

Summary of Vernalis Salinity/Boron TMDL LSJR Committee Meeting--24 March 2011

The goal of the Central Valley Water Board salt and boron control program is to achieve compliance with water quality objectives without restricting the ability of dischargers to export salt out of the San Joaquin River Basin. The program assumes that control actions that result in salt load reductions will also be effective in the control of boron. Current implementation focuses on meeting objectives at Vernalis, however, a framework and timeline for implementing upstream objectives is also included.

The program addresses discharges from irrigated lands, the U.S. Bureau of Reclamation (Bureau) Delta Mendota Canal (DMC), and municipal and industrial point source discharges such as municipal waste water treatment plants and industrial discharges. Irrigated lands are defined to include irrigated row, field and crop lands, as well as commercial nurseries, land used for nursery stock production, managed wetlands, and rice production land. Given loads from background sources including ground water accretion and a 15% margin of safety, allowable monthly salt load allocations are established for discharges from irrigated lands and from the DMC. Because only a very small percentage of the salt load in the river at Vernalis comes from point sources, those discharges are addressed by requiring effluent limits in NPDES permits to be set equal to the Vernalis objectives (Table 1).

The program divides the river basin into seven subareas and prioritizes them based on the average per acre salt load discharged to the river from each subarea. Based on that prioritization, a schedule for compliance with load allocations was established (Figure 1, Table 2). The two subareas on the west side of the river, Grassland and Northwest Side subareas, were considered the highest priority and were given a compliance date of July 2014 for all water-year types except critical years. Because the salt load imported via the DMC is equivalent to approximately 50% of the load in the river at Vernalis, the DMC was also determined to be a high priority and the Bureau was given the same compliance date of July 2014.

In order “. . . to achieve compliance with salt and boron water quality objectives without restricting the ability of dischargers to export salt out of the San Joaquin River Basin . . .”, a framework was adopted that encourages real time management of the system.

Dischargers are not required to participate in a real-time program, but are offered alternatives for compliance. Dischargers of irrigation return flows from irrigated lands are in compliance with this control program if they meet any of the following conditions:

- ✓ Cease discharge to surface water
- ✓ Discharge does not exceed 315uS/cm (based on 30-day running average)
- ✓ Operate under waste discharge requirements (WDRs) that include effluent limits for salt
- ✓ Operate under a waiver of WDRs for salt and boron discharges to the LSJR (if participate in a Board approved real-time management program)

For irrigated agricultural dischargers, the load allocations to be met in WDRs are fixed loads, based on modeling flows over a 73-year historical record and utilizing the lowest flow conditions anticipated in the LSJR for each month and water year type. Under this conservative framework, even with credits for salt imported in DMC and diverted from

the LSJR, it will often be difficult, and may at times be impossible, for dischargers to meet their load allocations.

If participating in a Board-approved real-time management program that meets the Vernalis objectives, dischargers would be assigned real-time load allocations instead of fixed base flow allocations. Real-time allocations provide greater allocation whenever actual flow exceeds the pre-determined design flow. The use of real-time management would therefore provide dischargers with increased opportunity to discharge, help achieve salt balance in the watershed by maximizing salt exports, and allow a waiver of WDRs. As long as the Vernalis objectives are met, real-time allocations are not an issue, since the amendment contains the following provision:

“Participation in a Regional Board-approved real-time management program and attainment of salinity and boron water quality objectives will constitute compliance with this control program.”

Real-time management is also appealing to the Bureau, since they are required to offset the imported DMC load that exceeds their load allocation. Currently their excess load averages approximately 400,000 tons annually and their offset options include providing dilution flow and supporting mitigation activities. The Bureau has been tracking how much offset they have been getting from current activities, including dilution flow they are providing to the river through VAMP and other non-consumptive use releases of high quality Sierra water. In an analysis of potential offsets under current salt control programs, the Bureau concluded that between 2000 and 2009, they would have failed to offset their excess loads. So, under a Management Agency Agreement with the Central Valley Water Board, the Bureau continues to move forward with dilution flows and mitigation activities and has been focusing on evaluating a real-time option and trying to engage stakeholders in such a program.

Upstream Water Quality Objectives

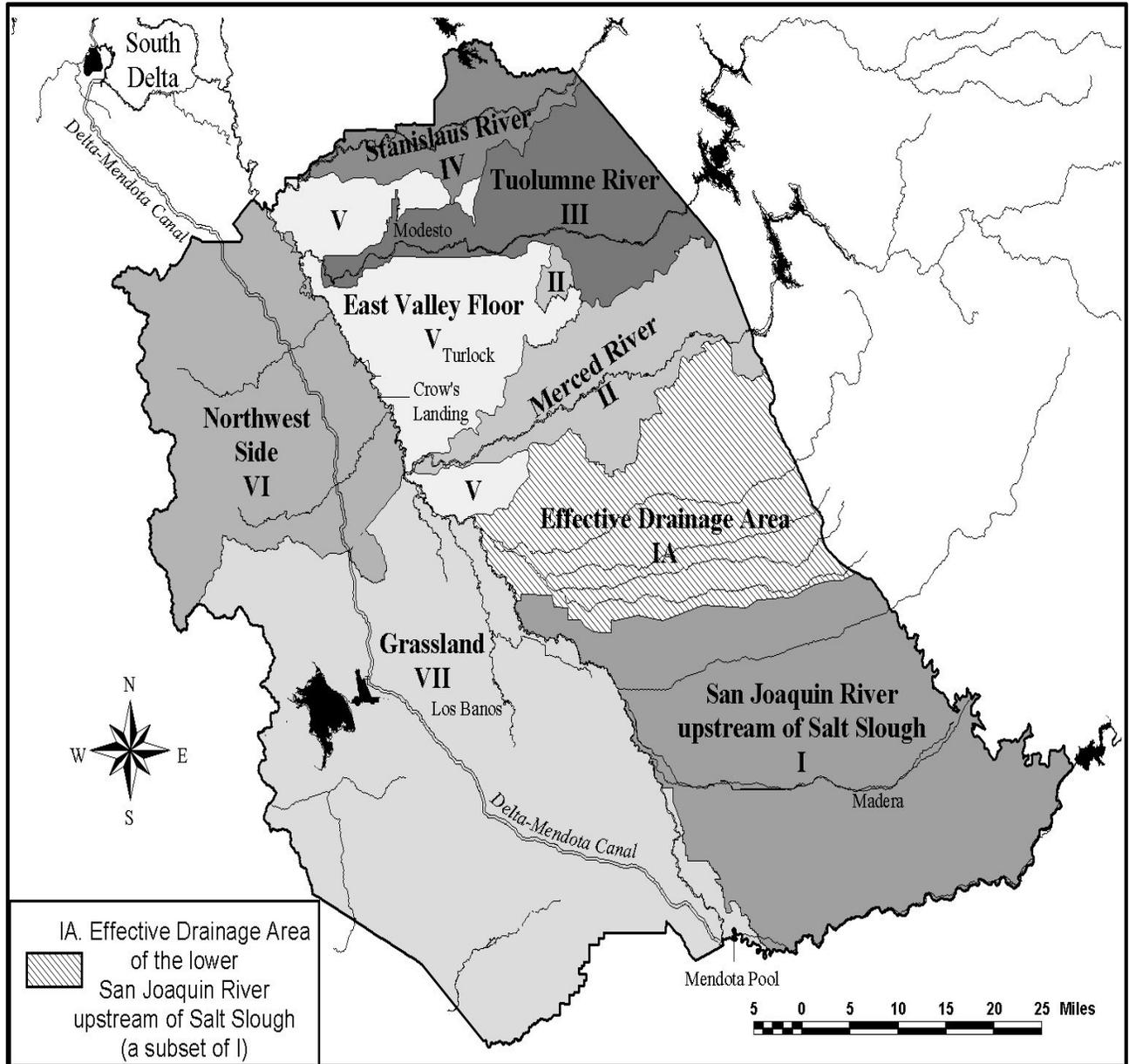
The focus of the current program is on meeting salt and boron water quality objectives at Vernalis. However, an anticipated time schedule for the adoption of upstream objectives to protect beneficial uses was also identified¹. As part of evaluating the protection of beneficial uses, the salt/boron control program includes language as follows:

“The established waste load allocations, load allocations, and supply water allocations represent a maximum allowable level. The Regional Water Board may take other actions or require additional reductions in salt and boron loading to protect beneficial uses.”

Without refined objectives, the Water Board will continue to regulate based on narrative objectives to protect the most sensitive beneficial use in all reaches upstream of Vernalis. The protection of those uses will need to be considered during any CEQA evaluations during the development of WDRs and/or waivers of WDRs for discharges from the identified sub-basins into the San Joaquin River.

¹ That timeline has already been exceeded--anticipated Board adoption was June 2006.

Figure 1. Project Area and Subareas



Tables

Table 1. Source Category Data

| Source Category | Discharge | | Salt Load | |
|--|--------------------|-----------------|---------------|-----------------|
| | thousand acre/feet | % Vernalis Flow | thousand tons | % Vernalis Load |
| Background | 3,100 | 84% | 222 | 20% |
| Groundwater Accretions | 145 | 4% | 320 | 30% |
| Agricultural Surface and Subsurface Return Flows | 358 | 9% | 465 | 43% |
| Wetlands | 193 | 5% | 101 | 9% |
| Municipal and Industrial | 26 | 1% | 23 | 1% |
| Totals | 3,670 | 100% | 1,100 | 100% |
| Footnote: DMC imports determined to contribute 50% salt load at Vernalis. Load captured within above categories | | | | |

Table 2 . Subarea Data

| Subarea | % Salt Load | Load / Acre | Priority | Compliance Date | |
|------------------------------|-------------|----------------|----------|-----------------|----------------|
| | | | | Wet – Dry Years | Critical Years |
| | | tons/acre/year | | | |
| Northwest Side | 30% | 2.61 | High | 2014 | 2018 |
| Grassland | 38% | 0.90 | High | 2014 | 2018 |
| Tuolumne River | 8% | 0.51 | Medium | 2018 | 2022 |
| Stanislaus River | 5% | 0.27 | Low | 2022 | 2026 |
| East Valley Floor | 4% | 0.24 | Low | 2022 | 2026 |
| Merced River | 4% | 0.14 | Low | 2022 | 2026 |
| LSJR Upstream of Salt Slough | 9% | 0.12 | Low | 2022 | 2026 |
| Total | 100% | | | | |
| Delta-Mendota Canal | 47% | | High | 2014 | 2014 |