methyl-2-pentanone; Total Xylene Isomers	1/month	Determine compliance with effluent limitations.
Other VOCs	1/quarter	Determine compliance with effluent limitations.
pH	1/month	Determine compliance with instantaneous minimum/maximum effluent limitations.
Boron, Chloride, EC at 25° C	1/month	Determine compliance with effluent limitations.
Arsenic	1/month	Determine compliance with effluent limitations.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Chapter III of the Basin Plan establishes narrative toxicity water quality objectives and requires that at a minimum compliance with this objective shall be evaluated with a 96-hour bioassay. This Order requires annual acute toxicity testing that implements the requirements of the Basin Plan.

2. **Chronic Toxicity.** Section 4 of the SIP states that a chronic toxicity effluent limitation is required in permits for all discharges that will cause, have the reasonable potential to cause, or contribute to chronic toxicity in receiving waters. Therefore, in accordance with the SIP, the Discharger will be required to conduct chronic toxicity testing in order to determine reasonable potential and establish WQBELs as necessary.

D. Receiving Water Monitoring

1. Surface Water

Receiving water monitoring is included to determine the impacts of the discharge on the receiving water, and also to determine compliance with receiving water limitations. Table F-6 summarizes the receiving water monitoring required by this Order.

Table F-6
Summary of Receiving Water Monitoring
Monitoring Locations R-001 and R-003 or R-002 and R-004

Parameter	Frequency	Rationale
pH, EC at 25° C, Turbidity	1/month	Monitoring assigned to determine whether the discharge is causing an in-stream exceedance of applicable water quality objectives.

2. Groundwater – Not Applicable

E. Other Monitoring Requirements

Section 1.3 of the SIP requires the Regional Water Board to require periodic monitoring for pollutants, at least once prior to the reissuance of a permit, for which criteria or objectives apply and for which no effluent limitations have been established. To comply with the SIP, this Order requires the Discharger to sample effluent and upstream receiving water for priority pollutants at least once during this permit term and the samples shall be collected no more than 365 days and no less than 180 days prior to expiration of this Order.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

Federal Standard Provisions

Standard Provisions, which in accordance with 40 CFR Sections 122.41 and 122.42, apply to all NPDES discharges and must be included in every NPDES permit, are provided in Attachment D to the Order.

40 CFR Section 122.41(a)(1) and (b) through (n) establish conditions that apply to all state-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. 40 CFR Section 123.25(a)(12) allows the State to omit or modify conditions to impose more stringent requirements. In accordance with Section 123.35, this Order omits federal conditions that address enforcement authority specified in 40CFR Sections 122.41(j)(5) and (k)(2) because the enforcement authority under the CWC is more stringent. In lieu of these conditions, this Order incorporates by reference CWC section 13387(e).

B. Special Provisions

1. Reopener Provisions

a. **Provision VI.C.1.a, Reopener Provision.** This provision allows the Regional Water Board to re-open this Order to include any newly adopted receiving water standards.

b. **Provision VI.C.1.b, Chronic Toxicity Reopener Provision.** If the chronic toxicity testing specified in Section VI.C.2 indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the water quality objective for toxicity, this Order shall be reopened and a chronic toxicity limitation included and/or a limitation for the specific toxicant identified in the TRE included. Additionally, if a chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened and a limitation based on that objective included.

c. **Provision VI.C.1.c, Studies/Monitoring Reopener Provision.** This provision allows the Regional Water Board to reopen this Order if review of the study results specified in Section VI.C.2 of this Order or any effluent monitoring show that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective.

2. Special Studies and Additional Monitoring Requirements

a. **Provision VI.C.2.a, Toxicity Studies.** This provision is based on Section 4 of the SIP. It requires the discharger to conduct additional studies to evaluate toxicity in the

discharge and eventually reduce that toxicity (Toxicity Identification Evaluation (TIE) and Toxicity Reduction Evaluation (TRE)) if chronic toxicity monitoring indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the water quality objective for toxicity.

b. **Provision VI.C.2.b, Priority Pollutant Monitoring.** According to Section 1.2 of the SIP, the Discharger must report data for all the priority pollutants listed in the CTR. The data are used to determine reasonable potential for these constituents to cause or contribute to an exceedance of applicable water quality criteria and to calculate effluent limitations. The Discharger was directed under Section 13267 of the California Water Code to conduct a receiving water and effluent monitoring study in accordance with the SIP. The Discharger has not submitted all of the required monitoring data. This provision requires the Discharger to sample the upstream receiving water for priority pollutants and submit the results to the Regional Water Board.

3. Best Management Practices and Pollution Prevention – Not Applicable

4. Compliance Schedules

Provision VI.C.4, Compliance Schedule and Infeasibility Study. The SIP, Section 2.1, provides that: "Based on an existing discharger's request and demonstration that it is infeasible for the discharger to achieve immediate compliance with a CTR criterion, or with an effluent limitation based on a CTR criterion, the Regional Water Board may establish a compliance schedule in an NPDES permit." Section 2.1 further states that compliance schedules may be included in NPDES permits provided that the following justification has been submitted:…"(a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream; (b) documentation of source control and/or pollution minimization efforts currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., GWTS upgrades); and (d) a demonstration that the proposed schedule is as short as practicable." This Order requires the Discharger to provide this information. The new water quality-based effluent limitations for copper, lead, and nickel become effective on **18 September 2006** if a compliance schedule justification is not completed and submitted by the Discharger to the Regional Water Board. Otherwise, final water quality-based effluent limitations for copper, lead, and nickel become effective May 18, 2010.

5. Construction, Operation, and Maintenance Specifications

Order No. 5-00-008 established the following backflushing requirement: "Each greensand filter shall be cleaned by backflushing with approximately 5070 gallons of uncontaminated water after treating approximately 35,000 gallons of groundwater." This Order continues the backflushing requirement established in the previous Order.

6. Special Provisions for Municipal Facilities (POTWs Only) – Not Applicable

7. Other Special Provisions

Order No. 5-00-008 established the following requirement for the disposal of greensands filter backflush water: "Any proposed change in [greensands filter backwash water] disposal practice from that described in [section II.A of Attachment F] shall be reported to the Executive Officer at least 90 days in advance of the change." This Order continues the above backflush water disposal requirement.

VIII. PUBLIC PARTICIPATION

The Regional Water Board is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for the Purity Oil Sales Superfund Site. As a step in the WDR adoption process, the Regional Water Board staff has developed tentative WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through mail service and posting at the site and other public locations.

B. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments should be submitted either in person or by mail to the Executive Office at the Regional Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Regional Water Board, written comments should be received at the Regional Water Board offices by 5:00 p.m. on **21 June 2006.**

C. Public Hearing

The Regional Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: 3 August 2006
Time: 8:30 A.M.
Location: Central Valley Regional Water Quality Control Board
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

Interested persons are invited to attend. At the public hearing, the Regional Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our web address is http://www.waterboards.ca.gov/centralvalley/ where you can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

E. Information and Copying

The Report of Waste Discharge (RWD), related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the Regional Water Board's Fresno Office at any time between 8:00 a.m. and 5:00 p.m., Monday through Friday. The address of the Fresno Office is on the cover of this Order. Copying of documents may be arranged through the Regional Water Board by calling (559) 445-5116.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Regional Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Matt Scroggins at (559) 445-6042.

Attachment G – WQBEL Calculations

The water quality-based effluent limits developed for this Order are summarized below and were calculated as described in the methodology summarized in Attachment F, Fact Sheet Section IV.C.4 of this Order.

	Human Health Calculations			**Aquatic Life Calculations**											**Selected Limits**	
	Human Health			Freshwater												
Pollutant	AMEL = ECA = C hh	MDEL/AMEL multiplier	MDEL hh	ECA acute = C acute	ECA acute multiplier	LTA acute	ECA chronic = C chronic	ECA chronic multiplier	LTA chronic	Lowest LTA	AMEL multiplier 95	AMEL aquatic life	MDEL multiplier 99	MDEL aquatic life	AMEL	MDEL
	ug/L		ug/L	ug/L		ug/L	ug/L		ug/L	ug/L					ug/L	ug/L
Copper	1000	2.01	2006	1.6	0.32	0.51	1.3	0.53	0.69	0.51	1.55	0.8	3.11	1.60	0.80	1.6
Lead	15	2.93	44	4	0.14	0.55	0.17	0.25	0.04	0.04	2.48	0.11	7.29	0.31	0.11	0.3
Nickel	100	3.20	320	70	0.10	6.98	7	0.16	1.14	1.14	3.13	3.56	10.02	11.38	3.56	11.4
1,2-DCA	0.38	2.62	1.0	--	--	--	--	--	--	--	--	--	--	--	0.38	1.0
1,1-DCE	0.057	2.01	0.11	--	--	--	--	--	--	--	--	--	--	--	0.057	0.11

Notes:

C = Water Quality Criteria
hh = human health
AMEL = Average monthly effluent limitation
MDEL = Maximum daily effluent limitation
ECA = Effluent concentration allowance
LTA = Long-term average concentration

Appendix L – Exhibit 26 of the James Irrigation District Comment Letter

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): Septerber 16, 2016

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District, Henrietta Solar, SPK-2015-00147

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: **California** County/parish/borough: **Kings** City: **Lemoore**
Center coordinates of site (lat/long in degree decimal format): Lat. **36.2317°**, Long. **-119.8133°**
Universal Transverse Mercator: **11 247152.85 4013323.2**
Name of nearest waterbody: **Kings River**
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: **San Joaquin River**
Name of watershed or Hydrologic Unit Code (HUC): **Tulare Lake Bed, 18030012**
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form:

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: **September 15, 2016**
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☒ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: **700** linear feet, **28** wide, and/or **0.45** acres.
      Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Established by OHWM.**
      Elevation of established OHWM (if known):

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **DR-3 and DR-4 are drainages within the review area that are determined not to be jurisdictional. DR-4 branches off from DR-1 (non-RPW) in the northern portion of the survey area and flows south approximately 2275 feet within the survey area and continues approximately 2260 feet outside of the survey area. It terminates along the Kent Avenue with no connection to another water of the U.S. DR-3, which is approximately 1,912 feet, does not sustain continuous hydrologic connection from or to any water of the U.S. DR-3 and DR-4 are not interconnected althought they pass with a few feet of each other.**

SECTION III: CWA ANALYSIS

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW:

Summarize rationale supporting determination:

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent":

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **524,000 acres**
Drainage area: **Pick List**
Average annual rainfall: **7.91** inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☒ Tributary flows through **4** tributaries before entering TNW.

Project waters are **30 (or more)** river miles from TNW.
Project waters are **2-5** river miles from RPW.
Project waters are **30 (or more)** aerial (straight) miles from TNW.
Project waters are **2-5** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: **None**

Identify flow route to TNW[5]: **DR-1 (part of Lemoore Canal system) to North Fork Kings River to Fresno Slough to San Joaquin River (TNW).**
Tributary stream order, if known: **4**

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☒ Artificial (man-made). Explain:
☐ Manipulated (man-altered). Explain:

Tributary properties with respect to top of bank (estimate):
Average width: **28** feet
Average depth: **4** feet
Average side slopes: **2:1.**

Primary tributary substrate composition (check all that apply):

☐ Silts	☒ Sands	☐ Concrete
☐ Cobbles	☒ Gravel	☐ Muck
☐ Bedrock	☐ Vegetation. Type/% cover:	
☐ Other. Explain:		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: **man-made**
Presence of run/riffle/pool complexes. Explain: **none**
Tributary geometry: **Relatively straight**
Tributary gradient (approximate average slope): **0-5** %

(c) Flow:
Tributary provides for: **Seasonal flow**
Estimate average number of flow events in review area/year: **20 (or greater)**
Describe flow regime: **It is an agricultural system that is artifically controlled by pumps and gates**
Other information on duration and volume: **unknown**

Surface flow is: **Confined.** Characteristics:

Subsurface flow: **No**. Explain findings:
☐ Dye (or other) test performed:

Tributary has (check all that apply):
☒ Bed and banks
☒ OHWM[6] (check all indicators that apply):

☒ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☐ destruction of terrestrial vegetation
☐ shelving	☐ the presence of wrack line
☐ vegetation matted down, bent, or absent	☐ sediment sorting
☐ leaf litter disturbed or washed away	☐ scour
☐ sediment deposition	☐ multiple observed or predicted flow events
☐ water staining	☐ abrupt change in plant community
☐ other (list):	

☐ Discontinuous OHWM.[7] Explain:

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:	☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list):	

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.). Explain: **water color is clear and general watershed characteristics.**
Identify specific pollutants, if known: **None.**

(iv) Biological Characteristics. Channel supports (check all that apply):

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

☐ Riparian corridor. Characteristics (type, average width):
☐ Wetland fringe. Characteristics:
☐ Habitat for:
  ☐ Federally Listed species. Explain findings:
  ☐ Fish/spawn areas. Explain findings:
  ☐ Other environmentally-sensitive species. Explain findings:
  ☐ Aquatic/wildlife diversity. Explain findings:

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:
Properties:
Wetland size: acres
Wetland type. Explain:
Wetland quality. Explain:
Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:
Flow is: **Pick List**. Explain:

Surface flow is**: Pick List**
Characteristics:

Subsurface flow: **Pick List**. Explain findings:
☐ Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:
☐ Directly abutting
☐ Not directly abutting
  ☐ Discrete wetland hydrologic connection. Explain:
  ☐ Ecological connection. Explain:
  ☐ Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW
Project wetlands are **Pick List** river miles from TNW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Flow is from: **Pick List.**
Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:
Identify specific pollutants, if known:

(iii) Biological Characteristics. Wetland supports (check all that apply):

☐ Riparian buffer. Characteristics (type, average width):
☐ Vegetation type/percent cover. Explain:
☐ Habitat for:
  ☐ Federally Listed species. Explain findings:
  ☐ Fish/spawn areas. Explain findings:
  ☐ Other environmentally-sensitive species. Explain findings:
  ☐ Aquatic/wildlife diversity. Explain findings:

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**
Approximately acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed:

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: **DR-1 is a portion of a larger drainage that conveys water from the Kings River Complex (non-RPW) into North Fork Kings River(non-RPW) which flows into Fresno Slough (RPW) and finally flow into San Joaquin River (TNW). As part of the drainage, DR-1 has the capacity to carry flood water including pollutants, nutrients and organic carbon, eventually to the San Joaquin River. Hence, the capacity to carry flood water has a significant relationship to the physical, chemical and biological intergrity of the San Joaquin River. The San Joaquin River and its adjacent wetlands are one of the most polluted rivers in the U.S. which is attributed to years of natural run-off and man-made pollution from up-stream agricultural use and mining. The river also supports a large varity of about 40 species of freshwater fishes, migratory birds, and large grazing animls. As such, DR-1's flood water could transfer nutrients and organic carbon to support habitat and lifecycle function for migratory fishes and birds, and other species for feeding, nesting, spawning and rearing young in the TNW.**

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet, wide, Or acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
   - ☐ Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

   Provide estimates for jurisdictional waters in the review area (check all that apply):
   - ☐ Tributary waters: linear feet wide.

☐ Other non-wetland waters: acres.
Identify type(s) of waters:

3. Non-RPWs[8] that flow directly or indirectly into TNWs.

☒ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☒ Tributary waters: **764.35** linear feet, **28** wide.
☐ Other non-wetland waters: acres.
Identify type(s) of waters:

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.[9]

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]

☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain:
☐ Other factors. Explain:

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet, wide.
☐ Other non-wetland waters: acres.
Identify type(s) of waters:

[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Appendix L – Exhibit 27 of the James Irrigation District Comment Letter

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

January 19, 2017

Regulatory Division (SPK-2010-00319)

Ms. Alicia Forsythe
Bureau of Reclamation
San Joaquin River Restoration Program
2800 Cottage Way, W-1727
Sacramento, California 95825

Dear Ms. Forsythe:

We are responding to your June 13, 2016, September 29, 2016, and January 19, 2017, request and correspondence for a preliminary jurisdictional determination (JD) for the Mendota Pool Bypass & Reach 2B Project site from our office. This approximately 5,610.65-acre project site is located in the San Joaquin River, including Mendota Pool, in Sections 7, 8, 16-23, 25-27, 29-30, 32, and 36, Township 13 South, Range 15 East, MDB&M, Latitude 36.780214676602°, Longitude -120.329834476599°, Fresno and Madera Counties, California. The Corps of Engineers has jurisdiction over this project area under Section 10 of the Rivers and Harbors Act, and Section 404 of the Clean Water Act.

Based on available information, we concur with your aquatic resources delineation for the site as depicted in the set of 29 wetland delineation maps created by AECOM dated 2016, entitled *404 Wetland Delineation, Mendota Pool Bypass and Reach 2B Improvements Project*. We verify that there are approximately 711.26 acres of waters of the United States within the project site. These waters of the United States are made up of approximately 396.59 acres of other waters of the United States, 299.68 acres of wetlands, and 14.99 acres of jurisdictional canals that are present within the survey area. These features are potential jurisdictional aquatic resources or waters of the United States and are regulated under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

At your request, we have completed a preliminary JD for the site. Enclosed find a copy of the *Preliminary Jurisdictional Determination Form* (Enclosure 1). Please sign and return the completed form to this office, at the address listed below, within 30 days of the date of this letter. If you do not return the signed form within 30 days, we will presume concurrence and finalize the preliminary jurisdictional determination.

You may request an approved JD for this site at any time prior to starting work within waters, including after a permit decision is made.

We recommend you provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This preliminary jurisdictional determination has been conducted to identify the potential limits of wetlands and other aquatic resources at the project site which may be subject to U.S. Army Corps of Engineers jurisdiction under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act. A *Notification of Appeal Process and Request for Appeal Form* is enclosed to notify you of your options with this determination (Enclosure 2).

Please refer to identification number SPK-2010-00319 in any correspondence concerning this project. If you have any questions, please contact me at the letterhead address, Room 1350, by email at *Kathy.Norton@usace.army.mil*, or telephone at (916) 557-5260. For Regulatory program information or to complete our customer survey, visit our website located at *www.spk.usace.army.mil/Missions/Regulatory.aspx*.

Sincerely,

Kathy Norton
Sr. Project Manager
California South Branch

Enclosures

cc: (w/encl)

Ms. Rebecca Victorine, Bureau of Reclamation, San Joaquin River Restoration Program, 2800 Cottage Way, Sacramento, California 95825

PRELIMINARY JURISDICTIONAL DETERMINATION FORM
Sacramento District

This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

Regulatory Branch: **California South** File/ORM #: **SPK-2010-00319** PJD Date: **January 19, 2017**

State: **CA** City/County: **Near Firebaugh, Madera/Fresno Counties**
Nearest Waterbody: **San Joaquin River**
Location (Lat/Long): **36.780214676602°, -120.329834476599°**
Size of Review Area: **5,610.65** acres

Name/Address Of Property Owner/ Potential Applicant: **Bureau of Reclamation**
Attn: Ms. Alicia Forsythe
2800 Cottage Way
Sacramento, California 95825

Identify (Estimate) Amount of Waters in the Review Area
Non-Wetland Waters:
Canals: 14.99 acres linear feet ft wide
Other Waters: 396.59 acre(s)
Stream Flow: **Perennial and Seasonal**

Wetlands: 299.68 acre(s)
Cowardin Class: **Mixed**

Name of any Water Bodies Tidal:
on the site identified as
Section 10 Waters: Non-Tidal: **San Joaquin River**

☒ Office (Desk) Determination
☐ Field Determination:
Date(s) of Site Visit(s):

SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply – checked items should be included in case file and, where checked and requested, appropriately reference sources below)

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
- ☐ Data sheets prepared by the Corps.
- ☐ Corps navigable waters' study.
- ☐ U.S. Geological Survey Hydrologic Atlas:
  - ☐ USGS NHD data.
  - ☐ USGS HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: **1:24K; CA-MENDOTA DAM**
- ☐ USDA Natural Resources Conservation Service Soil Survey.
- ☒ National wetlands inventory map(s).
- ☐ State/Local wetland inventory map(s).
- ☐ FEMA/FIRM maps.
- ☐ 100-year Floodplain Elevation (if known):
- ☒ Photographs: ☒ Aerial ☒ Other
- ☐ Previous determination(s). File no. and date of response letter:
- ☒ Other information (please specify): **LiDAR from BOR**

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and Date of Regulatory Project Manager (REQUIRED) — 19 JAN 2017

Signature and Date of Person Requesting Preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Bureau of Reclamation, Attn: Ms. Alicia Forsythe	File No.: SPK-2010-00319	Date: January 19, 2017

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
♦	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the **above** decision. Additional information may be found at *http://www.usace.army.mil/cecw/pages/reg_materials.aspx* **or** Corps regulations **at** 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

From: Minks, Andrew
To: Norton, Kathleen M CIV CESPK CESPD (US)
Subject: Re: [EXTERNAL] Re: Wetland Delineation for Reach 2B (UNCLASSIFIED)
Date: Thursday, January 19, 2017 2:15:19 PM

Hi Kathy,

The following are the acreage totals for the delineation sheets the canal occurs on.

- Sheet 3: 0.38 acre
- Sheet 4: 2.31 acres
- Sheet 5: 2.26 acres
- Sheet 7: 0.378 acre
- Sheet 8: 4.74 acres
- Sheet 9: 3.29 acres
- Sheet 10: 1.63 acres
- Sheet 11: 0.004 acre

14.99 acres

Cheers,
Andrew

On Thu, Jan 19, 2017 at 1:23 PM, Norton, Kathleen M CIV CESPK CESPD (US) <Kathy.Norton@usace.army.mil> wrote:

CLASSIFICATION: UNCLASSIFIED

Hi Andrew--- Thanks for your help on this-- Would it be possible to have an acreage total for the canals per wetland delineation sheet? Please.....thanks much again!

Kathy Norton
Ecologist/Sr. Project Manager
USACE, Regulatory Division
California South Branch,
1325 J Street, Room 1350
Sacramento, California 95814-2922
916-557-5260; fax-916-557-7807
Customer Service Hours: 09:00 am-3:00 pm - Tuesday -Friday
kathy.norton@usace.army.mil
(We do not have "out-of-office" e-mail return notes. So--e-mails not returned in a reasonable amount of time means I'm not in the office, and haven't received your message.)
Web page/surveys/information
Blockedhttp://www.spk.usace.army.mil/Missions/Regulatory.aspx
Blockedhttp://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey

-----Original Message-----
From: Minks, Andrew [mailto:aminks@usbr.gov]
Sent: Tuesday, January 17, 2017 3:06 PM
To: Harrison, Katrina <kharrison@usbr.gov>
Cc: Norton, Kathleen M CIV CESPK CESPD (US) <Kathy.Norton@usace.army.mil>; Rebecca Victorine <rvictorine@usbr.gov>
Subject: [EXTERNAL] Re: Wetland Delineation for Reach 2B (UNCLASSIFIED)

Hi Kathy,

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Kathy Norton
Sr. Project Manager
California South Branch
U.S. Army Corps of Engineers
1325 J Street, Room 1480
Sacramento, California 95814-2922
Phone: (916) 557-5260, FAX 916-557-7807
Email: Kathy.Norton@usace.army.mil

If you only have questions regarding the appeal process you may also contact:

Thomas J. Cavanaugh
Administrative Appeal Review Officer
U.S. Army Corps of Engineers
South Pacific Division
1455 Market Street, 2052B
San Francisco, California 94103-1399
Phone: 415-503-6574, FAX 415-503-6646)
Email: Thomas.J.Cavanaugh@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
_____ Signature of appellant or agent.		

Appendix L – Exhibit 28 of the James Irrigation District Comment Letter

STEVEN P. STADLER, P.E.

SUMMARY

Professional engineer with over 30 years of experience in a variety of professional settings and over 10 years of experience working for public agencies engaged in the management of water and power resources.

WATER QUALITY EXPERIENCE

- Responsible for administration of the Kings Basin Water Quality Coalition and Irrigation Lands Regulatory Compliance while employed at Kings River Conservation District.
- Directed preparation of Groundwater Assessment Report covering the Kings and Tulare Lake groundwater sub-basins for the Kings River Water Quality Coalition.
- Directed preparation of a groundwater model conversation and update for the Kings groundwater sub-basin.
- Responsible for water quality monitoring of surface water and groundwater for James Irrigation District including regulatory, chemical, and bacteriological monitoring programs.

EDUCATION

Juris Doctor (with Distinction) 2009
San Joaquin College of Law, Clovis, California
Master of Science in Chemical Engineering 1992
San Jose State University, San Jose, California
Master of Science in Mechanical Engineering 1990
University of Southern California, Los Angeles, California
Bachelor of Science in Mechanical Engineering (Summa Cum Laude) 1989
University of Southern California, Los Angeles, California

CURRENT EMPLOYMENT

General Manager 2016-Present
James Irrigation District, San Joaquin, California
Manager 2016-Present
Reclamation District No 1606, San Joaquin, California
Executive Director 2016-Present
James Groundwater Sustainability Agency, San Joaquin, California
Executive Secretary 2016-Present
James Resource Conservation District, San Joaquin, California

AFFILIATED POSITIONS

Director, San Luis and Delta-Mendota Water Authority Board of Directors 2016-Present
Director, Kings River Water Association Board of Directors 2016-Present
Executive Director, Kings River Water Association Executive Committee 2018-Present
Director, Power and Water Resources Pooling Authority 2016-Present
Director, Kings River Water Quality Authority 2016-Present

PAST EMPLOYMENT

Assistant Manager 2014-2015
James Irrigation District, San Joaquin, California
Deputy General Manager of Water Resources / Chief Engineer 2008-2014
Kings River Conservation District, Fresno, California
Technical Advisor / Patent Agent 2008
Law Offices of Andrew D. Fortney, Fresno, California
Senior Power Engineer 2006-2007
Kings River Conservation District, Fresno, California
Consulting Engineering 1998-2006
Stadler Engineering, Reedley California
Project Manager 1997-1998
Teter Consultants, Visalia, California
Process Engineer / Software Development Manager 1992-1997
Praxis Engineers, Milpitas, California
Pressure Equipment Engineer 1989-1991
Shell Oil Company, Dominguez, California

LICENSES & ADMISSIONS

State of California, Professional Mechanical Engineer (M27977)
State of California, Professional Chemical Engineer (CH5051)
State of California, Professional Electrical Engineer (E16526)
State Bar of California, Attorney (267182)
U.S. Patent and Trademark Office, Patent Attorney (64,094)

Mike Day, PE

Principal Engineer

Education

- ✓ B.S. Civil Engineering, California State University, Fresno

Registration/Certifications

- ✓ Civil Engineer, California #39494

Affiliations

- ✓ United States Committee on Irrigation & Drainage (USCID)

Areas of Expertise

- ✓ Water Resources Studies, Planning, Funding
- ✓ Irrigation Conveyance Design
- ✓ On-Farm Irrigation System Design
- ✓ Surface & Subsurface Drainage
- ✓ Groundwater Management
- ✓ Water and Groundwater Quality
- ✓ Energy

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PROVOST& PRITCHARD
CONSULTING GROUP
An Employee Owned Company

Professional Summary

Mike Day is a principal project manager in water and energy resources engineering with over 35 years of experience. He has an extensive background in investigation, planning, and design of water and groundwater supply and storage facilities for local agencies and landowners. Mr. Day's areas of expertise include studies, planning, funding and financing through grants, loans, and Prop 218 elections, design, and construction management for water and groundwater distribution and storage facilities as well as surface and subsurface drainage facilities. He has expertise in water and groundwater quality and provides expert consultation for farms, water agencies, and energy utilities on a variety of energy-related topics.

Relevant Experience

Water Quality Exchange Study, Friant Water Users Authority, Southeastern San Joaquin Valley, California, Lead Researcher/Writer for Case Studies – Mr. Day led the research and writing team in the investigation of soil and groundwater impacts resulting in three water agencies (two agricultural and one urban) which have utilized State Water Project (California Aqueduct) water in-lieu of Central Valley Project-Friant Unit (San Joaquin River) water as a result of water transfer and exchange programs for over 30 years. A report was prepared to summarize observed water, soil and groundwater impacts, impacts to urban water treatment and distribution systems, agricultural water distribution and irrigation systems, and to estimate changes in applied salts through irrigation water quality and cultural (soil amendment) practices.

Irrigated Lands Regulatory Program Review and Monitoring, Various Water Agencies, Kern County, California, Project Manager – Mr. Day led Provost & Pritchard's initial monitoring of the Central Valley Regional Water Quality Control Board's Ag Waiver and Irrigated Lands Regulatory Program (ILRP) for Arvin-Edison Water Storage District; and through Young-Wooldridge on behalf of several agricultural water agencies in Kern County, provided engineering and hydro-geologic comments on the draft environmental impact report document for the ILRP. Mr. Day has also provided general oversight as Provost & Pritchard formed the Kern River Water Quality Coalition, staffed it, and provided advocacy, administrative, and technical work to assist its growers with ILRP compliance. This work included general oversight and quality assurance and control of the surface water monitoring program, Sediment Discharge Evaluation and Assessment Report and Groundwater Assessment Report.

Groundwater Evaluation, Tulare 144 Ranch, Tulare, California – Mr. Day analyzed quantity and quality of groundwater supply available to 1,800-acre farm in Tulare County, and projected the impact of increased future pumpage on groundwater levels and quantity.

Water Resources Evaluation, Maddox Farms Burrel Ranch, Helm, California – Mr. Day analyzed quantity and quality of surface water (from Kings River) and groundwater supply available to 5,000-acre farm in Fresno County.

CEQA Documentation, Berrenda Mesa Water District, Lost Hills, California, Project Manager – This project included the preparation of studies and documents for CEQA compliance for a reservoir spillway enlargement project, and also for a water transfer project.

Well and Pump Evaluation, Marchini Property, Mendota, California – Mr. Day oversaw the testing and evaluation of the condition of 11 groundwater well pumps and two lift pumps. The project included evaluating the long-term outlook for groundwater quantity and quality underlying the property's well field, evaluating the quantity of surface water available through an existing exchange contract with the U.S. Bureau of Reclamation, and evaluating the viability of short and long-term water transfers to other properties within Westlands Water District.

North In-lieu Project, Arvin-Edison Water Storage District, Arvin, California, Principal-in-Charge – Mr. Day was principal project manager, lead grant writer and administrator on this project. The project includesd development of bi-directional water delivery and banked water return facilities for 650 acres of permanent crops and involves use of surface water in-lieu of groundwater with second priority district use of landowner wells. A 50-60 cfs reverse flow pumping facility has also been added to the District's North Canal to better distribute well water to meet critical drought water supply needs. Mr. Day led the preparation of a successful application for California Department of Water Resources Prop 84 Drought Solicitation Improvement Grant funding though the Kern Integrated Regional Water Management Group. He has also led grant administration and reporting while providing senior engineering input during design, bidding assistance, and construction.

Sediment and Erosion Control Plan Preparation, Wonderful Citrus, Madera, California, Project Manager – Mr. Day worked with Wonderful Citrus as a soil and erosion control engineer to complete and certify Sediment and Erosion Control Plans for properties in the Eastside Water Quality Coalition.

Multi-Benefit Groundwater Storage Project, Arvin-Edison Water Storage District, Arvin, California, Project Manager – Mr. Day served as the project manager and was responsible for project planning, hydrogeology studies, successful application for funding (Proposition 13), California Environmental Quality Act (CEQA) compliance, and design and construction management for a 30-acre expansion of an existing regulation/groundwater recharge reservoir with four new electric-powered deep wells, plus an 80-acre expansion of another existing groundwater storage facility. The project expanded a regulation reservoir, and the groundwater banking capacity for the District and a banking partner.

Canal Lining and Piping Project, James Irrigation District, San Joaquin, California – Mr. Day was design engineer on a project to line and pipe canals that feed James Irrigation District with well water from outside of district boundaries. The project included concrete lining of 9.1 miles of the unlined McMullin Grade Canal and piping 3.8 miles of the Kerman Canal with PVC pipe. Services included design, bidding assistance, and construction review of the successful project that greatly reduced seepage losses, conserved electrical power, and reduced pumping costs.

Integrated Farm Drainage Management Planning Study, Lost Hills Water District, Lost Hills, California, Project Manager – This project involved the supervision of a project team to study and plan changes to Lost Hills Water District's agricultural subsurface drainage water management system from evaporation ponds to Integrated Farm Drainage Management (IFDM), which involved sequential reuse on salt tolerant crops and plants, with a solar evaporator as the final stage. The study and planning included development of a water and salinity model to assist in the planning and conceptual design of IFDM facilities.

Eric A. Abrahamsen, PE

Principal Engineer

Education

- ✓ B.S. Agricultural Engineering, California Polytechnic State University, San Luis Obispo

Registration/Certifications

- ✓ Civil Engineer, California #52000

Affiliations

- ✓ Sustainable Forests and Communities Collaborative
- ✓ American Trails

Areas of Expertise

- ✓ Water Resources
- ✓ Water/Irrigation District Engineering
- ✓ Conservation/Natural Resources Engineering
- ✓ Geographic Information Systems (GIS)

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Professional Summary

Eric Abrahamsen has over 26 years of experience in water resources and agricultural engineering throughout California. He is a principal engineer at Provost & Pritchard specializing in project management, water resources, conservation and natural resources engineering, and irrigation/water district engineering. Mr. Abrahamsen is experienced in the design of water control structures, hydrologic/watershed studies, preparation of agreements and legal descriptions, and is knowledgeable in ArcView/MAP and AutoCAD Map software for geographic information systems (GIS) applications.

Prior to joining the Provost & Pritchard team, Mr. Abrahamsen worked at Merced Irrigation District as a senior engineer and was a field office engineer for the USDA Natural Resources Conservation Service.

Relevant Experience

Conservation/Natural Resources/Recreation Engineering

Seepage Management for San Joaquin River Restoration Program, United States Bureau of Reclamation, CDM Smith, Merced County, California, Project Manager – Mr. Abrahamsen is assisting the U.S. Bureau of Reclamation and the prime contractor staff in seepage management support on the San Joaquin River and bypasses. The scope of work generally includes site evaluations, baseline monitoring, and preliminary and 60% project designs. Specific work has included monitoring of shallow groundwater wells, review of data collection methods reports, agronomic evaluations, preparation of geologic logs and soil sampling from monitor wells and hydraulic conductivity testing, and preparation of appraisal level designs for farms impacted by seepage due to restoration flows. Project is ongoing. (2012-present)

Resource Protection & Erosion Control Designs, USDA Natural Resources Conservation Service, Santa Barbara and San Luis Obispo Counties, California, Project and Resident Engineer – While a field office engineer for the USDA Natural Resources Conservation Service, Mr. Abrahamsen's focus was on the planning, design, and construction management of water distribution, storm runoff, and soil and erosion control systems and structures. His responsibilities included design and construction of drop inlet pipe culverts, pipelines, channels, earthen embankments, sediment and storm water retention basins, gully reclamation projects, reinforced concrete chute and straight drop spillways, stockwater distribution systems and streambank protection projects in the central California coastal region. Work included a preliminary hydrologic investigation for 2,140-acre proposed PL-566 watershed project; damage survey reports after flooding in Southern California; a semi-automated demonstration water distribution system for an 1,850-acre ranch to model for local government agencies, ranchers, and the public, the benefits of time-controlled grazing management within the Morro Bay watershed. (Work prior to P&P, 1989-1993)

Irrigation/Water District Engineering

Railroad Regulating Reservoir Project, Tranquillity Irrigation District, San Joaquin Valley, California, Project Manager – This project involved the

preparation of construction plans for a 74-acre regulating reservoir 4,500-foot-long pipeline and pump stations for construction by the contractor and district forces. Mr. Abrahamsen was responsible for oversight of the boundary survey, easement acquisition, California Environmental Quality Act (CEQA) process, and project design. The initial study, mitigated negative declaration, monitoring and reporting program, and associated noticing as required for CEQA was prepared for approval, which included oversight of project biologist and archeologist, and multiple surveys and mitigation measures regarding endangered species. (2010)

Water Management Plan Preparation, James & Tranquillity Irrigation Districts, Fresno County, California, Project Manager – Mr. Abrahamsen prepared U.S. Bureau of Reclamation required annual water management plans for the 41-square-mile James Irrigation District and 5-year update for 17-square-mile Tranquillity Irrigation District. He performed a district-wide water budget analysis and recommended best management practices for improving operations and water conservation methods. (2010)

Mendota Pool Telemetry System Project Development, Tranquillity Irrigation District, Fresno County, California, Project Manager – Mr. Abrahamsen was responsible for this design/build project, which included the installation of water level telemetry and an alarm system for district agricultural water system at the Mendota Pool. He ensured that the Integrator system was installed in a manner for future expansion for SCADA capabilities and the addition of district domestic water system sites, as well as accessibility of data remotely by San Luis Delta Mendota Water Authority staff. The project included three remote sites and office server with Internet access capabilities, database, alarms and reporting. Mr. Abrahamsen also obtained $50,000 in grant funding for the project from the U.S. Bureau of Reclamation Water Conservation Field Services Program. (2007, $111,000 construction)

Three District Interconnection Study, Tranquillity Irrigation District, San Joaquin Valley, California, Project Manager – As the project manager, Mr. Abrahamsen obtained $25,000 in grant funding from the U.S. Bureau of Reclamation Water Conservation Field Service Program for the Tranquillity Irrigation District. He researched the feasibility of connecting James Irrigation District and Tranquillity Irrigation District's and Tranquillity Irrigation District and Fresno Slough Water District's agricultural irrigation facilities in various locations. Feasible interconnections are planned to be implemented as available funding and agreements between the districts are finalized. (2007/2008)

Groundwater Recharge Project, Lateral K Recharge Basin, James Irrigation District, San Joaquin, California, Project Manager/Lead Design Engineer – This project involved coordinating construction surveys and staking, testing, and inspection with the district and sub-consultants. Mr. Abrahamsen submitted pay estimates for the District's reimbursement to the Department of Water Resources. His responsibilities also included identification, evaluation, location, design and construction of a 220-acre recharge facility capable of producing an average annual new yield of 10,000 acre-feet per year. Facilities included four recharge basins ranging from 70 to 20 acres in size, two canals with a combined flow rate of 205 cfs, and two new turnouts consisting of multiple 48-inch pipelines which deliver water to the project, ultrasonic flow metering, basin delivery structures, and new monitoring wells. Management of groundwater and infiltration data is ongoing.

Groundwater Recharge Project Instrumentation, Lateral K Recharge Basin, James Irrigation District, San Joaquin, California, Project Manager/Lead Design Engineer – Mr. Abrahamsen's responsibilities included identification, evaluation, location, design and construction of a 220-acre recharge facility. Facilities included four recharge basins ranging from 70 to 20 acres in size, two canals with a combined flow rate of 205 cfs, and two new turnouts consisting of multiple 48-inch pipelines which deliver water to the project. The project also included flow metering, basin delivery structures, new monitoring wells, and instrumentation. In addition, the project consisted of instrumentation design, procurement and installation for water level monitoring by direct read pressure transducers with temperature information, and ongoing management of downloaded data, data reduction and graphical presentation to the District. Mr. Abrahamsen also designed and provided installation assistance of ultrasonic flow meters to District staff. Management of groundwater and infiltration data is ongoing. (ALTERNATE WORDING)

Meter Test Facility, James Irrigation District, Fresno County, California, Project Manager – As a result of the U.S. Bureau of Reclamation's Water Conservation Field Services Program, money was award to the district to develop a facility to test their open channel and saddle propeller flow meters. Extensive hydraulic calculation scenarios were performed to ensure that the full range of test flows could be attained. This included comparing system curves with pump curves, variable-frequency drive (VFD) pump scenarios, and hydraulic grade line analyses. (2008)

Main Canal Reregulation Structure, James Irrigation District, Fresno County, California, Project Manager – This project involved modifying an existing structure to capture 40 cfs of spill from the James Irrigation District's main canal. The structure

also reregulates water, acting as a pump structure. Mr. Abrahamsen's responsibilities included site layout and design calculations. This project was designed as a combination long-crested weir and as a pump structure (to Hydraulic Institute Standards). (2007)

Water Augmentation and Storage Consulting, James Irrigation District, Fresno County, California, Project Manager – This project analyzed current James Irrigation District demands to determine if it would be possible to continue farming if Delta supplies were lost. Cropping, weather, and monthly demand patterns were investigated to show the District the necessary measures to break their reliability on the Central Valley Project (CVP). This has resulted in a construction project estimated at $8 million, that could pay for itself in five years.

Merced Irrigation District, Merced County, California, Senior Engineer (1995-2000) – As Merced Irrigation District staff, Mr. Abrahamsen prepared water conveyance facility pipeline and appurtenances designs, reviewed subdivision improvement plans, prepared engineering standard designs, developed standard agreements for encroachments, completed irrigation distribution turnout designs, oversaw implementation of surface water incentive program, and oversaw the installation of California Irrigation Management Information System (CIMIS) weather station. He also conducted field review of projects, managed construction activities, and prepared legal descriptions and deeds. Mr. Abrahamsen served as the agency representative over a 3-year period for a U.S. Army Corps of Engineer flood control facility (1,350 cfs canal turnout and drop structure) on the District Main Canal to insure the facility met local agency concerns and needs during design and construction.

Groundwater Quality Monitoring Program, Pleasant Valley Water District, Coalinga, California, Project Manager – This project consisted of the development of a groundwater-quality monitoring program for the Pleasant Valley Water District. The work included evaluating the quality and thoroughness of water quality data, performing a well canvass, populating a data management system, constructing new monitor wells, and collecting water samples. Mr. Abrahamsen also developed a groundwater-quality monitoring plan, developed new basin management objectives, and updated the District's groundwater management plan in order to develop a comprehensive groundwater-quality monitoring program. Infrastructure needed for the long-term groundwater-monitoring program was installed, which included direct read pressure transducers for gathering water level and temperature information, submersible pumps for gathering water samples, and sensors to measure electrical conductivity on an ongoing basis.

Agricultural Wastewater Reclamation

Solar Evaporator Closure Plans & Evaporation Tank Design, Westside Resource Conservation District, Fresno County, California, Project Manager – This project involved preparation of the required "closure plan" documents on behalf the Westside Resource Conservation District for the California Regional Water Quality Control Board, including waste discharge requirements for the closure of two solar evaporators being used by private agricultural operations. The solar evaporators were located on the soil surface for the separation of salts and metals from drainage tile irrigation water. Mr. Abrahamsen's responsibilities included attending regulatory meetings, overseeing final soils investigation, organizing historical data, and making recommendations for closure alternatives. He also designed, and prepared the plans and specifications, and quantities estimate for a concrete masonry solar evaporation tank system to replace one of the previously existing solar evaporators.

Integrated On-Farm Drainage Management (IFDM) spreadsheet development, University of California, Riverside California, Project Engineer – Mr. Abrahamsen provided consulting services to Economics Professor Kurt Schwabe at UC Riverside, in support for economic analysis of solar evaporators and evaporation ponds. The end result of the project was the development of a spreadsheet model.

Regulatory Compliance

Environmental and Permit Documents for Groundwater Recharge Projects, James Irrigation District, Fresno County, California, Project Manager – Mr. Abrahamsen was responsible for the preparation of environmental documents and obtaining regulatory permits for two groundwater recharge projects in James Irrigation District. For the 220 acres "K Basin," an initial study, negative declaration and associated noticing were prepared for project approval. For the 240-acre water augmentation project, the initial study, mitigated negative declaration, monitoring and reporting program, and associated noticing was prepared for approval, which included oversight of the project biologist and archeologist, and multiple reports concerning endangered species, cultural resources, vernal pools and permits. Permit applications included the U.S. Army Corps of Engineers' individual 404 permit for waters and wetlands including Section 7 consultation with U.S. Fish and Wildlife Service's Fish & Game Streambed Alteration Agreement, and the Central Valley Flood Protection Board encroachment. (2002 and 2008-2011)