Issue List and Work Plan for the 2014 Triennial Review of the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins

To meet requirements of Section 303(c)(1) of the Federal Clean Water Act and Section 13240 of the California Water Code, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) reviews the Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin (Basin Plans) every three years, hence the Triennial Review. The Basin Plans are the foundation for the Central Valley Water Board's water quality regulatory programs. The Basin Plans designate beneficial uses for both surface and ground water bodies in the three basins that make up the Central Valley, establish water quality objectives to protect those beneficial uses, contain implementation plans that describe the actions necessary to achieve water quality objectives, and describe the surveillance and monitoring activities needed to determine regulatory compliance and assess the health of the Basins' water resources. While the Triennial Review is used to direct the Central Valley Water Board's basin planning activities, it is not the venue to amend the basin plans.

The Triennial Review begins with a solicitation for comments on water quality issues that may need to be addressed with basin plan amendments in preparation for the development of a work plan for each Basin Plan which describes the actions the Central Valley Water Board may take to investigate and respond to issues. A public workshop before the Central Valley Water Board is held to receive verbal comments. After public input is received, the Central Valley Water Board develops and adopts by resolution a priority list of potential issues that may result in Basin Plan amendments. The priority list is used to direct basin planning efforts over the next three years. Implementation of the work plan depends upon the Central Valley Water Board's program priorities, resources, and other mandates and commitments.

For the 2014 Triennial Review, both Basin Plans were reviewed concurrently. This triennial review work plan is for the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins. There is a separate work plan available for the Water Quality Control Plan for the Tulare Lake Basin.

Since the 2011 Triennial Review, the Central Valley Water Board has completed the following basin planning projects for the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins:

- Control of Methylmercury and Total Mercury in the Sacramento-San Joaquin Delta Estuary (R5-2010-0043)
- Site-Specific Water Quality Objectives for Chloroform, Chlorodibromomethane, and Dichlorobromomethane for New Alamo and Ulatis Creeks, Solano County, and Permit Implementation Provision (R5-2010-0047)
- Control of Selenium in the Lower San Joaquin River Basin (R5-2010-0046)

- Cost Estimate and Potential Sources of Financing for a Long-Term Irrigated Lands Program (R5-2011-0075)
- Drinking Water Policy for Surface Waters of the Delta and its Upstream Tributaries (R5-2013-0098)
- Onsite Wastewater System Implementation Program (R5-2014-0036)
- Edit and Updates (R5-2014-0037)

The following are Basin Planning projects for the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins that have been adopted by the Central Valley Water Board but are not yet fully approved and in effect:

- Drinking Water Policy for Surface Waters of the Delta and its Upstream Tributaries (R5-2013-0098)
- Onsite Wastewater System Implementation Program (R5-2014-0036)
- Edit and Updates (R5-2014-0037)
- Control of Diazinon and Chlorpyrifos (R5-2014-0041)
- Groundwater Regulatory Framework towards Closure of the Royal Mountain King Mine Site, Calaveras County (R5-2014-0047)
- 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 (R5-2014-0074)

The Central Valley Water Board began the 2014 Triennial Review by providing a 45-day public notice, culminating in two public workshops, to solicit comments on water quality issues that could result in basin plan amendments in the Central Valley. An information document was prepared to provide a status of the high priority issues from the last Triennial Reviews. The notice was mailed to almost 3,000 entities and emailed to almost 1,400 entities that requested electronic notification.

The public workshops were held on 24 October 2012 in Fresno and 6 December 2012 in Rancho Cordova to receive verbal comments. All written comments submitted in response to the public notice were considered in this review. The Central Valley Water Board received written comments from seven entities prior to both workshops and 1 after the workshops. Seven individuals provided verbal comments at the workshops. Staff prepared responses to all comments and used the comments to develop coordinated work plans for both Basin Plans.

While working on the Triennial Review staff was diverted to work on 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 (Resolution R5-2014-0036) and Amendments to the Water Quality Control Plan for Sacramento River and San Joaquin River Basins and the Tulare Lake Basin to Edit and Update Language (Resolution R5-2014-0037 and Resolution R5-2014-0038). Redirection of staff to work on these amendments took precedence over the Triennial Review process and, once completed, staff resumed work on the Triennial Review. The

redirection resulted in an extended time frame between the solicitation of issues in late 2012 and the presentation of the proposed work plans during ~~late 2014~~early 2015.

The issues numbered below reflect the water quality issues identified from public comments received during this review period and staff's knowledge about problems in the Basins. The Triennial Review work plans consist of issues that are in various stages of development. Many of the issues have not been investigated by staff and detailed information was not provided in comments. These issues are described in broad conceptual terms. Before an issue can result in basin plan amendments, staff must investigate the issue to identify the scope of potential basin plan amendments in conformance with applicable federal and state laws and regulations. After determining that a basin plan amendment is the appropriate means to address the issue, information, including the development of scientific justification, is prepared to support the amendment. Then the potential amendment undergoes a structured public participation process before it can be presented to the Central Valley Water Board for its consideration.

The list of issues exceeds the staff resources of 7.9 staff positions per year (PYs) allocated to planning activities. Existing resources only allow a small portion of the highest priority issues to be addressed. In addition to prioritizing the activities, the work plan identifies unfunded and inadequately funded issues for which the Central Valley Water Board will actively seek funding and will accept funding to accomplish.

For the unfunded issues, the issue description is meant to provide sufficient information to show where more investigation is necessary and the scope of the investigation to support the staff estimate of the necessary resources. While the issue description may be the basis of future investigations, it is not an exhaustive compilation of all available information on the issue. After resources are allocated and projects near completion, the issue description will shorten unless the completion of a project results in recommendations for additional projects.

Two levels of actions are specified: Current Actions and Needed Actions. Current Actions represent the staff's best judgment on what can be accomplished from FY 14/15 through FY 16/17 based on available resources. In addition to basin planning resources, other internal programs, such as the Total Maximum Daily Loads (TMDL) program, include resources to complete basin plan amendments. Some stakeholders, such as CV-SALTS, Central Valley Clean Water Association, California Urban Water Agencies, Sacramento County Regional Sanitation District and Meridian Beartrack Company, have provided funding for staff and studies to move certain issues forward. Needed Actions are those issues that cannot be addressed until more resources become available. Estimates of funding needs are identified in the work plan. The priority for each issue indicates the intended order to address the issues.

Based on the public input and staff analysis, the following broad issues have been identified as issues that may result in amendments to one or both Basin Plans. Many of the issues have several components so the work plan identifies the portions that are

slated for work during the next three years (Current Actions) and those that require additional resources (Needed Actions).

Potential amendments to both basin plans:

1. Salt and Nitrate Management for Surface and Ground Waters
2. Beneficial Use Designations for Surface and Ground Waters
3. Appropriate Beneficial Use Designations in Agricultural Dominated Water Bodies and Agricultural Conveyance Facilities
4. Regulatory Guidance to Address Water Bodies Dominated by NPDES Discharges
5. Participation in State Water Board Plans and Policies and Other Statewide Issues
6. Secondary Maximum Contaminant Levels (MCLs) as Water Quality Objectives for Surface and Ground Waters
7. Protection of Central Valley Fisheries and Other Aquatic Life
8. Evaluating Current United State Environmental Protection Agency (USEPA) Criteria

Potential amendments to the Sacramento and San Joaquin Rivers Basin Plan:

9. Implementation of the Delta Strategic Work Plan
10. Pesticide Control Efforts
11. Mercury Load Reduction Program
12. Battle Creek (Sedimentation Impacting Endangered Species)
13. Pit River (Reassess Beneficial Uses and Water Quality Objectives in Specific Reaches)
14. Policies for Maintaining Water Quality for Drinking Water

These issues selected for the 2014 Triennial Review represent major water quality concerns based on what is currently known about them. Knowledge about pollution problems may change significantly from one year to the next.

The basin plan amendment process begins after sufficient studies and technical information has been gathered to develop the scope of the amendment. Resources are estimated based on conducting the information gathering phase and the basin plan amendment process as efficiently and quickly as possible. For many of the issues, staff has access to very limited technical information. Therefore the resource estimates are generic and may significantly underestimate the resources needed to gather the necessary information or to complete the actual basin plan amendment. For many of the issues, stakeholders have expectations of specific outcomes. Due to the lack of technical information readily available to staff, the outcome of these issues is uncertain and cannot be determined at this time.

The following issue descriptions are mainly based on stakeholder comments and may include stakeholder expectations. As explained above, outcomes are uncertain until

further information has been gathered. Available technical information and statutory and regulatory requirements were used to provide context to the issues.

A table is included at the end of the work plan (Table 2) to summarize the priority projects with the anticipated current resource allocations and the needed resource allocations over the next triennial review period (fiscal year (FY) 2014-15 through FY 2016-17).

Issue 1: **Salt and Nitrate Management for Surface and Ground Waters**

Discussion: Elevated salinity and nitrates in surface and ground water is an increasing problem in California's Central Valley. Managed hydrology systems import more salt into the San Joaquin River and Tulare Lake Basins than is being exported. In addition, as surface and ground water supplies become scarcer, recycling and water conservation practices are becoming more widespread and as a result wastewater streams are becoming more concentrated, with salinity impairments occurring with greater frequency and magnitude.

Salinity: A 2006 Central Valley Water Board report provides an overview of salinity in the Central Valley.[1] The report identifies consumptive water users as contributors to the Central Valley's increasingly saline water supply. Consumptive water users include all users of water. In the case of irrigated agriculture, consuming water leaves behind dissolved salts in both the soil and water drainage runoff. Urban water users may add salt (operating water softeners, fertilizing lawns, using soaps and detergents, etc.) and simply utilizing/consuming water reduces the amount available for downstream dilution and transport of salt. The act of using water concentrates salts and as consumptive water users we all have a part in salt management which depends upon the development and implementation of effective land use, water supply, and water quality policies.

Salinity impacts are not uniform across the Central Valley. In general, the Sacramento River Basin has sufficient dilution flows and is not suffering direct salinity impacts except in distinct areas. However, the Sacramento River Basin exports salt to the Delta, where it is picked up by the water distribution systems for much of the state. The San Joaquin River Basin relies on water distributed from the Delta, resulting in a net import of salt to the basin. To address the salinity impacts to the San Joaquin River Basin, the Central Valley Water Board

[1] Central Valley Regional Water Quality Control Board. (2006). Salinity in the Central Valley. An Overview. This report is available at: http://www.waterboards.ca.gov/centralvalley/water_issues/salinity/centralvalley_salinity_alternatives_archives/initial_development/swrcb_02may06_ovrvw_rpt.pdf

allows the San Joaquin River to be used to export salts from the San Joaquin River Basin as long as beneficial uses are protected in the Lower San Joaquin River and downstream water bodies. This creates additional problems since salt that is being exported through the San Joaquin River is being recirculated into the federal and state water project pumps and returned to the water users in the San Joaquin River Basin as well as to water users in the Tulare Lake Basin. The Tulare Lake Basin, which also relies on water from the Delta, is essentially a closed basin and does not have a reliable means of discharging salt.

In addition to the regional issues, there are local areas of potential problems due to disposal of wastewater from food processing, septic tanks, municipal wastewater, confined animal facilities, and numerous other types of industrial dischargers. With no basin wide infrastructure to isolate and export salt, there are only two alternatives for these dischargers: individually isolate the salt and store it in the basin or dilute it for reuse. Both have long-term consequences.

Nitrates: Nitrates in ground water have been associated with agricultural use and are higher in shallow ground water than deeper ground water. Several studies have documented elevated levels of nitrate in groundwater used as a drinking water supply. [2,3,4]

Other Salinity Concerns: Comments received during the last triennial review indicated that wineries might be an area of local concern. Wineries can produce substantial quantities of stillage waste which is high in concentrations of biochemical oxygen demand (BOD),

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[2] Pacific Institute. 2011. The Human Costs of Nitrate-contaminated Drinking Water in the San Joaquin Valley. March. This report is available at: http://pacinst.org/publication/human-costs-of-nitrate-contaminated-drinking-water-in-the-san-joaquin-valley/

[3] State Water Resources Control Board. 2013. Recommendations Addressing Nitrate in Groundwater Report to the Legislature. February This report is available at: http://www.waterboards.ca.gov/water_issues/programs/nitrate_project/docs/nitrate_rpt.pdf

[4] Dubrovsky, N.M., Burow, K.R., Clark, G.M., Gronberg, J.M., Hamilton P.A., Hitt, K.J., Mueller, D.K., Munn, M.D., Nolan, B.T., Puckett, L.J., Rupert, M.G., Short, T.M., Spahr, N.E., Sprague, L.A., and Wilber, W.G. (2010). The Quality of Our Nation's Waters—Nutrients in the Nation's Streams and Groundwater, 1992–2004. United States Geological Survey Circular 1350. This report is available at: http://pubs.usgs.gov/circ/1350/pdf/circ1350.pdf

electrical conductivity (EC), total dissolved solids (TDS), and nitrogen. The Basin Plans include guidelines for the disposal of stillage waste and notes that the guidelines represent minimum requirements and do not preclude the establishment of more stringent requirements to comply with water quality objectives and protect beneficial uses of surface and ground waters.

In addition, commenters requested that the Central Valley Water Board develop an implementation program to achieve water quality objectives in the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan) for dischargers of salt.

Priority: High

Current Action(s): Salt and Nitrate Management Plan (SNMP): In recognition of these salt and nitrate issues, the Central Valley Water Board, the State Water Board, and stakeholders initiated the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative. The CV-SALTS initiative is developing a comprehensive SNMP for the Central Valley that will be implemented through amendments to the Basin Plans. This effort is expected to include evaluation of beneficial uses and water quality objectives for salt and nitrate constituents as well as development of a comprehensive implementation program. The SNMP for the Central Valley is intended to satisfy the requirements of the State's Recycled Water Policy but the CV-SALTS initiative is broader and is evaluating implementation strategies to provide Central Valley-wide environmental and economic sustainability as well as address legacy issues currently impacting safe drinking water supplies.

Several high priority Basin Planning issues are being addressed with active stakeholder participation under the umbrella of CV-SALTS. These issues include:

- Salt and Boron in the Lower San Joaquin River (described below);
- Review of MUN designation in receiving waters of four POTWs (described in Issue 2);
- Developing a framework to evaluate MUN designation in agriculturally dominated water bodies (described in Issue 2);

- MUN evaluation in a portion of the Tulare Lake Bed groundwater basin (described in Issue 2);
- Evaluation of the application of secondary MCLs for salinity to protect MUN (portion of issue 6)

Salt and Boron in the Lower San Joaquin River: Development of numeric water quality objectives for salinity in the Lower San Joaquin River is necessary since the Central Valley Water Board allows the San Joaquin River to be used to export salt from the San Joaquin River Basin as long as water quality objectives are met in the Lower San Joaquin River and at the boundary of the Sacramento-San Joaquin Delta. The Lower San Joaquin River Committee (LSJRC), established under CV-SALTS, is evaluating the beneficial uses of this river reach to recommend water quality objectives for salinity and an implementation strategy. The LSJRC recommendations will be proposed as a separate basin plan amendment and incorporated into the SNMP.

Salinity Variance Program and Salinity Exception Program: Since the long-term plan developed under CV-SALTS could include revision of certain beneficial use designations and/or current salinity water quality objectives and the State Water Board is also considering revision of the southern Delta salinity objectives, the basis for water quality based effluent limits and receiving water limits may change in the future. However, current National Pollutant Discharge Elimination System (NPDES) permits, WDRs and conditional waivers are being adopted with water quality based effluent limits and receiving water limits for salts. For some dischargers, the effluent limits are not attainable through any means short of reverse osmosis treatment. The work of CV-SALTS and the development of southern Delta salinity objectives are comprehensive efforts that may take a number of years to complete. While these efforts are underway, it is important for all stakeholders to be involved in developing solutions through CV-SALTS. To maintain the momentum of the CV-SALTS work, it is important for the Water Boards to provide an atmosphere conducive for stakeholders to maintain their focus. Therefore, the Central Valley Water Board adopted amendments to the Basin Plans to provide procedures to issue a variance from meeting water quality based

effluent limits to NPDES dischargers in accordance with 40 Code of Federal Regulations section 131.13. A temporary salinity variance for discharges that meet specific criteria including active participation in the CV-SALTS initiative was also adopted. Since a variance only applies for dischargers subject to NPDES permits, an exception has been adopted into the Basin Plans for dischargers subject to waste discharge requirements (WDRs) and conditional waivers. While the bulk of the effort for this project is complete, the amendments must be approved by the State Water Board, the Office of Administrative Law and the US Environmental Protection Agency (USEPA) before going into effect.

Other Activities: The State Water Board is proposing changes to the San Joaquin River flow and southern Delta water quality objectives in the Bay-Delta Plan. The proposal includes potential changes to the program of implementation. Central Valley Water Board staff works with State Water Board staff to coordinate planning efforts and reduce duplication.

Current Resource(s):

In July 2008 stakeholders formed the Central Valley Salinity Coalition (CVSC) to facilitate and fund CV-SALTS efforts. In 2009 and 2010 a total of $5 million in Clean-up and Abatement Account (CAA) resources was provided as seed money for the CV-SALTS initiative with stakeholders providing additional match. The CAA funding has been providing resources for facilitation and administration of CV-SALTS as well as supporting the technical studies required to develop the SNMP for the Central Valley Region. Remaining funds of $3 million continue to support facilitation and technical studies, including necessary environmental documentation and drafting of Basin Plan Amendment language. Annual progress reports are presented to the State Water Board and Central Valley Water Board and can be found at: http://www.waterboards.ca.gov/centralvalley/water_issues/salinity/progress_reports/index.shtml.

SNMP: Staff providing technical support, basin planning direction, and contract management to CV-SALTS is funded from basin planning resources (2 PYs per year). The $3 million remaining CAA funds, and approximately $1.3 million of CVSC resources and in-kind services for early implementation activities and pilot projects, is

projected to support development of the SNMP including umbrella projects.

Salt and Boron in the Lower San Joaquin River: Staff uses basin planning resources to work with the stakeholders to develop water quality objectives for salt and boron in the Lower San Joaquin River (0.5 PYs per year). CV-SALTS has provided $319,421 from the CAA resources to manage the effort. An additional $765,000 from separate CAA resources focused on Delta water quality improvements was provided in 2009 to the Central Valley Water Board to develop the salt and boron water quality objectives. Approximately $300,000 of the separate CAA resources remains to complete this project by December 2015.

Salinity Variance Program and Salinity Exception Program: Complete basin plan amendment approval process through State Water Resources Control Board, Office of Administrative Law and US EPA. (0.2 PYs per year for FY2014-15)

Needed Action(s): Current actions are expected to cover staff assistance on the comprehensive CV-SALTS effort, including adoption of appropriate elements of the SNMP through a basin plan amendment.

After the SNMP is completed, it is anticipated that staff will be needed to provide assistance in the development of local management plans. The development of local management plans are most likely to be needed in the next triennial review cycle. In addition, stakeholders are expected to develop a funding mechanism to obtain resources needed for CV-SALTS activities.

Needed Resource Requirement(s): Staff – Existing staff resources are adequate to complete the basin planning actions associated with the SNMP. However, CV-SALTS may identify new projects that would require an additional 0.5 PYs per year per project for staff in the next triennial review cycle to provide assistance in the development of local management plans.

Contract(s) – To be determined after completion of the SNMP.

Issue 2: **Beneficial Use Designations for Surface and Ground Waters**

Discussion: The Basin Plans designate beneficial uses to surface waters in three different ways: (1) Table II-1 lists existing, potential and probable future beneficial uses that apply to surface waters of the basins; (2) the beneficial uses of any specifically listed water body generally apply to its tributary streams; and (3) the Basin Plans implement State Water Board Resolution 88-63 (Sources of Drinking Water Policy) by assigning municipal and domestic supply uses (MUN) to all water bodies that are not listed in Table II-1.

The Sacramento/San Joaquin Rivers Basin Plan states that all ground waters in the 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).

The Tulare Lake Basin Plan states that the following beneficial uses have been identified and occur throughout the ground water in the Basin: municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), industrial process supply (PRO), water contact recreation (REC-1) non-contact water recreation (REC-2), and wildlife habitat (WILD).

Dischargers to both effluent dominated surface water bodies and water bodies modified or constructed for agricultural uses ~~question the appropriateness of~~oppose the designated beneficial uses. In addition, commenters would like an evaluation of the way the Sources of Drinking Water Policy is implemented with a blanket MUN designation of all water bodies that are not listed in Table II-1 of the Basin Plans. There have also been questions on how to protect water bodies designated with both WARM and COLD beneficial uses since these uses seem to conflict. Adjustments to designated beneficial uses for surface and ground waters can only be made through the basin plan amendment process. Changes to surface water beneficial uses that result in less stringent criteria must be supported by scientific analysis as specified in 40 Code of Federal Regulations section 131.10(g).

The State Water Board determined in Order WQO 2002-0015 (*Vacaville's Easterly WWTP*), pp. 15-16, "… where a Regional Board has evidence that a use neither exists nor likely can be feasibly attained, the Regional Board must expeditiously initiate appropriate basin plan amendments to consider dedesignating the use. Moreover, the Regional Board can require dischargers to the affected water body to provide assistance, through data collection, water quality-related investigations, or other appropriate means, to support and expedite the basin plan amendment process."

Individual Water Bodies: Stakeholders have indicated that there is information that supports reviewing specific beneficial uses of the water bodies listed in Table 1.

Table 1

Water Bodies	Basin
West Squaw Creek*	Sacramento River and San Joaquin River Basins
Grassland wetland water supply channels	
Upper North Fork Feather River from Lake Almanor to Lake Oroville	
Pit River	
Yuba River, above Englebright Dam	
North and Middle Forks, American River	
Willow Creek in Madera County	
Pleasant Grove Creek	
Kellogg Creek	
Fresno River above Hensley Reservoir	
Calaveras River from the San Joaquin River to the Stockton Diverting Canal and from the Stockton Diverting Canal to below the weir	
Receiving water systems for the discharges from the cities of Colusa, Live Oak, Willows and Biggs publicly owned treatment works (POTWs)*	
Ground water beneath the Royal Mountain King Mine site in Calaveras County*	
Hume Lake	Tulare Lake Basin
Lake Isabella	
Kern River	
Ground water in various Kern County Westside oilfields.	
Historical Tulare Lakebed*	
Ground water in Western Kern and Kings Counties	

***Current Projects**

Water Body Groupings: Stakeholders have identified the following categories of water bodies as deserving review for specific beneficial uses: (1) Long water body reaches (i.e. water body reaches that are so long that the characteristics of the water body changes within the reach), especially water bodies that have large changes in elevation, species assemblages and climate; (2) Water

bodies with both COLD and WARM beneficial use designations (i.e. Yuba, American, Pit, and Kern Rivers); (3) agricultural water bodies that are designated MUN through the Central Valley Water Board's application of the Sources of Drinking Water Policy.

Priority: High

Current Action(s): Staff is evaluating beneficial uses for West Squaw Creek, tributary to Shasta Lake. The Central Valley Water Board recently adopted a basin plan amendment for ground water beneath the Royal Mountain King Mine site in Calaveras County. The amendment must be approved by the State Water Board and the Office of Administrative Law before it can go into effect. Because the de-designation area is partially inconsistent with the *Sources of Drinking Water Policy*, the State Water Board will need to consider a site-specific modification to the *Sources of Drinking Water Policy* to resolve this inconsistency. In addition, the Central Valley Water Board through the CV-SALTS initiative is evaluating the MUN beneficial uses in the receiving water systems considered to be agriculturally dominated water bodies for four publicly owned treatment works (POTWs) (Issue No. 3). This project is being used as an archetype for developing a framework for determining the appropriate level of protection of municipal and domestic use in agricultural surface water bodies in the Central Valley. Water bodies within the San Joaquin River Basin have been identified to test the framework that has been developed. The framework could then be used in the future as a template for similar basin plan amendments.

Also, the Central Valley Water Board, in conjunction with the CV-SALTS initiative, is re-evaluating the MUN designation for a portion of the ground water in the historic Tulare Lakebed. The project includes development of a framework for evaluating the applicability of the MUN beneficial use in ground water basins.

The frameworks for evaluating the MUN beneficial use in agricultural surface water bodies and in ground water basins is proposed to be included in both basin plans.

Current Resource(s):

1) West Squaw Creek: Staff – Stakeholders have funded staff.

2) Royal Mountain King Mine Site: Staff – 0.3 PYs for FY 2014-15 to complete the amendment.

3) Receiving Waters that are Designated MUN for the four POTWs:

   - Staff – 1 PYs per year~~ to work.~~

   - Contract - $145,000 of Clean-up and Abatement Account resources (CV-SALTS) ~~have been allocated~~was spent to support the monitoring and environmental evaluation for this project.

   - Stakeholders provided $50,000 to support this amendment in addition to in-kind services for monitoring and data review.

4) Beneficial Use Framework for Agricultural Surface Water Bodies (Phase I—MUN Evaluation):

   - Staff – 1 PYs per year.

   - Contract - $100,000 of Clean-up and Abatement Account resources (CV-SALTS) was ~~used~~ spent to support this project.

   - Stakeholders provided $50,000 match and in-kind services for a San Joaquin Basin case study.

5) Tulare Lakebed Evaluation of MUN in Ground Water:

   - Staff – 0.2 PYs per year to provide technical oversight. In addition, other programs are contributing staff resources to help in this effort.

   - Contract - $100,000 of Clean-up and Abatement resources (CV-SALTS) ~~has been allocated~~was spent to support this project.

   - Stakeholders are developing the technical information for this project and have contributed $229,000 to date to support this project.

Needed Action(s):

A method is needed to efficiently use resources to work on assigning beneficial uses. Two potential methods are proposed. One method would be to develop a logical system of grouping and assigning beneficial uses to the large number of unlisted water bodies in the Central Valley Region. It would be useful to assemble and work with a stakeholder group to define the issues associated with any general classification system and to determine the best and most efficient approach to the assignment of beneficial uses. The starting point for grouping water bodies could be identifying water bodies that fit the exception criteria 2a and 2b in the *Sources of Drinking Water Policy*. The current efforts to address the MUN beneficial use in agricultural surface water bodies (No. 4 above) is an example of this approach of conducting beneficial use assessments for select categories of water bodies to develop templates or frameworks for grouping beneficial use designations. ~~One possible conclusion of additional studies could be that categorizing the water bodies will be technically infeasible and beneficial uses will need to be addressed on a site-specific (individual water bodies) basis. In addition, while grouping water bodies appears to be an efficient approach to addressing the beneficial use issues, the outcome is uncertain so securing funding is difficult.~~

The second method would be to select individual water bodies with notable characteristics for individual basin plan amendments with the goal of developing templates for similar water bodies. An example of this approach is the Basin Plan amendment addressing pH and turbidity in Deer Creek, tributary to the Cosumnes River. This amendment was then used as the model for a pH and turbidity Basin Plan amendment for the entire Sacramento River and San Joaquin River Basins.

Needed Resource Requirement(s):

Staff – For evaluating grouping of water bodies, 1.0 PYs per year for the first two years is needed to further define this issue for groupings that do not include agriculturally dominated systems (e.g. effluent dominated, ephemeral, etc.). Future needs would depend on the number and types of water body categories that are identified. For work on individual water bodies, 0.5 PYs is needed per year for three years for each water body.

Contract(s) – Approximately $500,000 is needed to help identify the scope of the grouped water body issue and group water bodies into logical categories. Future needs would depend on the types of water body categories that are identified. For individual water bodies, up to $200,000 is needed per water body.

Issue 3: **Appropriate Beneficial Use Designation in Agricultural Dominated Water Bodies and Agricultural Conveyance Facilities**

Discussion: In agricultural environments, a complex network of modified natural and constructed channels convey irrigation supplies to farms and export agricultural drainage water to natural streams. Many of these waterways lack habitat and physical flow characteristics to sustain the full range of aquatic life and other beneficial uses. In 1992, Central Valley Water Board staff collected information from local water agencies identifying natural water bodies that were dominated by agricultural drainage, water bodies constructed to carry agricultural drainage and/or supply water, and water bodies that were natural dry washes that were altered to carry agricultural supply and/or drainage. The local water agencies also provided information on the lengths of these water bodies.

Some of these water bodies were deliberately modified for the purpose of providing support to the agricultural industry. During previous triennial reviews, stakeholders commented that fully protecting the assigned beneficial uses would result in loss of the agricultural functionality of the water body. Therefore, stakeholders requested that the Central Valley Water Board develop plans and policies that recognize that the functionality of the modified water body should take precedence over any perceived beneficial uses. The State Water Board developed recommendations for providing reasonable protection for beneficial uses of agricultural waters in a 1995 Agricultural Waters Task Force report and some of these recommendations may provide an approach to addressing stakeholder concerns.[5]

The recommended approaches require amending the Basin Plan. Basin Plan amendments would need to comply with the California Water Code and the Clean Water Act, if applicable.

Priority: High

[5] State Water Resources Control Board. (1995). Report of the Agricultural Waters Task Force for Consideration of Issues Related to the Inland Surface Waters Plan. This report is available at: http://www.waterboards.ca.gov/publications_forms/publications/general/docs/inland_surface_plan_b.pdf

Current Action(s):	The Central Valley Water Board staff in partnership with the CV-SALTS initiative, and a diverse stakeholder group is developing a framework to categorize agricultural surface water body types such as constructed conveyances and agricultural dominated natural water bodies (Issue 2, No. 4). The framework will include a process to determine the appropriate designation and level of protection for the Municipal and Domestic Supply (MUN) beneficial use in agricultural water bodies. This process is the first phase of a two phase process. Phase 2 is projected to be a larger effort to evaluate the appropriate designation and level of protection for beneficial uses other than MUN in agricultural water bodies.
Current Resource(s):	Staff – 1.0 PYs per year~~ for two years~~ to develop a framework to categorize agricultural surface water body types and conduct the public outreach to amend the Basin Plans. (Counted as part of Issue 2, No. 4) Contract - $100,000 of Cleanup and Abatement Account resources (CV-SALTS) are allocated to support Phase I of this project. (Issue 2, No. 4). No additional contract resources have been allocated specific to this project.
Needed Action(s):	Phase 1 of the two phase process is the current action. Phase 2 is projected to be a larger effort to evaluate the appropriate designation and level of protection for beneficial uses other than MUN in agricultural water bodies. Because of the similarities in approach between Phase 1 and Phase 2, it would be useful and reduce duplication to finish Phase 1 before starting Phase 2. ~~Resources to conduct Phase 2 have not yet been identified. However, it is anticipated that~~ Phase 2 will not begin until Phase 1 is completed~~ so~~, no additional action is needed during this triennial review period.
Needed Resource Requirement(s):	None

Issue 4: **Regulatory Guidance to Address Water Bodies Dominated by NPDES Discharges**

Discussion: It is sometimes difficult and expensive for dischargers to meet water quality objectives in water bodies dominated by surface water discharges, also known as effluent dominated water bodies (EDWs). Where little or no dilution is available, effluent limits are set at the applicable water quality criterion/objective which may be more stringent than drinking water MCLs in order to protect aquatic life beneficial uses.

The consistent flows provided by the wastewater discharge may enhance some aquatic life beneficial uses but be detrimental to others that depend on the ephemeral nature of the stream (i.e. cause a shift from the uses of ephemeral waters to the uses of perennial waters). There are questions of whether the discharger should be required to fully protect these shifted uses when it is the discharge itself that allows the modified uses to exist. There are also questions regarding the fate of the original uses that are lost due to the discharge.

In 1995 an Effluent-Dependent Water Bodies Task Force established by the State Water Board developed recommendations for providing reasonable protection for effluent-dependent water bodies.[6] Some of these recommendations might be appropriate for these types of water bodies in the Central Valley.

Stakeholders have suggested that the assigned beneficial uses of these water bodies are inappropriate and have requested that various alternatives be explored for assigning beneficial uses to EDWs. The alternatives suggested in the past were to a) designate site specific beneficial uses, b) use “warm” and “cold” designations on a case by case basis rather than applying the “tributary rule,” c) develop an EDW beneficial use which would consist of a limited warm water habitat, recreation and/or municipal use, d) adopt site specific objectives, or e) develop provisions for granting variances from

[6] State Water Resources Control Board. (1995). Report of the Effluent-Dependent Waters Task Force for Consideration of Issues Related to the Inland Surface Waters Plan. October. The report is available at: http://www.waterboards.ca.gov/publications_forms/publications/general/docs/effluent-dependent-waters-1995.pdf

compliance with water quality objectives. Further discussion regarding the designation of beneficial uses is in Issue No. 2.

All of the above alternatives can only be accomplished through the Basin Plan amendment process. They cannot be performed during the permit adoption process. Studies necessary to comply with Clean Water Act and Water Code requirements for amending the basin plan have not been completed for most EDWs.

The Central Valley Water Board has adopted several basin plan amendments that address EDW concerns. In 2003, the Central Valley Water Board adopted site specific water quality objectives for pH, turbidity and temperature for Deer Creek in El Dorado County. This provided the approach used for a region wide amendment to revise the pH and turbidity water quality objectives in 2007. In 2005, the Central Valley Water Board de-designated several beneficial uses of Old Alamo Creek in Solano County. In 2010, the Central Valley Water Board adopted site specific water quality objectives for several trihalomethanes for New Alamo and Ulatis creeks in Solano County and implementation provisions for NPDES dischargers to Old Alamo Creek. In 2014, the Central Valley Water Board adopted a variance policy for non-priority pollutants.

Priority: High

Current Action(s): The Central Valley Water Board recently adopted amendments to the Basin Plans to allow the Central Valley Water Board the authority to grant variances within the meaning of 40 Code of Federal Regulations section 131.13 (See Issue No. 1). Variances could be used to address regulatory issues associated with discharges to receiving waters with little or no dilution. Before these amendments can go into effect, they must be approved by the State Water Board, the Office of Administrative Law and the USEPA.

Current Resources(s): Resources for the current actions to evaluate beneficial uses are included in Issue No. 2 (Beneficial Use Issue). Resources for the development of a variance policy are included in Issue No. 1 (Salt and Nitrate Management for

Surface and Ground Waters). No resources are currently allocated to specifically evaluate EDWs.

Needed Action(s): Develop a logical system for grouping water bodies, assigning beneficial uses, water quality objectives, and/or specific implementation provisions. Following the example of pH and turbidity, it would be efficient to explore whether the approaches used for site-specific basin plan amendments can be expanded to region wide basin plan amendments. Otherwise, it is still important to conduct individual amendments that deal with different aspects of the EDW issue to address regulatory issues as well as provide information that would be useful for geographically larger basin plan amendments.

Needed Resources Requirement(s): Staff – Site-specific amendments require roughly 0.5 PYs per year for three years. It is estimated that an amendment for a grouping of like water bodies would require 1.0 PYs per year for two years to develop an approach. Resource needs and time frames after the first two years will depend on the approach.

Contract(s) – Approximately $200,000 to conduct studies per site-specific basin plan amendment. These studies include the scientific justification, environmental assessment and economic analysis. An amendment looking at a grouping of multiple water bodies could require $500,000 or more to conduct studies.

Issue 5: **Participation in State Water Board Plans and Policies and Other Statewide Issues**

Discussion: The State Water Board may develop plans and policies which, when adopted, supersede any regional water quality control plans for the same waters to the extent of any conflict (Wat. Code, §13170). The Central Valley Water Board participates and collaborates in the development of plans, policies, and other issues with the State Water Board to make sure the Central Valley regional priorities are considered. Coordinating with the State Water Board on development of statewide policies is an efficient use of limited basin planning resources. The most relevant program generally provides staff to participate in policy development. For example, the Water Quality Certification Program takes the lead in communicating with State Water Board staff developing the Wetlands and Riparian Areas Policy. However, for many of the policies, the most closely related program is basin planning. Therefore, some of the Region's basin planning resources have been allocated to participate in the development of the State Water Board's plans and policies.

The State Water Board provides a current status of Statewide Policies and Significant General Permits along with other items in an Executive Director's Report that can be found on the State Water Board's website.[7] Below is a list of State Water Board plans and policies that are relevant to the Central Valley region basin planning. The list is in alphabetical order.

- Antidegradation Policy
- Bacterial Standards for Ocean and Inland Surface Waters
- Draft Water Quality Control Plan Update for San Joaquin River Flows and Southern Delta Salinity Objectives (Bay-Delta Plan)
- Biological Integrity Plan Development
- Cadmium Objective and Hardness Implementation Policy
- Chlorine Residual Objectives and Implementation
- Listing Policy Update

[7] http://www.waterboards.ca.gov/board_info/exec_dir_rpts/index.shtml

- Mercury Offset Policy
- Mercury TMDL (Reservoirs)
- Methylmercury Objectives
- Natural Sources
- Nonpoint Source (NPS) Implementation and Enforcement Policy Amendments
- Nutrient Numeric Endpoints Tools
- Sediment Quality Objectives (SQOs) for Enclosed Bays and Estuaries: Phase II
- Toxicity Water Quality Control Plan Amendments
- Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP) Revisions to Appendix 4 – Minimum Reporting Level Tables
- Trash Water Quality Control Plan Amendments
- Water Effects Ratios
- Wetlands and Riparian Areas Policy

Once the State Water Board's plans and policies become effective, the Central Valley's Basin Plans should be amended to provide the most updated information to stakeholders.

Priority: High

Current Action(s): Staff in the various programs are participating and collaborating in the development of plans, policies, and other issues with the State Water Board. The following shows which programs are coordinating on which actions:

- Basin planning resources are used to track development of the anti-degradation policy, bacterial standards, natural sources, nutrient numeric endpoints tools, toxicity amendments, the amendments to the SIP and the water effects ratios. The Central Valley Water Board is on the work group to evaluate how the antidegradation policy applies to protecting ground water quality.

- The Total Maximum Daily Loads (TMDLs) program is tracking work on the Bay-Delta Plan, the listing policy, the mercury offset policy, methylmercury objectives, sediment quality objectives and the trash policy. Staff working on CV-SALTS is also coordinating with State Water Board staff on the Bay-Delta Plan.

- TMDLs program staff from around the state are working together to develop a control program to address mercury contamination in California reservoirs. Central Valley Water Board staff is leading this effort. More information on mercury contamination is described in Issue No. 11 (Mercury Load Reduction Program) of the Triennial Review Work Plan for the Sacramento River and San Joaquin River Basins.

- The core regulatory programs (NPDES and timber activities programs) track development of the biological integrity plan, cadmium objectives and chlorine residual objectives.

- The Nonpoint Source Program tracks amendments to the NPS Implementation and Enforcement Policy.

- The Water Quality Certification program is tracking development of the wetlands and riparian areas policy.

Current Resource(s):	Basin planning provides 0.2 PYs per year to track the development of the policies that are most closely related to the basin planning program and to provide assistance as appropriate.
Needed Action(s):	None
Needed Resource Requirement(s):	None

Issue 6: **Secondary Maximum Contaminant Levels (MCLs) as Water Quality Objectives for Surface and Ground Waters**

Discussion: Secondary MCLs are established by the USEPA and the California Department of Public Health as guidance for public water systems to manage their drinking water for consumer acceptance. These contaminants are not considered to present a risk to human health at these levels but may cause consumers to stop using the water from the public water system due to aesthetic considerations, such as taste, color and odor. Secondary MCLs are used as water quality objectives to protect the municipal and domestic supply (MUN) beneficial use from impairment. The Central Valley Water Board determines compliance with these water quality objectives using total recoverable analysis of unfiltered water samples, not as dissolved. One rationale for the use of total recoverable analysis rather than dissolved is that MUN beneficial use includes protection of small domestic water supply systems that may not be required to filter and may not be filtering ambient water prior to delivery to consumers.

Commenters in recent triennial reviews have recommended that the Central Valley Water Board re-evaluate the use of secondary MCLs as water quality objectives. Commenters were particularly concerned with iron, manganese and total dissolved solids (TDS). Commenters believe that the use of secondary MCLs should be re-evaluated because secondary MCLs are based on consumer acceptance levels and are therefore unrelated to human health and welfare or the protection of aquatic life. Also, secondary MCLs were developed to be applied at the tap, not to the drinking water source (or in this case ambient water). Commenters recommend the removal of the incorporation by reference for secondary MCLs, or, at the very least, secondary MCLs should be applied as a dissolved objective instead of a total objective.

While secondary MCLs are objectives that apply to contaminants that may adversely affect the odor or appearance of water, these constituents may have other effects at higher concentrations including to beneficial uses other than MUN. As long as the Central Valley

	Water Board protects at the MCL level, these other beneficial uses are protected. Therefore, a proposal to change the application of the secondary MCLs as water quality objectives should include an evaluation of the potential effect of the proposal on human health as well as on other beneficial uses. Any proposed revisions to the water quality objectives would need to be conducted in accordance with federal and state laws and regulations.
Priority:	High
Current Action(s):	The Salt and Nitrate Management Plan for the Central Valley that is under development through CV-SALTS and described in Issue No. 1, will include basin plan amendments that establish regulatory structure, and policies to support basin-wide salt and nitrate management. CV-SALTS is evaluating the use of secondary MCLs for salinity as part of the overall project which may include a framework that would be applicable to other secondary MCLs. No current action is proposed to address this issue separately from CV-SALTS efforts.
Current Resource(s):	None
Needed Action(s):	After basin plan amendments that are part of the CV-SALTS efforts are completed, the basin plans should be evaluated to identify additional basin planning issues related to the secondary MCLs.
Needed Resource Requirement(s):	None during this Triennial Review period.

Issue 7: **Protection of Central Valley Fisheries and Other Aquatic Life**

Discussion: The Basin Plans identify water bodies that require aquatic life protection by designating the following beneficial uses: warm freshwater habitat (WARM), cold freshwater habitat (COLD), fish migration (MIGR) and fish spawning (SPWN). The Basin Plans include water quality objectives for dissolved oxygen and temperature that provide protections for these aquatic life beneficial uses. Stakeholders have indicated that water quality objectives for dissolved oxygen and temperature may need to be re-evaluated to provide appropriate protection of the aquatic life beneficial uses.

Dissolved Oxygen: The basin plans include (1) general dissolved oxygen objectives that apply to all water bodies designated as supporting WARM, COLD and SPWN; and (2) site specific objectives for certain water bodies that are typically higher than the general objectives. Both general and site-specific objectives are applied as minimum levels that are to be equaled or exceeded at all times. These objectives have existed in the Basin Plan since its original adoption in 1975. In 1986, the USEPA developed ambient water quality criteria for dissolved oxygen. The recommended national criteria have not been evaluated for use in the Central Valley.

A site-specific concern is that the specific dissolved oxygen objectives for the Delta contain ambiguous language regarding applicable water quality objectives for "bodies of water which are constructed for special purposes and from which fish have been excluded or where the fishery is not important as a beneficial use." There is an unresolved disapproval from the USEPA on the editing of the language that created this ambiguity.

Commenters have requested that site specific dissolved oxygen objectives be developed for the Stanislaus River because the current dissolved oxygen water quality objectives do not provide adequate protection of the fisheries present in the River.

Temperature: The Sacramento River and San Joaquin River Basin Plan has specific numeric temperature objectives for the Sacramento River, Lake Siskiyou and

Deer Creek, source to Cosumnes River. Both Basin Plans also have narrative temperature objectives that specify protection of beneficial uses. These objectives have existed in the Basin Plan since its original adoption in 1975,

In August 2005, NOAA Fisheries designated critical habitat for 19 Evolutionarily Significant Units (ESUs) of salmon and steelhead in the Northwest and California. The ESUs within the Central Valley are the Central Valley Spring Run Chinook Salmon and the Central Valley Steelhead. The ESU range for the Chinook salmon is the Sacramento River and the ESU range for the steelhead is the Sacramento River and the San Joaquin River and their tributaries. Essential features of critical habitat include adequate: (1) substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food, (8) riparian vegetation, (9) space, and (10) safe passage conditions.

In previous Triennial Reviews, the Department of Fish and Wildlife requested that temperature objectives be established to provide protection of spring-run Chinook salmon and steelhead in the Sacramento River Basin and fall-run Chinook salmon in the San Joaquin River Basin. USEPA Region 10, which has jurisdiction over the Northwestern United States, issued regional guidance for developing numeric temperature standards for the Pacific Northwest to protect cold water (salmonid) beneficial uses. While USEPA Region 9, which has jurisdiction over California, has not adopted similar guidance, it is supportive of the scientific approach used in the USEPA Region 10 guidance for development of numeric temperature standards to protect salmonid beneficial uses in the Central Valley. The Department of Fish and Wildlife also supports the use of the USEPA Region 10 guidance to develop numeric temperature objectives. There are also comments that the USEPA Region 10 guidance is inappropriate for use in the Central Valley and support the development of temperature objectives that are specific to the various Central Valley water ways.

Long Water Body Reaches: Commenters from previous Triennial Reviews also point out that some of the Basin Plans' named water bodies are very long and have different characteristics from one end of the reach to the

other end. In many of these cases, these long water body reaches are designated both WARM and COLD, and thus protection of aquatic life is based on the COLD criteria, which is believed to be more stringent. However, this may not be adequately protective of either the warm or cold water ecosystems that are present. Suggestions include subdividing these reaches to appropriate sizes and designating appropriate beneficial uses for each sub reach, or developing water quality objectives that take into consideration the species that may be present at any particular place or time and, thus, provide seasonality to the water quality objectives.

Beneficial Uses: Commenters have stated that there is technical information that indicates that WARM and/or COLD might be inappropriately designated for specific water bodies. These water bodies have been included under Issue No. 2 (Beneficial Use Designations) and are not included in the below work plan estimates.

Priority:	High
Current Action(s):	None
Current Resource(s):	None
Needed Action(s):	There are a number of actions that staff may take to address this issue. One possible action would be to re-evaluate the general and site-specific water quality objectives for dissolved oxygen. Another action would be to work with the fishery agencies and other stakeholders to develop water quality objectives, which may be narrative or numeric, for dissolved oxygen and temperature to specifically protect Central Valley salmonid beneficial uses. Yet another action could be to work with stakeholders on appropriately subdividing long water body reaches and developing water quality objectives that provide optimum protection of the aquatic life that is present in each reach. In these cases, it may be useful to design and conduct a site-specific evaluation that would then serve as a template for other evaluations.

Needed Resource Requirement(s):	Staff – 0.5 PYs per year per amendment. Contract(s) – $250,000 for work on DO; $500,000 for work on temperature objectives; $200,000 for work on reaches.

Issue 8: **Evaluating Current United States Environmental Protection Agency (USEPA) Criteria**

Discussion: The Central Valley Water Board is implementing criteria promulgated by USEPA as of 2000. These criteria are known as the California Toxics Rule (CTR) and include the toxic pollutants which are also called priority pollutants. USEPA also publishes guidance for non-priority pollutants. These non-priority pollutants were not included in the USEPA promulgation of the CTR. USEPA publishes updates of criteria pursuant to Section 304(a) of the Clean Water Act. The updated criteria and guidance represent the most current science and may include criteria that provide better protection of beneficial uses than the currently applicable criteria and water quality objectives.

The Basin Plan includes narrative objectives and a *Policy for Application of Water Quality Objectives* that indicates that the Central Valley Water Board can use available information, numerical criteria, and guidelines from other authoritative bodies to assist in determining compliance with narrative objectives. Therefore, staff can use the USEPA National Recommended Water Quality Criteria to derive permit limits. However, non-uniform translation of narrative water quality objectives could be impairing the Central Valley Water Board's ability to properly protect the beneficial uses of its waters.

The USEPA updated the recommended freshwater criteria for ammonia in 2013 to incorporate the results of new scientific studies to protect freshwater mollusks which are more sensitive to ammonia than the organisms represented in the dataset for the previous criteria. USEPA also published a recalculation procedure to derive site-specific criteria if more sensitive aquatic life species are not found. Potential application of these updated criteria in the Central Valley discharges needs to be evaluated.

Commenters from this Triennial Review have also requested the Central Valley Water Board update its water quality objectives for copper using the Biotic Ligand Model (BLM), as recommended by USEPA in the *2007 Updated Aquatic Life Copper Criteria*.

Priority:	~~Low~~High
Current Action(s):	Central Valley Water Board staff coordinates with State Water Board staff in the development of statewide water quality objectives (See Issue No. 5). ~~No additional actions are proposed at this time.~~ Stakeholders are conducting studies to determine the presence and type of mollusks found in Central Valley waterways. Results of these studies may be used to amend the water quality objectives for ammonia.
Current Resource(s):	Staff – 0.2 PYs are used to coordinate with State Water Board staff. See Issue No. 5. NPDES program staff is working with stakeholders that are conducting studies on mollusks.
Needed Action(s):	Once stakeholders complete the studies on mollusks, resources may be needed to move forward with a basin plan amendment for water quality objectives for ammonia. The Central Valley Water Board should review the current criteria developed pursuant to the Clean Water Act section 304(a) and USEPA published methodologies to determine whether basin plan amendments are needed to update the water quality objectives to ensure that beneficial uses are protected. In addition, while amendments to the basin plans have been completed for certain areas of the region to revise water quality objectives for pH and turbidity and to establish water quality objectives in select water bodies for mercury and certain pesticides to protect aquatic life uses, most of the water bodies in the region have not been evaluated to determine the need for establishing these water quality objectives in those water bodies. While interpretation of the narrative toxicity objective allows the Central Valley Water Board to consider these water quality objectives elsewhere in the region, environmental conditions throughout the region should be evaluated to establish appropriate numeric water quality objectives for these constituents and parameters elsewhere in the region.
Needed Resource	

Requirement(s):	Staff – Once initiated, 0.5 PYs per year for three years are needed to conduct a basin plan amendment for water quality objectives for ammonia. In addition, ~~About~~ about 0.5 PYs per year for two years to conduct a review of the other current USEPA numeric criteria in the basin plans and the CTR. Additional resources would be needed to conduct basin plan amendments if determined to be necessary. For water quality objectives that have already been established for certain parts of the region, 0.5 to 1 PYs for one year per objective is needed to conduct an evaluation of other parts of the region to determine if the basin plan(s) should be amended. An additional 0.5 PYs per year for three years, at a minimum, would be needed to conduct any basin plan amendments. Contract – No contract resources needed.

Issue 9: **Implementation of the Delta Strategic Work Plan**

Discussion: In relatively recent years, various aquatic species in the Bay-Delta have experienced dramatic and unexpected population declines. The causes of Delta ecosystem problems are complex and not fully understood, but involve flow, habitat, invasive species, contaminant, and other stressors. The Regional Water Boards focus primarily on contaminant issues, although they are also involved in habitat preservation and restoration, and invasive species control.

Staff of the Central Valley, San Francisco Bay and State Water Boards formed a Bay-Delta Team to coordinate activities to protect the beneficial uses of the Bay-Delta. The three Water Boards adopted resolutions supporting short-term and long-term actions to protect beneficial uses in the Bay-Delta, and then adopted the June 2008 Strategic Workplan for Activities in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Strategic Workplan). Water quality and contaminant control actions identified in the Strategic Workplan have either been completed or are in progress. In some cases, the need for new actions resulted from the completion of identified actions.

The Drinking Water Policy was adopted by the Central Valley Water Board in July 2013 and is discussed in Issue No. 14.

The TMDLs referenced in the Strategic Workplan and the Delta Plan are discussed in more detail in Issue Nos. 1, 10, and 11. Basin plan amendments for diazinon and chlorpyrifos were adopted by the Central Valley Water Board in March 2014.

Staff is working with stakeholders to develop a Regional Monitoring Program (RMP) in the Delta. The RMP will allow more efficient collection and evaluation of Delta monitoring data, help identify beneficial use impairments and provide data supporting basin planning actions.

In February 2014, staff updated the Central Valley Water Board on the status of the activities assigned to the Board in the 2008 Work Plan and made recommendations on actions that should be included in

an updated 2014 Strategic Work Plan. The 2014 Delta Strategic Work Plan has the following activities listed as a high priority that may result in basin planning actions:

1. Review the control program for low oxygen levels in the Stockton Ship Channel
2. Evaluate control actions to address chronic low oxygen concentrations in Old and Middle Rivers
3. Continue development of the Delta regional monitoring program
4. Develop and implement a nutrient study plan for the Delta
5. Adopt a basin plan amendment for pyrethroid insecticides in sediment and water in the Delta
6. Adopt a Diuron herbicide basin plan amendment for the Delta
7. Conduct a toxicological assessment of current use fungicides and herbicides on pelagic primary production in the Delta
8. Document current recycling efforts in the Central Valley and identify impediments to additional reclamation

Priority: High

Current Action(s): Staff is implementing the actions identified in the 2014 Strategic Work Plan. Progress on each of the activities is documented on the Central Valley Water Board's website at:

http://www.waterboards.ca.gov/centralvalley/water_issues/delta_water_quality/index.shtml

Current Resource(s):

1) Low oxygen levels in the Stockton Ship Channel: Staff – 1 PYs per year from the TMDL Program. No contract resources are allocated to this project.

2) Low oxygen levels in Old and Middle Rivers: Staff – 1.55 per year for FY 2014-15 from the TMDL Program. No contract resources are allocated to this project.

3) Nutrient Study Plan: Staff – 1.35 PYs for FY 2014-15 from general funds dedicated to Delta work. No contract resources are allocated to this project.

4) Pyrethroid Control Program: Staff – 1 PYs per year from the TMDL Program. No contract resources are allocated to this project. See Issue No. 10 for more details.

5) Diuron Control Program: Staff – 1 PYs per year from the TMDL Program. No contract resources are allocated to this project. See Issue No. 10 for more details.

6) Evaluation of Fungicides and Herbicides: 0.2 PYs for FY 2014-15 from general funds dedicated to Delta work. No contract resources are allocated to this project.

Needed Action(s):

~~Central Valley Water Board staff is working with State Water Board staff and stakeholders to review the dissolved oxygen objective applicable to the Deep Water Ship Channel. Additional resources are needed to conduct the review.~~ Once the nutrient study work plan is completed, funds will be needed to implement the work plan. Resources are also needed to conduct studies on the effects of fungicides and herbicides on beneficial uses in the Delta. In addition, assessment of the back sloughs in the south Delta is needed to determine the impacts and causes of low dissolved oxygen and control programs should be developed, if necessary.

Needed Resource Requirement(s):

1) ~~Low oxygen levels in the Stockton Ship Channel: Contract – About $150,000 is needed to review the dissolved oxygen objective of 6 mg/l applicable in the San Joaquin River between Turner Cut and Stockton from 1 September to 30 November.~~

~~2)~~ Nutrient Study Plan: Staff – 1.35 PYs per year is needed to implement the study work plan. Contract funding needs will be determined after completion of the Study Plan.

~~3~~2) Evaluation of Fungicides and Herbicides: Staff – 0.5 PYs per year is needed after FY 2014-15 to oversee contract work. Contract – Approximately $300,000 is needed to conduct an assessment of the impacts of fungicides and herbicides on Delta beneficial uses.

~~4~~3) Low Oxygen in the Back Sloughs of the South Delta: 1 PYs per year is needed with contract needs of $100,000 for dissolved oxygen meters. If the assessment is done under contract, 0.3 PYs per year will be needed to oversee a $~~250~~200,000 contract.

Issue 10: **Pesticide Control Efforts**

Discussion: Pesticides, when used properly, protect people and their environment from pests (animal, plant, or microbial) that threaten human health and human activities.[8] However, pesticide residues that escape their intended use area may enter waters of the state and cause beneficial use impairments, particularly aquatic life impacts. Various pesticides have been detected at toxic levels in the Central Valley water bodies. The Basin Plan contains requirements relevant to pesticides, including narrative and numeric water quality objectives to protect beneficial uses. However, there are currently very few numeric water quality objectives for pesticides.

The Central Valley Water Board has identified many Central Valley waterways as impaired due to ambient pesticide levels on the Clean Water Act section 303(d) list. The Basin Plan outlines a specific review process that the Central Valley Water Board must follow to address pesticide detections and problems that are identified and for coordination with the Department of Pesticide Regulation (DPR), which regulates pesticide registration and use in California. The Central Valley Water Board has adopted specific control programs for certain pesticides.

Organophosphates: The organophosphorus (OP) pesticides diazinon and chlorpyrifos have been documented at toxic levels in numerous surface water bodies and these water bodies have been listed on the Clean Water Act section 303(d) list of impaired water bodies.

To address the OP pesticide problem, the Basin Plan has been amended to establish water quality objectives and implementation programs for diazinon and chlorpyrifos on the valley floor of the Sacramento River and San Joaquin River Basins.

Other Pesticides: In addition to diazinon and chlorpyrifos, there are a number of other pesticides that are frequently detected in Central Valley waters, including some that are at levels that they have been

[8] California Department of Pesticide Regulation, Pesticide Info Fact Sheet

included on the Clean Water Act section 303(d) list. In addressing the diazinon and chlorpyrifos issues, significant concerns have been raised regarding the impacts of replacement products, such as pyrethroids. ~~It is anticipating that adopting~~The adoption of numeric objectives and a control program for these pesticides will ~~facilitate implementation since well-defined pesticide objectives and compliance time schedules will be established.~~ assure the reasonable protection of beneficial uses.

Organochlorines: Organochlorine (OC) pesticides have been detected in the water column, sediment and biota collected from water bodies throughout the Sacramento and San Joaquin River Basins at high enough concentrations to include these water bodies on the Clean Water Act section 303(d) list of impaired water bodies, even though most OC pesticides have been banned for use in the United States for decades.

Stakeholders have expressed concern regarding the water quality objectives for organochlorine pesticides which states that:

Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by the Environmental Protection Agency or the Executive Officer.

Stakeholders are concerned that the water quality objective fluctuates with the accuracy of analytical methods and would prefer numeric water quality objectives that are protective of beneficial uses. Since the adoption of this water quality objective, the USEPA has developed water quality criteria for organochlorine pesticides that are protective of human health and aquatic life and in 2000 promulgated the criteria in the California Toxics Rule (CTR). At this time, the detection limits for analytical methods approved by the USEPA are higher than the CTR criteria for the organochlorine pesticides. Any Basin Plan amendments must be consistent with applicable federal and state laws and regulations to revise, add or delete any water quality objective.

Public workshops and hearings will be held as part of the basin planning process to address diazinon, chlorpyrifos, OC, and other pesticides. The public hearings will provide the review process that was established in the Basin Plan for addressing problem pesticides.

Priority: High

Current Action(s): Diazinon and Chlorpyrifos: The Central Valley Water Board recently amended the Basin Plan to include water quality objectives and an implementation program to control diazinon and chlorpyrifos on valley floor streams. The amendment must be approved by the State Water Board, the Office of Administrative Law and the US Environmental Protection Agency before going into effect.

Other Pesticides: Staff has started basin plan amendments to address the herbicide diuron and pyrethroid impairments in the Sacramento River and San Joaquin River Basins. Staff anticipates working on future basin plan actions to address other pesticides.

Organochlorines: Staff started working on a control program for OC pesticides in 21 impaired reaches of water bodies within the Central Valley. However, since the listings are due to legacy uses of the pesticides, existing regulatory programs may provide appropriate control. Staff is preparing a report of its findings.

Current Resource(s):

1) Diazinon and Chlorpyrifos: Staff – 0.3 PYs for FY 2014-15 from the TMDL Program. No contract resources are allocated to this project.

2) Pyrethroid Control Program: Staff – 1 PYs per year from the TMDL Program. No contract resources are allocated to this project.

3) Diuron Control Program: Staff – 1 PYs per year from the TMDL Program. No contract resources are allocated to this project.

4) Organochlorines: To be completed in FY 2014-15 by the TMDL Program. No contract resources are allocated to this project.

Needed Action(s):	The Central Valley Water Board recognizes that implementation of the authorities of agencies that regulate pesticide use should be one of the primary mechanisms for addressing pesticide-caused water quality impairments. The implementation provisions for pesticides should be reviewed to consider whether the provisions include adequate coordination with DPR, USEPA, and County Agricultural Commissioners on pesticide registration and use regulation. The Basin Plan water quality objectives for OC pesticides need to be re-evaluated.
Needed Resource Requirement(s):	Staff – 0.5 PYs for one year to review general pesticide provisions in the Basin Plan and 0.5 PYs per year for three years to update the Basin Plan, if necessary. 0.5 PYs per year for three years to re-evaluate the water quality objectives for OC pesticides.

Issue 11: **Mercury Load Reduction Program**

Discussion: Elevated mercury levels can be expected in areas where mercury was mined (Coast Range), where mercury was used to extract gold (Sierra Nevada and Cascade Range), and in downstream water bodies. In addition, elevated mercury levels in some waters are due to modern point and non-point sources as well as atmospheric deposition. Mercury is a problem because it accumulates in aquatic organisms to levels that pose a threat to predator species and people that eat fish. Because of elevated mercury levels in fish tissue, numerous water bodies, including the Delta, its tributaries, and numerous reservoirs and streams have been included on the Clean Water Act Section 303(d) list of impaired water bodies. The Clean Water Act mandates that the Regional Water Board develop load reduction programs to resolve these water quality problems through a Total Maximum Daily Load (TMDL) allocation process. Health advisories have been issued for the Delta, the Lower American River, the Sacramento River, the San Joaquin River, Folsom Lake, Lake Oroville, and other water bodies in the Central Valley due to the mercury levels in fish. Recent studies may result in health advisories being issued for additional water bodies as well as more water bodes being added to the Clean Water Act 303(d) list for mercury impairments.

The Regional Water Board adopted Basin Plan Amendments that include fish tissue objectives, implementation programs, and TMDL allocations for controlling mercury and methylmercury in Clear Lake, Cache Creek and its tributaries, and the Delta.

Priority: High

Current Action(s): Staff from multiple water boards is working together on a control program to address mercury-impaired reservoirs on a statewide perspective. Central Valley Water Board staff is leading this effort. Staff is meeting with stakeholders and drafting a staff report for State Water Board consideration in late 2015. See Issue No. 5 (Participation in State Water Board Plans and Policies and other Statewide Issues) for ~~more~~additional information.

Current Resource(s):	Staff – Up to 1.8 PYs per year for up to three years from the TMDL Program.
	Contract(s) – ~~$0~~None
Needed Action(s):	None
Needed Resource Requirement(s):	None

Issue 12:	**Battle Creek (Sedimentation Impacting Endangered Species)**
Discussion:	Battle Creek is one of the northernmost major tributaries to the Sacramento River and is considered a high priority stream because it contains critical cold-water habitat for endangered Spring Run Chinook salmon, supports important populations of Chinook salmon and Central Valley steelhead, contains numerous fish hatcheries, and is the location of an ongoing salmonid restoration project that is receiving substantial funding from state and federal agencies, as well as local and private entities. There is concern of excessive sedimentation endangering the aquatic life beneficial uses. Due to the importance of this water body, there have been requests to assign beneficial uses, site-specific water quality objectives and/or an implementation program that recognizes the importance of this water body and protects its beneficial uses.
Priority:	High
Current Action(s):	A special study is underway to update a watershed assessment to evaluate the impacts of the various land uses in the watershed and how those impacts may be affecting the biological community and the large-scale salmonid restoration efforts that are underway. The study will provide a broad overview of the sediment sources and effects on Battle Creek.
Current Resource(s):	Staff – Funded with timber program resources to provide technical oversight of studies and to conduct outreach to stakeholders. Contract(s) – $44,900 from the SWAMP program to compile all available water quality data and literature for the Battle Creek watershed.
Needed Action(s):	Additional watershed assessments are needed to provide a better understanding of the sediment sources. Also additional study is needed to determine the actions that can be taken to control sediment in Battle Creek. Resources will be needed to fund staff to amend the Basin Plan to include specific protection for Battle Creek.

Needed Resource Requirement(s):	Staff – 0.5 PYs per year to conduct the basin plan amendment. Contract(s) – $100,000 to conduct additional assessment on sediment sources in the watershed and to identify appropriate control actions.

Issue 13:	**Pit River (Reassess Beneficial Uses and Water Quality Objectives in Specific Reaches)**
Discussion:	The Basin Plan identifies beneficial uses for the South and North Forks of the Pit River, the Pit River from the confluence of the forks to the mouth of Hat Creek, and the Pit River from the mouth of Hat Creek to Shasta Lake. The Pit River is over 200 miles long and varies in elevation from about 4300 feet above mean sea level at the confluence of the forks to about 1000 feet above mean sea level at Lake Shasta. Commenters have requested the Central Valley Water Board re-evaluate beneficial uses in these reaches of the Pit River as well as divide the Pit River into additional reaches to provide more appropriate protection of the beneficial uses. Commenters have also requested that the Central Valley Water Board re-evaluate water quality objectives, including pH, for the protection of aquatic life uses in the Pit River and to reflect the environmental conditions in the Pit River. A number of stakeholders have conducted assessments of the Pit River and have indicated an interest in conducting additional assessments that could lead to basin plan amendments to address beneficial uses and water quality objectives in the Pit River.
Priority:	Medium
Current Action(s):	None
Current Resource(s):	None
Needed Action(s):	Evaluate the environmental conditions in the Pit River to identify the appropriate beneficial uses and water quality objectives. It may be necessary to divide the Pit River into smaller reach segments to provide adequate protection of the beneficial uses.
Needed Resource Requirement(s):	Staff – 0.5 PYs per year Contract(s) – $200,000 to assess the current literature on water quality and beneficial use conditions in the Pit River and conduct any necessary studies on the environmental conditions of the Pit River and its watershed.

Issue 14:	**Policies for Maintaining Water Quality for Drinking Water**
Discussion:	The CALFED Record of Decision (ROD) identified the need for a comprehensive source water protection program and a comprehensive drinking water policy for the Delta and upstream tributaries. The Central Valley Water Board signed a Memorandum of Understanding (MOU) committing to working with the Department of Health Services (now the Department of Public Health), the State Water Board and USEPA to develop and adopt a policy to protect sources of drinking water for the Delta and its tributaries. A Central Valley Drinking Water Policy Workgroup (Workgroup) made up of federal and state agencies, drinking water purveyors, and wastewater, municipal and agricultural interests was formed to help staff develop the comprehensive drinking water policy. The Central Valley Water Board adopted a Drinking Water Policy for Surface Waters of the Sacramento-San Joaquin Delta and Upstream Tributaries in July 2013.
Priority:	None
Current Action (s):	No action required.
Current Resource(s):	None
Needed Action(s):	None
Needed Resource Requirement(s):	None

Table 2
Summary of 2014 Triennial Review Issues, Current Actions and Resources, and Needed Actions and Resources from FY 14-15 through FY 16-17

Issue No.	Issue Title	Priority	Current Actions and Resources (Continuing and Proposed)			Needed Actions and Resources (Currently Unfunded with Estimated Funding Needs)		
			Actions	Staff	Contract	Actions	Staff	Contract
Regionwide Issues								
1	Salt and Nitrate Management Plan	High	Salt and Nitrate Management Plan - Application/implementation Secondary MCLs - Implicitly includes TLB EC Effluent Limits Lower SJR Salt/Boron Variance Policy, Salinity Variance Program and Exception Program	2 PYs/yr 0.5 PYs/yr 0.2 PYs	$1.3 M ~$300,000 $0	Any Basin Planning projects that result from ongoing work. Implementation of the SNMP.	0.5 PYs/yr/project TBD	TBD ~$22 to $42 million from stakeholders
2	Beneficial Use Designations	High	West Squaw Creek RMK Mine Framework for agricultural surface waters - Archetype: MUN in POTW receiving waters MUN in Tulare Lakebed	Reimb. 0.3 PYs 1 PYs/yr - 1 PYs/yr 0.2 PYs	$0 $0 $0 $0 $0	Amendments for groupings of water bodies (e.g. ephemeral/perennial; elevation; etc.). Amendments for individual water bodies	1 PYs/yr for 2 yrs to group waterbodies 0.5 PYs/yr for 3 yrs to do site-specific amendments	$500,000 to group water bodies $200,000 per water body for site specific amendments
3	Agricultural Dominated Waters	High	Phase 1: Framework for MUN Phase 2: Framework for remaining Beneficial Uses	See Issue 2	$0	Phase 2: Complete development of framework for BUs other than MUN. Phase 2 projected to begin in next triennial review period.	None - continue staffing identified in Issue 2	None
4	Water Bodies Dominated by NPDES Discharges	High	Variance Policy	See Issue 1	Issue 1	Amendments for groupings of water bodies (e.g. effluent dominated constructed vs. natural). Amendments for individual water bodies	1 PYs/yr for 2 yrs to group waterbodies 0.5 PYs/yr for 3 yrs to do site-specific amendments	$500,000 to group water bodies $200,000 per water body for site specific amendments
5	Participation in State Water Board Plans and Policies	High	Anti-degradation Policy, bacterial standards, natural sources, nutrient numeric endpoints tools, toxicity amendments, and the amendments to the SIP Bay-Delta Plan, the listing policy, the mercury offset policy, methylmercury objectives, sediment quality objectives and the trash policy Mercury contamination in California reservoirs biological integrity plan, cadmium objectives and chlorine residual objectives NPS Implementation and Enforcement Policy wetlands and riparian areas policy	0.2 PYs (Basin Planning) TMDL TMDL NPDES/ Timber NPS WQC	None	None	None	None
6	Secondary MCLs	High	Re-evaluate use of secondary MCLs as WQOs. Defer to the SNMP for possible development of a regulatory process	See Issue 1	None	Revisit after completeion of SNMP	None	None

Summary of 2014 Triennial Review Issues, Current Actions and Resources, and Needed Actions and Resources from FY 14-15 through FY 16-17

Issue No.	Issue Title	Priority	Current Actions and Resources (Continuing and Proposed)			Needed Actions and Resources (Currently Unfunded with Estimated Funding Needs)		
			Actions	Staff	Contract	Actions	Staff	Contract
7	Protection of Fisheries and Aquatic Life	High	None	None	None	WQOs for DO, Temperature BU re-evaluation (inc. subdividing long reaches,evaluation of appropriate WARM/COLD designations)	0.5 PYs/yr/amendment 0.5 PYs/yr/amendment	$250,000 for DO $500,000 for Temp. $200,000 for each BU/waterbody
8	Current USEPA Criteria	High	Coordination with State Board Evaluate water quality objectives for ammonia	See Issue 5 NPDES	None Stakeholder funding	Develop basin plan amendment if necessray Current 304a criteria and methodology including use of the biotic ligand model for copper pH/turbidity, mercury, and pesticides	0.5 PYs/yr 0.5 PYs/yr for 2 yrs to review current criteria (inc. Cu) 0.5 to 1 PYs for one year/WQO to evaulate need for WQOs and 0.5 PYs/yr/WQO for 3 yrs to conduct amendments	None None None
Sacramento/San Joaquin River Basins Specific								
9- Sac/SJ	Implementation of Delta Strategic Work Plan	High	DO in DWSC DO in Old and Middle Rivers Nutrient Study Plan Pyrethroid Control Program Diuron Control Porgram Fungicides and Herbicides evaluation	1 PYs/yr (TMDL) 1.55 PYs/yr (TMDL) 1.35 PYs (Delta) 1 PYs/yr (TMDL) 1 PYs/yr (TMDL) 0.2 PYs (Delta)	None None None None None None	Nutrient Study Plan (No allocation post FY14-15) Fungicides and Herbicides (No allocation post FY14-15) Low dissolved oxygen in back sloughs	1.35 PYs/yr 0.5 PYs/yr 1 or 0.3 PYs/yr	TBD $300,000 $100,000 or $200,000
10 - Sac/SJ	Pesticide Control Efforts	High	Diazinon and Chlorpyrifos Pyrethroids Diuron	0.3 PYs (TMDL) See Issue 9 See Issue 9	None None None	Review Basin Plan implementation provisions for pesticides Re-evaluation of WQO for organochlorie pesticides	0.5 PYs/yr 0.5 PYs/yr/3 years	None None
11 - Sac/SJ	Mercury Load Reduction Program	High	Control Program for Hg in reservoirs	1.8 PYs/yr (TMDL)	None	None	None	None
12- Sac/SJ	Battle Creek	High	Special Study to update watershed assessment	Timber	$44,900 from SWAMP	Additional study to ID sources and determine control actions	0.5 PYs/yr	$100,000
13 - Sac/SJ	Pit River	Medium	None	None	None	BUs and WQO for pH (related to Issue #7)	0.5 PYs/yr	$200,000
14 - Sac/SJ	Drinking Water Policy	None	Completed	None	None	None	None	None