

# Reclamation’s Salinity Management Plan

Revised ~~May~~ November 2010

## Actions to Address the Salinity and Boron Total Maximum Daily Load Issues For the Lower San Joaquin River

### Table of Contents

|   |                               |
|---|-------------------------------|
| Changing Landscape.....   | 1                             |
| Current Actions.....  | 2                             |
| Flow Actions.....   | 3                             |
| New Melones Operations – Dilution Flows.....                                      | 3                             |
| Water Acquisitions.....   | <del>44</del>                 |
| San Joaquin River Restoration Program.....  | <del>55</del>                 |
| Salt Load Reduction Actions.....  | <del>66</del>                 |
| Grassland Drainage Area Salinity Reduction.....                                   | <del>66</del>                 |
| Water Use Efficiency Grant Programs.....  | <del>77</del>                 |
| Water Conservation Field Services Program.....                                    | <del>77</del>                 |
| WaterSMART (previously Water 2025) Grant Program.....                             | <del>88</del> <del>7</del>    |
| CALFED Water Use Efficiency Program.....  | <del>99</del> <del>8</del>    |
| Salt Mitigation Actions.....  | <del>99</del>                 |
| Real Time Management Program.....   | <del>99</del>                 |
| Westside Salt Sources Assessment.....   | <del>101</del> <del>09</del>  |
| Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS)..... | <del>101</del> <del>0</del>   |
| Wetlands BMP Plan.....  | <del>111</del> <del>10</del>  |
| Cumulative Effectiveness of the Management.....                                   | <del>111</del> <del>1</del>   |
| Potential Future Actions.....   | <del>111</del> <del>1</del>   |
| Monitoring and Reporting.....   | <del>121</del> <del>211</del> |
| Accounting of Actions.....  | <del>121</del> <del>2</del>   |
| Schedule of Actions.....  | <del>131</del> <del>2</del>   |

### Changing Landscape

The Sacramento-San Joaquin Delta and its watersheds are in a state of crisis on many fronts. While this Action Plan solely focuses on Reclamation activities to reduce or mitigate salt loads transferred from the Delta to the San Joaquin River basin, it must first acknowledge that these actions are affected by flows and quality in the Delta and its watersheds, the state of the ecosystem and actions needed to recover and maintain the ecosystem, as well as the regulatory and planning science and priorities in the watershed. ~~It~~ Over the next five years~~2010~~, there are several major activities either recently implemented or underway that can significantly affect the ability of the Action Plan to accomplish its goals. This section of the Action Plan is added as an acknowledgement of these activities and a commitment to track these activities to understand how to adapt the Action Plan in the future.

After the establishment of the Management Agency Agreement, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service finalized biological opinions to minimize the impacts of Central Valley Project operations on Chinook salmon and Delta smelt. These biological opinions are expected to change watershed flow and storage patterns, as well as DMC delivery patterns.

Activities underway that may affect implementation of the Action Plan include:

- Bay-Delta Conservation Plan (Delta flow, water quality, upstream flow/storage);
- State Water Resources Control Board re-evaluation of the science upon which salinity objectives to protect agriculture are based;
- State Water Resources Control Board re-evaluation of San Joaquin River flow requirements;
- The future of the ~~Vernalis Adaptive Management Program~~ [San Joaquin River Agreement](#);
- CV-SALTS long term salinity and nutrient planning, including evaluation of salinity objectives on the Lower San Joaquin River upstream of Vernalis;
- State Water Resources Control Board Cease-and-Desist order on Central Valley Project and State Water Project water rights, based on meeting South Delta salinity objectives;
- Implementation of the Stockton Deepwater Ship Channel dissolved oxygen TMDL;
- Implementation of the Delta mercury TMDL;
- Climate change planning.

## **Current Actions**

This document identifies the practices and procedures which are the structure of the salinity management plan (Action Plan) for Reclamation's Mid-Pacific Region. The Action Plan describes the actions used for water quality management on the San Joaquin Basin for the control of salinity and boron using existing authority and appropriations. The most current modeling analyses performed on the Basin are consistent with the actual collected data and supports the positive benefits to water quality through the implementation of these actions.

The Action Plan will focus on current actions and proposed mitigation components. This Action Plan was developed in conjunction with the MAA between Reclamation and the Board to improve the salt and boron conditions on the Lower San Joaquin River. The Action Plan focuses on three major groups of actions taken by Reclamation:

1. Providing flows to the system
2. Reducing salt load to the river
3. Facilitating mitigation

While Reclamation is committed to implementing the Action Plan and monitoring and evaluating its effects in relation to the loads of salt delivered through the DMC, Reclamation is also conditioned under its water rights to meet the salinity (and flow) objectives at Vernalis. Until salt regulation and compliance is fully converted to a TMDL approach, Reclamation will continue to meet its obligations at Vernalis through a combination of flow and load actions, using flow operations to meet the [Vernalis](#) objective in real time but not to comply with the TMDL requirements<sup>1</sup>. Reclamation is also studying the residence time and

---

<sup>1</sup> [The overall objective of the TMDL is to achieve the Vernalis salinity objective, which is similar to the objective of the CVP water rights' condition related to Vernalis salinity. The TMDL requires Reclamation to reduce or offset salt loads delivered into the San Joaquin River watershed from the Delta Mendota Canal. While Reclamation is committed to an operation that meets the Vernalis salinity objective in real time, it is not committed to providing dilution flows beyond that in order to offset calculated salt loads in real time, since Reclamation believes this would](#)

transport of salt loads delivered to the basin through the DMC, in order to determine the most effective way to stop, minimize, or offset their impact on the Lower San Joaquin River.

## Flow Actions

### New Melones Operations – Dilution Flows

The Flood Control Act of December 1944 authorized construction of a dam to replace Melones Dam. The U.S. Army Corps of Engineers (Corps) was to build and operate this dam to help alleviate serious flooding problems along the Stanislaus and Lower San Joaquin Rivers. In the Flood Control Act of 1962 (P.L. 87-874), Congress reauthorized and expanded the project to a multi-purpose unit to be built by the Corps and operated by the Secretary of the Interior as part of the Central Valley Project (CVP), thus creating the New Melones Unit. The multi-purpose objectives of the Unit include flood control, irrigation, municipal and industrial water supply, power generation, fishery enhancement, water quality improvement, and recreation. Irrigation and storage facilities have been developed on the Stanislaus River both upstream and downstream from New Melones Dam.

The New Melones Interim Plan of Operation was developed as a joint effort between Reclamation and the Fish and Wildlife Service (FWS) in conjunction with the Stanislaus River Basin stakeholders. This process began in 1995 with a goal to develop a management plan with clear operating criteria for available water supplies in the Stanislaus Basin on a long-term basis. That effort was continued with a group of Stanislaus stakeholders in 1996; however, the focus shifted to an interim plan for 1997 and 1998 operations. During a stakeholder's meeting on January 29, 1997, a final interim plan of operation for the New Melones Reservoir was agreed upon in concept.

The U.S. Fish and Wildlife Service (Service) delivered its Biological Opinion (BO) to the Bureau of Reclamation in December 2008 on the effects of the continued operation of the Federal Central Valley Project and the California State Water Project on the delta smelt and its designated critical habitat. The National Marine Fisheries Service delivered its Biological Opinion (BO) to the Bureau of Reclamation in June 2009 on the effects of the continued operation of the Federal Central Valley Project (CVP) and the California State Water Project (SWP) on the various runs of Chinook salmon, Central Valley steelhead, and green sturgeon, and their designated critical habitat. The biological opinions contain a number of mitigation actions ~~which may that~~ affect New Melones operations. [The National Marine Fisheries Service has committed to reevaluating these Reasonable and Prudent Actions by 2012.](#)

#### *Plan Elements:*

Congress authorized the construction and operation of New Melones Reservoir as a multi-purpose facility, which includes water quality. ~~Water-Non-consumptive water~~ released from New Melones is of high quality and provides a large ~~assimilative capacity when it dilution flows for salinity in reaches the confluence of the San Joaquin River. In terms of water management and water supply, releases from New Melones can improve salinity in the San Joaquin River at Vernalis.~~

New Melones Reservoir makes releases which provide multiple instream beneficial uses. When releases are made for non-consumptive uses, the majority of the release will reach the San Joaquin River at Vernalis. Releases are made for instream fishery benefits based on schedules requested by the California Department of Fish and Game (DFG) [under a water rights settlement agreement, as well as the U.S. Fish](#)

[result in over-compliance with the water quality objective and would thus be a waste of water in violation of the California Water Code.](#)

~~and Wildlife Service (Service) and National Marine Fisheries Service (NMFS) under the Central Valley Project Improvement Act of 1992 and under Central Valley Project biological opinions), as well as the FWS. Releases may also be made to maintain the dissolved oxygen level in the Stanislaus River at Ripon. If these releases are not sufficient to fully meet the salinity standard at Vernalis, then additional releases will be made from New Melones until the salinity standard is satisfied, unless New Melones has reached its dead pool storage level. It is the total of these non-consumptive-consumptive-use releases above the TMDL design flows which are counted as dilution flow for the purpose of compliance with the Basin Plan provides the assimilative capacity at Vernalis and mitigates for increased salinity in the middle reaches of the San Joaquin River.~~

*Plan Effectiveness:*

The combination of land retirement, refuge water supply, and reduced salt loading from the Grasslands Bypass Project has altered the hydrology of the Basin and has improved the water quality of the San Joaquin River. New Melones Reservoir dilution flows provide the final action to ensure the water quality standard will be met, ~~although there is some question as to whether the new biological opinions will reduce the availability of dilution flows.~~

## **Water Acquisitions**

### **Water Acquisitions Program**

Through the Central Valley Project Improvement Act (CVPIA), Congress identified the importance of the CVP in California's water resources picture, but made significant changes in the policies and administration of the project. A major feature of the CVPIA is that it requires acquisition of water for protecting, restoring, and enhancing fish and wildlife populations. To meet the needs under CVPIA, the Department of the Interior developed a Water Acquisitions Program (WAP), a joint effort by Reclamation and the FWS. CVPIA redefined the purposes of the CVP and identified several specific goals and objectives for the Interior to meet. These include:

- To protect, restore, and enhance fish, wildlife, and associated habitats in the Central Valley and Trinity River basins of California.
- To address impacts of the CVP on fish, wildlife, and associated habitats.
- To improve the operational flexibility of the CVP.
- To increase water-related benefits provided by the CVP to the State of California through expanded use of voluntary water transfers and improved water conservation.
- To contribute to the State of California's interim and long-term efforts to protect the San Francisco Bay/Sacramento-San Joaquin Delta Estuary.
- To achieve a reasonable balance among competing demands for use of CVP water, including the requirements of fish and wildlife, agricultural, municipal and industrial, and power contractors.

To achieve the CVPIA's purposes and the identified goals and objectives, a large number of provisions were incorporated into the statute. These provisions involve water contracts, improved water management, restoration of anadromous fish populations, water supplies for State and Federal refuges, mitigation for other fish and wildlife impacted by the CVP, and retirement of drainage-impaired farm lands. The actions of the CVPIA produce a broad spectrum of benefits – including improved water quality through increased flows.

*Plan Elements:*

- Provide up to 800,000 acre-feet of CVP water ([referred to as b\(2\) water](#)) annually to improve stream flows for salmon, steelhead, and other fish on the Sacramento, American, and Stanislaus Rivers and on Clear Creek.
- Implement the Vernalis Adaptive Management Program (VAMP). This experimental program involves the acquisition of water (as necessary) on the San Joaquin River tributaries to improve flows in the Delta and reductions in pumping at State and Federal facilities to reduce entrainment of juvenile salmon as they migrate to ocean waters. [Within the San Joaquin River Agreement, Reclamation purchases](#) fall pulse flows from the Merced River which also contribute [salinity dilution flows](#). [This program was funded under the authority of Title 34, Public Law 102-575 section 3406\(g\) through 2009, and more recently has been funded under the authority of Title 34, Public Law 102-575 section 3406 b\(3\).](#)
- Acquire additional water for restoration of fish-friendly instream flows.

*Plan Effectiveness:*

Since passage of the CVPIA, Reclamation and the FWS, with assistance from the State of California and the cooperation of many partners, have completed many of the necessary administrative requirements, conducted numerous studies and investigations, implemented hundreds of measures, and made significant progress toward achieving the goals and objectives established by the CVPIA. There are positive effects being observed in the Central Valley ecosystem, not only in the various species and habitat types, but also flow and water quality in the associated water bodies.

- VAMP was implemented. This experimental program involves acquisition of water (as necessary) on San Joaquin River tributaries to improve flows in the Delta and increase assimilative capacity in the river. The Basin Plan includes spring pulse flows in its salinity TMDL design flows, but not fall pulse flows, which are purchased from the Merced River. [This program was funded under the authority of Title 34, Public Law 102-575 section 3406\(g\) through 2009, and more recently has been funded under the authority of Title 34, Public Law 102-575 section 3406 b\(3\).](#)
- Nearly 800,000 acre-feet of [b\(2\)](#) water have been acquired for restoration of fish-friendly instream flows, although the majority of this water has been acquired outside of the San Joaquin Basin.
- In 2007, the WAP purchased 35,000 acre-feet of water from South San Joaquin Irrigation District, Merced Irrigation District, and Oakdale Irrigation District to increase instream flows for Delta smelt. [This purchase was funded under the authority of Title 34, Public Law 102-575 section 3406 b\(3\).](#)

## **San Joaquin River Restoration Program**

The San Joaquin River Restoration Program (SJRRP) is a comprehensive long-term effort to restore flows to the San Joaquin River from Friant Dam to the confluence of Merced River and restore a self-sustaining Chinook salmon fishery in the river while reducing or avoiding adverse water supply impacts from restoration flows. The SJRRP is a direct result of a Settlement reached in September 2006 of an 18-year lawsuit to provide sufficient fish habitat in the San Joaquin River below Friant Dam near Fresno, California, by the U.S. Departments of the Interior and Commerce, the Natural Resources Defense Council (NRDC), and the Friant Water Users Authority (FWUA). The Settlement received Federal court approval in October 2006. Interim flows began in the fall of 2009 and full restoration flows would begin no later than January 2014. Salmon will be reintroduced no later than December 31, 2012 in the upper reaches.

According to the settlement, restoration flows must reach the confluence with the Merced River, after which Friant parties have the option to redivert flows for agricultural use. Because of this uncertainty, these flows (and the program) will be tracked over the next four years to evaluate whether they are providing dilution flows.

Plan Elements:

The San Joaquin River Restoration Program calls for fall and spring restoration flows based on water year type. These flows, dependent on their ability to reach Vernalis and upon their need to provide dilution, may provide dilution flows.

Plan Effectiveness:

The SJRRP installed several sensors that measure EC along the river in both surface water and groundwater. These are available on the California Data Exchange Center and may be used to help determine the potential for the SJRRP to provide dilution flows. Reclamation will evaluate SJRRP data with respect to salinity dilution.

## **Salt Load Reduction Actions**

### **Grassland Drainage Area Salinity Reduction**

There are a number of names given to salinity reduction actions in the agricultural areas of the Grassland subarea (as defined in the Basin Plan). There is also substantial body of literature describing the regulatory, legal, and planning history of drainage management in this area, which is not repeated here. For the purposes of this Action Plan, the salinity reductions achieved by actions described as the Grassland Bypass Project (GBP), the Westside Regional Drainage Plan, and/or the San Luis Unit Drainage Feature Re-evaluation are monitored and evaluated as Grassland Drainage Area Salinity Reduction actions for purposes of the Management Agency Agreement. The Grassland Basin Drainers (GBD) manage drainage from 97,000 acres of agriculture called the Grassland Drainage Area. Prior to 1996, agricultural drainage water was discharged into the San Joaquin River through Salt Slough and other channels used to deliver water to wetland areas. Since then, the GBD have implemented the Grassland Bypass Project to isolate drainage from wetland supplies and to reduce drainage through improved efficiency, blending and reuse on increasingly salt tolerant crops and to use part of the San Luis Drain to convey the remaining drainage to Mud Slough and the San Joaquin River.

Although drainage is managed primarily to control and reduce selenium discharges to Mud Slough, the drainage management also reduces ~~all the contaminants~~other constituents associated with the drainage, including salinity. The goal of the 2019 Use Agreement se activities is to have a zero discharge from agricultural irrigation into the San Joaquin River by the end of 2019, which will require physical treatment of the concentrated drainage. Based on available funds and certain incentives in the 2019 Use Agreement, the GBD have a goal to continue to meet current obligations for load reductions and to greatly reduce completely end discharges to the San Luis Drain by starting in 2015<sup>2</sup>.

While Reclamation lacks control of many of the resources needed to be an active participant in these drainage activities, Reclamation provides annual funding to support them. To date, Reclamation has provided over \$21 million in federal funding to support this effort.

---

<sup>2</sup> The 2009 Agreement for Use of the San Luis Drain includes fees based on selenium and salt loads that will begin in 2016.

*Plan Elements:*

GBD activities rely on the following to reduce and then eliminate high salinity irrigation drainage from these lands:

- ~~Land Retirement.~~
- Reduction of drainage volumes to be managed through source control and efficient water management techniques.
- Recirculation and blending of tile water for use on primary irrigation lands.
- Installation of groundwater wells to lower groundwater in strategic locations in order to eliminate groundwater infiltration into tile drains.
- Voluntary land retirement.
- 
- Treatment of remaining drainage water for irrigation reuse and production of marketable salt product.

*Plan Effectiveness:*

Since implementation of GBD drainage management activities, discharges of most agricultural drainage water from the GDA into wetlands and refuges have been eliminated. With about 4,000 acres of marginal land currently acting as a drainage water reuse area, the total discharge volume from the drainage area was reduced by 75 percent. Selenium and salt loads discharged from the GDA were reduced by 85 percent and 75 percent, respectively.

For example, the Grassland Bypass Project improves water quality in the wildlife refuges and wetlands; sustains the productivity of approximately 90,000 acres of farmland; and fosters cooperation between area farmers and regulatory agencies in drainage management reduction which reduces selenium and salt loading. ~~An analysis made by the SJRWQMG using the SANMAN model developed by Metropolitan Water District concluded that full implementation of the Westside Regional Drainage Plan will assure compliance with salinity objectives at Vernalis.~~

## **Water Use Efficiency Grant Programs**

Reclamation funds several water conservation projects geared towards decreasing water demands in order to meet environmental, agricultural and growing urban needs. These projects are funded through different programs such as the Water Conservation Field Services Program (WCFSP), WaterSMART, and CALFED. Through water conservation and increasing the efficiency of water usage, agricultural drainage and salt loads are subsequently reduced to the river.

## **Water Conservation Field Services Program**

As a result of mandates detailed in the CVPIA of 1992, Reclamation's Mid-Pacific Region has placed a strong emphasis on water conservation. The WCFSP is an incentive-based vehicle for Reclamation to assist water contractors in meeting their water conservation planning obligations and implementing effective measures to optimize the use of limited water resources. The WCFSP provides cost-share funding to Reclamation contractors for the implementation of Best Management Practices (BMPs) mandated by the CVPIA and identified in their water management plans.

*Plan Elements:*

The WCFSP is designed to (1) encourage water conservation; (2) assist contractors with developing and implementing effective water management and conservation plans and activities; and (3) foster improved water management on a regional, state-wide, and watershed basis. The WCFSP has four areas of focus:

- Water management planning
- Implementation of conservation measures
- Demonstration of innovative technologies
- Conservation education

Plan Effectiveness:

Since 2000, Reclamation's MP region has awarded \$809,000 through 31 grants to districts within the San Joaquin basin through the WCFSP. Project costs, including recipient contributions, total approximately \$3.0 million. These grants were used to support projects such as canal lining and piping, irrigation scheduling, system delivery, system modernization, residential rebate programs and measurement.

**WaterSMART (previously Water 2025) Grant Program**

On February 22, 2010 Interior Secretary Ken Salazar announced the *WaterSMART* program, where SMART is short for "Sustain and Manage America's Resources for Tomorrow." This program will create a national framework to integrate and coordinate water sustainability efforts of the Department and its federal, state and private partners. WaterSMART expands the Bureau of Reclamation's various grant programs and its studies of entire river basins.

WaterSMART grant funding is provided on a cost-share basis to irrigation and water districts, western states, and other entities with water delivery authority for projects that stretch existing water supplies. The goal of WaterSMART is to leverage local and federal monies and resources on projects that conserve and use water more efficiently, increase the use of renewable energy in the management or delivery of water, protect endangered and threatened species, facilitate water markets, or carry out other activities to address climate-related impacts on water or prevent any water-related crisis or conflict. With leveraged water sustainability grants, an important step will be taken towards increasing conservation for a more efficient use of water in the West.

Plan Elements:

Principles of WaterSMART grants include:

- Water marketing projects with willing sellers and buyers, including water banks that transfer water to other uses to meet critical needs for water supplies;
- Water efficiency and conservation projects that allow users to decrease diversions and use or transfer the water saved;
- Projects that improve water management by increasing operational flexibility such as constructing aquifer recharge facilities or making system optimization and management improvements;
- Pilot and demonstration projects that showcase the technical and economic viability of treating and using brackish groundwater, seawater, or impaired waters within a specific locale.

Plan Effectiveness:

Since 2007, Reclamation’s MP region has awarded \$992,315 through 4 grants to districts within the San Joaquin basin through the WaterSMART and Water 2025 Challenge grant programs. Project costs, including recipient contributions, total approximately \$3.4 million.

### **CALFED Water Use Efficiency Program**

CALFED Bay-Delta Program was created in 1994 as a coordinated planning effort between 13 Federal and 12 State agencies to develop a long-term, comprehensive plan to restore the ecological health and to improve water management for the Bay-Delta System. The CALFED Water Use Efficiency (WUE) element is one of the cornerstones of CALFED’s water management strategy. The goal of the WUE program is to develop a set of programs and assurances that contribute to CALFED goals and objectives; has broad stakeholder acceptance; fosters efficient water use; and helps support a sustainable economy and ecosystem.

#### Plan Elements:

- Provide financial assistance to Delta water suppliers to improve water use efficiency
- Provide incentives to water suppliers and users that implement conservation measures which contribute to reducing irrecoverable water losses; attaining water quality benefits; and/or attaining environmental benefits

#### Plan Effectiveness:

Since 2006, Reclamation’s MP region has awarded \$2,204,755 through 5 grants to districts within the San Joaquin basin. Project funds, including recipient contributions, total approximately \$5.8 million.

## **Salt Mitigation Actions**

### **Real Time Management Program**

A “Real Time Salinity Management” Program was proposed by the Board in the salt and boron TMDL. Such a program would function through a cooperative effort where dischargers would coordinate their discharges into the San Joaquin River. By monitoring the assimilative capacity of the river, dischargers can take advantage of increasing assimilative capacity and release their discharges in a coordinated fashion without violating salinity objective in the river. This effort will require development of three major components – an integrated real time water quality monitoring network, potential physical infrastructure(s) to manage flows to the river, and an organizational institution to manage river activities and provide assurance that standards are in compliance.

The responsible parties identified in the TMDL are all potential stakeholders and their involvement is crucial to the success of a Real Time Management Program (RTMP). This effort will be carried out under Reclamation’s existing authority granted under P.L. 108-361 (PTMS).

#### Plan Elements:

This program will develop the stakeholder interest, support and participation in RTMP by:

- Working with stakeholders to develop an integrated water quality monitoring network and common data platform;

- Working with stakeholders to develop a forecast/decision support tool;
- Working with stakeholders to develop an organizational structure to manage river activities and ensure regulatory compliance;
- Partnering with other programs to leverage resource to conduct salinity management pilot projects that will benefit and provide new opportunities to further support for real time management.

Plan Effectiveness:

Australia has a successful Real Time Management Program to manage its saline discharges in the Murray Darling and Hunter River Basin. In concept, a RTMP in the San Joaquin River offers the greatest opportunity to basin stakeholders in meeting the salinity objective with the least cost and regulatory oversight. This program will develop the necessary components for a viable RTMP which will meet Board approval. The development of RTMP will be consistent with the activities of PTMS and CV-SALTS and integrate as many common features as possible.

**Westside Salt Sources Assessment**

In 2009, Reclamation awarded a contract to Montgomery Watson Harza (MWH) to conduct the “Assessment of Salt Sources, Transport and Fate within the Westside Region of the San Joaquin River Valley.” The goal of this project is to examine the transport and fate of salt loads delivered to the Northwest and Grassland subareas from the Delta-Mendota Canal, by developing water, salt and nitrate budgets for irrigation districts in these areas. Reclamation hopes to determine whether delivered salt loads are disposed into the river in the same month as they are delivered; to identify and explore the potential for cost-effective salt reduction or offset actions; and to identify any data or knowledge gaps. Nitrate is included to assist the CV-SALTS process.

Plan Elements:

This project will develop water, salt, and nitrate budgets in order to assess the fate and transport time of salts through CVP delivery areas. The information should also support the RTMP and the CV-SALTS planning effort.

Plan Effectiveness:

This project will expand our detailed technical knowledge of DMC-related salt loading.

**Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS)**

In 2006, the Central Valley Water Board, the State Water Board, and stakeholders began a joint effort to address salinity and nitrate problems in California’s Central Valley and adopt long-term solutions that will lead to enhanced water quality and economic sustainability. Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) is a collaborative basin planning effort aimed at developing and implementing a comprehensive salinity and nitrate management program. Reclamation participates in the CV-SALTS committees, and provides technical support, and plans to continue with that participation.

Plan Elements:

Information on CV-SALTS can be found at [www.cvsalinity.org](http://www.cvsalinity.org). CV-SALTS is performing/contracting for technical studies to support the development and implementation of salinity and nitrate management plans and adoption of a Basin Plan amendment on salinity and nitrate management.

Plan Effectiveness:

The goal of CV-SALTS is to develop an implementation framework for sustainable salinity management in the Central Valley. Effectiveness will be determined by how well critical stakeholders are engaged and by the quality of the plan.

### **Wetlands BMP Plan**

The (FWS), DFG, and the Grassland Resource Conservation District (GRCD) in coordination with Reclamation are developing BMP plans to reduce the impact of discharges from managed wetlands into the San Joaquin River.

Currently, a draft BMP plan has been developed and is awaiting FWS approval. Initial funding is in place to begin implementation of the BMP plan and to carry out the data collection effort. A small pilot study is under way with six paired sites to evaluate how the BMP measures would impact wetlands production and impacts to the San Joaquin River. When the plan is completed, Reclamation has funding available to support its implementation.

#### Plan Elements:

- Wetlands Recirculation - This practice involves recycling water used on managed wetlands within the Grassland Ecological Area (GEA).
- Early Drawdown - Use early drawdown in February, where feasible, as a management tool in wetland areas with grazing programs and alkali bush scrub type habitat.
- Staged Drawdown - Use staged drawdown, where feasible, as a management tool to optimize water bird use of wetland habitats.
- Control of Individual Wetland Management Units - Develop independent water control for wetland units to provide for greater management flexibility.
- Participation within the San Joaquin Valley Westside Coalition [to comply with the Irrigated Lands Regulatory Program](#).

#### Mitigation Plan Effectiveness:

Conceptually, a RTMP for the Lower San Joaquin River and the implementation of the Wetlands BMP plan could be very effective tools in removing high saline drainage out of the Basin without causing water quality violations, while minimizing reliance on New Melones to meet water quality standards. These elements are also consistent with the work and goals of CV-SALTS.

### **Cumulative Effectiveness of the Management**

Since 1995, the year the [current](#) water quality objective for salinity was adopted into the Water Quality Control Plan, the water quality objective has not been exceeded at the Vernalis compliance point on the Lower San Joaquin River. Over ten years of monitoring data indicates that all beneficial uses in the river are supported and protected. From 1995 to the present, the San Joaquin River Basin has experienced the full range of water year types, and the water quality objective continues to be met. The work outlined in this plan and the eventual implementation of the wetlands BMP plan and stakeholder-developed RTMP will continue to bring about improvements in water quality for the Basin.

### **Potential Future Actions**

Reclamation is currently involved in several planning studies and long-term projects that will have potential benefits in improving the water quality of the San Joaquin River Basin. Although the studies are

underway, the potential outcome of these studies and projects will not be known for some time. Projects include the following:

- Bay Delta Conservation Plan (Delta conveyance changes)
- New Melones Revised Plan of Operations
- Flow and Water Quality Data Collection
- Franks Tract Study
- Upper San Joaquin River Basin Storage Investigation

Both Reclamation and the Board have agreed to revise the Action Plan as appropriate when any of the above actions are implemented.

## **Monitoring and Reporting**

Reclamation and Board staff will continue to work together to develop a mutually agreeable monitoring and reporting plan to assess compliance with their salt allocation requirements and the progress made toward establishing a comprehensive, viable real-time water quality management program.

Reclamation and the Board have agreed on a phased approach to developing and implementing a Compliance Evaluation and Monitoring Plan. The first phase developed Action Plan quantification methods documented in the Compliance Evaluation and Monitoring Plan, and reporting mechanisms documented through quarterly reports and the Compliance Evaluation and Monitoring Report. Throughout the second phase, these documents will be reviewed and updated as appropriate.

The second phase of the monitoring and reporting plan is prescribed in a revised Management Agency Agreement. Reclamation will continue to prepare and submit annual reports to the Regional Board within 45 days following the end of each calendar year. In addition, Reclamation and the Regional Water Board will mutually re-evaluate and update the Action Plan on an annual basis, on a schedule similar to the Annual Activity and Monitoring Report. Reclamation will also host quarterly coordination meetings to apprise the Regional Water Board of Activity Plan progress, to provide quarterly estimates of salt loading and reduction/offset activities, and to inform the Regional Water Board of any activities that may impair implementation of the Action Plan.

## **Accounting of Actions**

The quantification methodology of Action Plan activities' contributions to reducing or offsetting Delta-Mendota Canal salt loads is described in the Compliance Evaluation and Monitoring Plan (May 2010). When Reclamation and the Regional Board determine additional actions have reached a point of implementation and monitoring so they can be quantified, the quantification methodology will be documented in the Compliance Evaluation and Monitoring Plan. Temporary actions will only be documented in the Compliance Evaluation and Monitoring Annual Report. If actions are determined not to contribute or are stopped, the Action Plan may be updated to reflect that status.

**Schedule of Actions**

|  |  |
|--|--|
| New Melones Operations                     | Ongoing  |
| Water Acquisitions Program                 | Ongoing program under CVPIA  |
| San Joaquin River Restoration              | Full Restoration Flows by 2014, dependent on channel capacity projects               |
| Grassland Drainage Area Salinity Reduction | Elimination of Discharge by 2019; Demonstration Treatment Plant construction in 2014 |
| Water Conservation Field Services Program  | Ongoing program, annual grant cycle  |
| WaterSmart Grant Program                   | Ongoing program, annual grant cycle  |
| CALFED Water Use Efficiency Program        | Authorized through 2014  |
| Real Time Management Program               | Ongoing  |
| Westside Salt Sources Assessment           | Contract end date is 9/30/2012   |
| CV-SALTS                                   | Plan due date in 2015  |
| Wetlands BMP Plan                          | In progress  |