

Quarterly Activity and Monitoring Report

October 1 – December 31, 2008

*In compliance with the “Management Agency Agreement between the
Central Valley Regional Water Quality Control Board and the United States
Bureau of Reclamation” executed on December 22, 2008*

February 15, 2009

Abbreviations and Acronyms

Action Plan	Actions to Address the Salinity and Boron TMDL Issues for the Lower San Joaquin River
AF	acre-foot or acre-feet
Authority	San Luis & Delta-Mendota Water Authority
Basin Plan	Water Quality Control Plan for the Sacramento and San Joaquin River Basins, 4 th Edition
BMP	Best Management Practices
CALFED	CALFED Bay-Delta Program
CDEC	California Data Exchange Center
CDFG	California Department of Fish and Game
cfs	cubic feet per second
Corps	U.S. Army Corps of Engineers
CVO	Central Valley Operations
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CVRWQCB	Central Valley Regional Water Quality Control Board
CV-SALTS	Central Valley Salinity Alternatives for Long Term Sustainability
DCRT	Data Collection and Review Team
DMC	Delta-Mendota Canal
DWR	California Department of Water Resources
EC	electrical conductivity
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
Exchange Contractors	San Joaquin River Exchange Contractors Water Authority
GBP	Grassland Bypass Project
GDA	Grassland Drainage Area
GRCD	Grassland Resource Conservation District
GUI	graphical user interface
ID	irrigation district
Interior	U.S. Department of the Interior
IPO	Interim Plan of Operations
MAA	Management Agency Agreement
μ S/cm	micro Siemens per centimeter
μ g/L	microgram(s) per liter
mg/L	milligram(s) per liter

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NPDES	National Pollutant Discharge Elimination System
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
Reclamation	Bureau of Reclamation
RTMP	Real Time Management Program
Secretary	Secretary of the Interior
Service	U.S. Fish and Wildlife Service
SJR	San Joaquin River
SJRIP	San Joaquin River Improvement Project
SJRWQMG	San Joaquin River Water Quality Management Group
SLDMWA	San Luis and Delta Mendota Water Authority
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAF	thousand acre-feet
TDS	total dissolved solids
TMDL	total maximum daily load
TPRT	Technical Policy and Review Team
VAMP	Vernalis Adaptive Management Plan
WAP	Water Acquisition Program
WCFSP	Water Conservation Field Service Program
WDR	Waste Discharge Requirement
WQO	water quality objective
WRDP	Westside Regional Drainage Plan
YSI	Yellow Spring Instrument

Purpose

The Central Valley Regional Water Quality Control Board's Salt and Boron Total Maximum Daily Load (TMDL) was approved and placed into effect on July 28, 2006. In response to the Salinity and Boron TMDL, the United States Bureau of Reclamation (Reclamation) developed a salinity control plan, *Actions to Address the Salinity and Boron TMDL Issues for the Lower San Joaquin River* (Action Plan) and entered into a Management Agency Agreement (MAA) with the Central Valley Regional Water Quality Control Board on December 22, 2009. The MAA describe the actions Reclamation will take to meet the obligations allocated to it by the Salinity and Boron TMDL for the lower San Joaquin River. The MAA states:

Reclamation will submit quarterly reports to the Regional Water Board by 45 days after the end of the calendar quarter. The quarterly reports will include a summary of activities conducted by Reclamation during the quarter in conjunction with each element included in their Action Plan, including activities related to developing a Real Time Management Program. In addition Reclamation will include data collected relevant to DMC load evaluation.

The "Quarterly Activity and Monitoring Report" summarizes the activities conducted by the Reclamation in conjunction with each element outlined in its salinity control plan for the lower San Joaquin River. The Action Plan describes Reclamation's past, current and planned practices and procedures to mitigate and manage adverse impacts of salt and boron imported into the San Joaquin basin via the Delta Mendota Canal (DMC) in order to help achieve compliance with the objectives contained in the Regional Water Board's *Water Quality Control Plan for the Sacramento River and the San Joaquin River Basins – 4th Edition* (Basin Plan).

Organization of Quarterly Report

The quarterly report will provide a synopsis of the various activities associated with each element identified in the Action Plan. The Action Plan describes all of the actions contemplated by the MAA. Within the Action Plan, actions are divided into three major categories: Flow, Salt Load Reduction, and Mitigation. For each action a brief description and list of activities are identified. The quarterly report will include calculations of salt loads based on DMC deliveries and calculations of assimilative capacity provide through dilution flows. The calculation methods used in this report are provisional and some elements in this report (such as the Westside Regional Drainage Plan) do not include estimations of benefits at this time. Reclamation is in the process of developing the *Compliance Monitoring and Evaluation Plan* which will outline the criteria and methodology for determining DMC loads and credits.

A. Flow Actions

Reclamation has agreed to provide mitigation and dilution flows to meet the Vernalis salinity and boron objectives. Historically, Reclamation has provided dilution flows from the New Melones Project and through purchases for the Vernalis Adaptive Management Plan. Flow actions include: dilution flows from New Melones and water acquisitions.

1. New Melones flows

Brief Description: In the Flood Control Act of October, 1962, the Congress reauthorized and expanded the New Melones project (P.L. 87-874) to a multipurpose unit to be built by the U.S. Army Corps of Engineers (Corps) and operated by the Secretary of Interior as part of the Central

Valley Project (CVP), thus creating the New Melones Unit. The multipurpose objectives of the unit include flood control, irrigation, municipal and industrial water supply, power generation, fishery enhancement, water quality improvement, and recreation. New Melones Reservoir is currently operating under an "Interim Operating Agreement." This agreement was completed in 1996 with significant input from stakeholder interests.

Activity:

- Working to develop a process to efficiently obtain the operations data on a routine basis for future reports.

Month	Volume of Releases (cfs) ¹	Volume of Releases (AF/month)	Volume of Releases (TAF/month)	Monthly Average EC (µS/cm) ²	Assimilative Capacity (thousand tons/month)
Oct-08	12453	24657	25	86	18690
Nov-08	7573	14995	15	91	11304
Dec-08	7454	14759	15	97	11057
Quarterly Total	27480	54410	54		41050

For the quantification of dilution flow allocations, the Basin Plan prescribes the following equation³ to calculate assimilative capacity. The TMDL specifies that entities providing dilution flows obtain an allocation equal to the salt load assimilative capacity provided by this flow, calculated as follows:

$$Adil = Qdil * (Cdil - WQO) * 0.8293$$

Where:

Adil = dilution flow allocation in thousand tons of salt per month

Qdil = dilution flow volume in thousand acre-feet per month

Cdil = dilution flow electrical conductivity in µS/cm

WQO = salinity water quality objective for the LSJR at Airport Way Bridge near Vernalis in µS/cm

2. Water Acquisitions

Brief Description: The Central Valley Project Improvement Act (CVPIA) signed into law on October 30, 1992, modified priorities for managing water resources of the Central Valley Project. CVPIA altered the management of the Central Valley Project to make fish and wildlife protection, restoration, and enhancement as project purposes having equal priority with agriculture, municipal and industrial, and power uses. To meet water acquisition needs under CVPIA, the U.S. Department of the Interior (Interior) has developed a Water Acquisition Program (WAP), a joint effort by the Reclamation and the U.S. Fish and Wildlife Service

¹ Flow data obtained from CVO Office; non-consumptive releases from Goodwin Dam

² Water quality data obtained from California date Exchange Center (CDEC); Ripon (RPN) monitoring station.

³ Water Quality Control Plan for the Sacramento and San Joaquin River Basins, 4th Edition; Page IV-32.07, Table IV-4.4 Summary of Allocations and Credits

(Service). The program's purpose is to acquire water supplies to meet the habitat restoration and enhancement goals of the CVPIA and to improve the Interior's ability to meet regulatory water quality requirements.

Activity:

- *Provided fall pulse flow releases in October 2008.*
- *Working to develop a process to efficiently obtain the water acquisitions information on a routine basis for future reports.*

<i>Month</i>	<i>Volume Acquired⁴</i>	<i>Source</i>	<i>Volume of Releases (TAF/month)</i>	<i>Monthly Average EC (µS/cm)⁵</i>	<i>Assimilative Capacity⁶ (thousand tons/month)</i>
Oct-08	12500	Merced R. ⁷	12.5	87 ⁸	9460
Nov-08	0	-	-	-	-
Dec-08	0	-	-	-	-
Quarterly Total	12500				9460

B. Salt Load Reduction Actions

Reclamation is under a court order to provide drainage to its San Luis Unit, on the Westside of the lower San Joaquin River. As part of its efforts to provide drainage, Reclamation has historically supported the Westside Regional Drainage Plan (WRDP) through monetary grants and in-kind services. Reclamation recognizes there is still much to be done to implement the Westside Regional Drainage Plan. Salt Load Reduction Actions include the Grasslands Bypass Project, the Westside Regional Drainage Plan, and conservation programs (Water Conservation Field Services Program, Water 2025 Grants Program, and the CALFED Water Use Efficiency Program).

1. Grasslands Bypass Project (GBP)

Brief Description: The Grassland Bypass Project is a multi-agency stakeholder project based upon an agreement between the Reclamation and the Authority to use a 28-mile segment of the San Luis Drain. The San Luis Drain is used to convey agricultural subsurface drainage water from the Grassland Discharge Area (GDA) to Mud Slough, a tributary of the San Joaquin River. The purpose of the project is to separate unusable agricultural drainage water discharged from the GDA from wetland water supply conveyance channels, facilitate drainage management that maintains the viability of agriculture in the GDA and promotes continuous improvement in water quality in the San Joaquin River.

⁴ Water acquisition data obtained from MP-400, Water Acquisitions Group

⁵ Average electrical conductivity data obtained from CDEC; monitoring station dependent upon location of acquired water.

⁶ Same formula used as cited on page 2 of this report. Formula taken from *Water Quality Control Plan for the Sacramento and San Joaquin River Basins, 4th Edition*; Page IV-32.07, Table IV-4.4 Summary of Allocations and Credits

⁷ 12500 AF was acquired from the San Joaquin River Group Authority from October 1-24.

⁸ Average electrical conductivity data obtained from CDEC; Merced River at Stevinson (MST) monitoring station.

Activity:

- *Reclamation continues to support portions of sediment and water monitoring effort necessary for the project. These include weekly, quarterly and annual monitoring of locations in the San Luis and Kesterson National Wildlife Refuges, Mud Slough, Salt Slough, DMC, Mendota Pool, and the San Luis Drain. Activities include collection of samples, incorporation of samples into a prescribed QA/QC program, fund analytical analyses, validation of analytical data, periodic update of the Quality Assurance Project Plan, and routine QA audits of all analytical laboratories performing work on the project.*
- *Reclamation is actively involved with project partners to pursue a third use agreement to fully develop the project. The administrative draft EIS/EIR for the continuation of the Grassland Bypass Project went out for public review in December 2008. This document will be used to support an amendment to the Basin Plan*
- *Reclamation continues to be a member of the Technical Policy Review Team (TPRT) and the Data Collection and Reporting Team (DCRT). The DCRT produces the Annual Report and help revise the Quality Assurance Project Plan. The TPRT is responsible for tracking the monitoring program carried out by the various agencies.*

2. Westside Regional Drainage Plan (WRDP)

Brief Description: The Westside Regional Drainage Plan is a local stakeholder program developed by integrating all consistent elements of drainage management developed by government and local agencies and private partnerships. The original efforts of the WRDP focused on reducing selenium discharges to the San Joaquin River. Success of the original effort prompted a proposal to expand the WRDP to go beyond regulatory requirements and eliminate selenium, boron, and salt discharges to the San Joaquin River, while maintaining productivity of agriculture lands in the solution area and enhancing water supplies for the region.

While Reclamation lacks control of many of the resources needed to be an active participant in the WRDP, Reclamation provides annual funding to support and sustain the WRDP.

Activity:

- *In 2008, Reclamation provided \$4 million in funding to the WRDP. Combined with state Proposition 50 funding and local cost sharing, the funds have been used to develop more than 6,000 acres of reuse lands. Funds were used to install facilities to collect and distribute drain water across the reuse area, remove and replace open drain ditches that were hazardous to waterfowl, and line earth canals with concrete to reduce seepage losses. Funds were also used for the EIS/EIR required for the continuation of the Grassland Bypass Project, a critical part of the WRDP, after 2010.*

3. Conservation Efforts

Brief Description: The water use efficiency program element includes several grant programs which fund actions to assure efficient use of existing and any new water supplies. Efficiency

actions can alter the pattern of water diversions and reduce the magnitude of diversions, providing additional benefits. Efficiency actions can also result in reduced discharge of effluent or drainage and improved water quality. Although Reclamation is unable to quantify the benefits of the various funded projects as related to salinity reduction, the following information is provided to depict the agency's water conservation efforts in the basin. Through Water 2025, CALFED, and the WCFSP, Reclamation has awarded 36 projects in the San Joaquin Valley that require performance measures since 2006. As information is collected from these projects quantifiable benefits may be determined in the future.

Activity:

- *In 2008, the Water Conservation Field Service Program and the CALFED Water Use Efficiency Program received 44 proposals and funded 21 proposals. Of the 21 proposals granted funding, 7 were in the San Joaquin Basin totaling approximately \$275,000.*
- *In 2008, the Water 2025 Grant Program received 68 proposals and provided Federal cost share funding to 3 proposals. Of the 3 proposals that received funding, 2 were in the San Joaquin Basin totaling \$600,000.*
- *Reclamation extended a \$433,000 contract to 2011 with the Agricultural Water Management Council to promote and advance effective water management practices to meet the water conservation goals and best management practices.*

C. Mitigation Actions

Reclamation's Action Plan identifies two mitigation actions to reduce salinity loads: a real time management program to maximize the removal of salt using assimilative capacity in the San Joaquin River, and a wetlands BMP plan to research and potentially develop practices to reduce salinity loading from managed wetlands. Reclamation has actively supported the development of a real time monitoring and forecasting program in the River and in managed wetlands.

1. Real Time Management Program – Development of Stakeholder-Driven Program

Brief Description: The Real Time Management Program is described in the TMDL as a stakeholder driven effort to use "real-time" water quality and flow monitoring data to support water management operations in order to maximize the use of assimilative capacity in the San Joaquin River. The Regional Board describes this assimilative capacity as up to 80% of the load determined by Vernalis salinity objective. Reclamation has contracted with a facilitation firm to support the development of a stakeholder-driven program.

Activity:

- *Executed a contract to procure the service of a consultant to facilitate stakeholder involvement in developing a Real Time Management Program (RTMP)*
- *Directed a consultant to develop and conduct a stakeholder survey to solicit feedback on the RTMP process and garner suggestions on salinity management in the basin.*
- *Conducted several coordinating and planning meetings to develop and prepare for the first stakeholder workshop held on January 8, 2009.*

2. Real Time Management Program – Technical Support

Brief Description: A successful RTMP will require a real time monitoring network and a model capable of reasonably accurate forecasting of assimilative capacity. Reclamation is committed to participation in and support of the development of these tools. Reclamation staff has valuable experience in both of these areas. The technical support of this program will follow the stakeholder process.

Activity:

- *Executed a contract to procure the service of a consultant to develop a graphical user interface (GUI) and water quality data management tool.*
- *Executed a contract to purchase three YSI multi-parameter environmental monitoring probes to be used with the existing monitoring network on the lower San Joaquin River.*
- *Executed a contract to purchase a software package that will be used to evaluate and perform quality control and quality assurance validation on time series data collected on the San Joaquin River.*

3. Wetlands BMP Plan

Brief Description: The Service, CDFG, 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, the developed draft BMP plan is awaiting the Service's approval.

Activity:

- *Reclamation is sponsoring a project entitled "Water Quality Monitoring in the Grassland Resource Conservation District". Through this project a contract was executed to retrofit six monitoring stations located in the Grassland Water District and California State Fish and Game wetlands and an agreement is in place to maintain 28 real time monitoring sites associated with a pilot study in the Grassland Resource Conservation District.*
- *Reclamation is working with the Service, CDFG, and local wetlands managers to finalizing the BMP Plan.*
- *Reclamation is working on a contract to purchase additional monitoring equipment to develop a real time monitoring network on managed wetlands.*

4. Involvement in CV-SALTS program

Brief Description: The Central Valley Water Board and State Water Board have initiated a comprehensive effort to address salinity problems in California's Central Valley and adopt long-term solutions that will lead to enhanced water quality and economic sustainability. The Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) is a collaborative basin planning effort aimed at developing and implementing a comprehensive salinity management

program. The goal of CV-SALTS is to maintain a healthy environment and a good quality of life for all Californians by protecting the state’s most essential and vulnerable resource: water.

Activity:

- *Reclamation is involved in the various sub-committees in the program – Leader Group, Technical Advisory Committee, Economics, Education and Outreach.*

D. DMC Load Evaluation

The calculated DMC load is determining by the volume of deliveries made to the Northwest and Grassland subareas and the corresponding TDS. The summary data tables below are taken from the monthly report titled *Delta-Mendota Canal Water Quality Monitoring Program*.

Loads of salt delivered to the Grasslands Subareas through CVP water ⁹

	October	November	December	Quarterly Total
EC ¹⁰ (µS/cm)	502	460	745	
TDS ¹¹ (mg/L)	326	299	484	
Cal. Salt Load ¹² (tons)	40810	16250	5070	62130
Supply Allocation ¹³ (tons)	6487	2818	542	9847
Excess Load (tons)	34323	13432	4528	52283

Loads of salt delivered to the Northwest Subareas through CVP water ¹⁴

	October	November	December	Quarterly Total
EC ¹⁰ (µS/cm)	509	525	743	
TDS ¹¹ (mg/L)	331	341	483	
Cal. Salt Load ¹² (tons)	3130	580	320	4030
Supply Allocation ¹³ (tons)	490	89	35	614
Excess Load (tons)	2640	491	285	3416

E. Reporting Requirements

In the MAA, Reclamation agreed to provide quarterly reports to the Regional Board. Reclamation will consult with the Regional Board before proposing any changes to the sample report format. Quarterly reports are due 45 days after the end of the calendar quarter:

⁹ Table 9b, *Delta Mendota Canal Water Quality Monitoring Program for Selenium, Salinity and Boron*, Reclamation

¹⁰ Flow weighed EC calculated as follows: (Sum of (daily flow * specific conductance of daily sample))/(Sum of daily flows when samples collected)

¹¹ The TDS value is flow weighed and calculated as follows: (Sum of (daily flow * TDS of daily sample))/(Sum of daily flows when samples collected)

¹² Salt load (tons) = Total Flow (acre-feet) * total dissolved solids (mg/L) * 0.00136

¹³ Supply Water Allocation Salt Load (tons) = LADMC = QDMC * 85 µS/cm * 0.8293

LADMC = DMC load allocation (1000 tons/month)

QDMC = Volume of water delivered from the DMC to the subarea (1000 acre-feet/month)

85 µS/cm = Background specific conductance of water from the Sierra Nevada from Page IV-32.07 of the Basin Plan

¹⁴ Table 10b, *Delta Mendota Canal Water Quality Monitoring Program for Selenium, Salinity and Boron*, Reclamation

End of calendar quarter	Due date of Quarterly report
Dec 31, 2008	Feb 15, 2009
March 31, 2009	May 15, 2009
June 30, 2009	August 15, 2009
September 30, 2009	November 15, 2010
December 31, 2009	February 15, 2010
March 31, 2010	May 15, 2010
June 30, 2010	August 15, 2010
September 30, 2010	November 15, 2010
December 31, 2010	February 15, 2011

F. Funding Reporting

Reclamation agreed in the MAA to seek additional funding, including grant funding, to support salinity control efforts. In its quarterly reports, Reclamation will report on its efforts to support the securing of additional funding.

Activity:

- *A funding request was submitted for the 2011 budget for administrative coordination and activities related to the RTMP.*