

Summary of Vernalis Salinity/Boron TMDL Adopted – 10 September 2004

**LSJR Committee Presentation
24 March 2011**

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Goal of the Program

“The goal of the salt and boron control program is to achieve compliance with salt and boron water quality objectives without restricting the ability of dischargers to export salt out of the San Joaquin River basin.”

Assumption:

Control of salt will also control boron

Approximate Salt Contributions

Source Category	Discharge		Salt Load	
	thousand acre-feet	Percent Vernalis Flow	thousand tons	Percent of 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

Addresses Salinity Discharges

M & I Dischargers

- Set effluent limits equal to Vernalis objectives

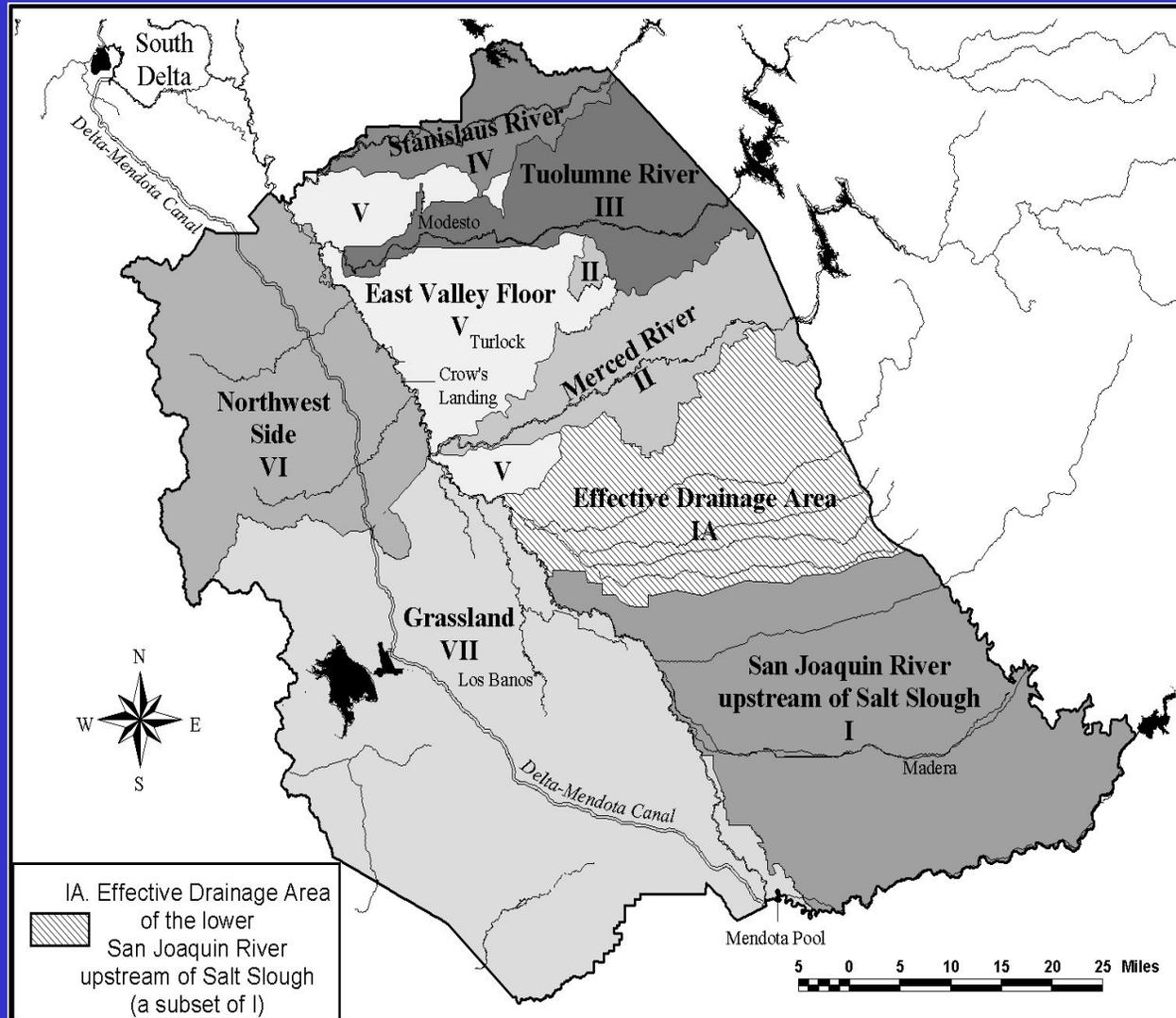
Remainder – load allocations

- Irrigated Lands
- Delta-Mendota Canal

Irrigated Lands Include

- Irrigated row, crop, field lands
- Commercial nurseries
- Nurseries
- Managed wetlands
- Rice production lands

Subarea Map



Subarea Information					
Subarea	Percent Salt Load	Load Per Acre	Priority	Compliance Date	
				Wet – Dry Years	Critical Years
		tons/acre/year			
Northwest Side	30%	2.61	High	2014	2018
Grassland	38%	0.9	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	2018

Compliance Alternatives

- Cease Discharge to Surface Waters
- Discharge does not exceed 315uS/cm
- Operate under WDRs that include effluent limits for salt
- Operate under a waiver if participating in a Board approved real-time management program

Under WDRs

- **Load allocations are fixed**
 - **Establishes fixed allocations for each month and water-year type**
 - **Based on design flows modeled from 73-year flow record**
 - **Based on lowest flow conditions**
 - **Zero base load allocations for all subareas during certain months and water-year types**
- **Grassland & NW Side Subareas also allowed fixed supply water credits**
- **Difficult/impossible for some dischargers to meet load allocations**

Under Waiver (Real-Time)

- Real-time load allocations are greater
- Provides increased opportunity for discharge
- Helps achieve salt balance

Under Waiver (Real-Time)

Real-time allocations are not an issue if Vernalis objectives are met.

“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 Benefits to USBR

Without Real-time program

- **Must offset excess load**
- **Offset options include:**
 - providing dilution
 - mitigation activities (e.g. GBP support)
- **Problem offsetting 100% of excess load without significant changes and additional projects**

Upstream Objectives

- TMDL program identifies time schedule for adopting upstream objectives
- Without upstream objectives, Board regulates based on narrative objectives to protect most sensitive beneficial use.

“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.”

Thank You

Appendix 1: Technical TMDL Report for Salt and Boron in the Lower San Joaquin River
July 2004 Draft Final Staff Report

Table 4-15: Subarea Base LAs (tons)

Year-type	Month / Period												
	Jan	Feb	Mar	Beg. Apr*	VAMP Pulse Period **	End. May***	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SJR upstream of Salt Slough Subarea Base LAs in Tons													
Wet	7,514	15,470	21,106	4,089	13,260	5,746	0	0	884	8,177	17,791	7,956	6,520
Abv. Norm	8,067	15,470	11,713	4,752	12,929	2,542	0	0	0	8,177	10,387	6,409	5,967
Blw. Norm	4,089	4,310	5,746	2,100	8,288	1,437	0	0	0	6,962	7,404	6,188	5,525
Dry	5,194	7,293	4,531	884	4,531	111	0	0	0	4,641	5,636	4,973	5,083
Critical	3,426	2,763	2,100	0	0	0	0	0	0	3,426	5,415	4,641	4,310
Grasslands Subarea Base LAs in Tons													
Wet	15,402	31,710	43,262	8,381	27,180	11,778	0	0	1,812	16,761	36,467	16,308	13,364
Abv. Norm	16,535	31,710	24,009	9,740	26,501	5,210	0	0	0	16,761	21,291	13,137	12,231
Blw. Norm	8,381	8,834	11,778	4,304	16,988	2,945	0	0	0	14,270	15,176	12,684	11,325
Dry	10,646	14,949	9,287	1,812	9,287	227	0	0	0	9,513	11,552	10,193	10,419
Critical	7,022	5,663	4,304	0	0	0	0	0	0	7,022	11,099	9,513	8,834
Northwest Side Subarea Base LAs in Tons													
Wet	4,012	8,260	11,269	2,183	7,080	3,068	0	0	472	4,366	9,499	4,248	3,481
Abv. Norm	4,307	8,260	6,254	2,537	6,903	1,357	0	0	0	4,366	5,546	3,422	3,186
Blw. Norm	2,183	2,301	3,068	1,121	4,425	767	0	0	0	3,717	3,953	3,304	2,950
Dry	2,773	3,894	2,419	472	2,419	59	0	0	0	2,478	3,009	2,655	2,714
Critical	1,829	1,475	1,121	0	0	0	0	0	0	1,829	2,891	2,478	2,301
East Valley Floor Subarea Base LAs in Tons													
Wet	6,834	14,070	19,196	3,719	12,060	5,226	0	0	804	7,437	16,181	7,236	5,930
Abv. Norm	7,337	14,070	10,653	4,322	11,759	2,312	0	0	0	7,437	9,447	5,829	5,427
Blw. Norm	3,719	3,920	5,226	1,910	7,538	1,307	0	0	0	6,332	6,734	5,628	5,025
Dry	4,724	6,633	4,121	804	4,121	101	0	0	0	4,221	5,126	4,523	4,623
Critical	3,116	2,513	1,910	0	0	0	0	0	0	3,116	4,925	4,221	3,920
Stanislaus River Subarea Base LAs in Tons													
Wet	1,938	3,990	5,444	1,055	3,420	1,482	0	0	228	2,109	4,589	2,052	1,682
Abv. Norm	2,081	3,990	3,021	1,226	3,335	656	0	0	0	2,109	2,679	1,653	1,539
Blw. Norm	1,055	1,112	1,482	542	2,138	371	0	0	0	1,796	1,910	1,596	1,425
Dry	1,340	1,881	1,169	228	1,169	29	0	0	0	1,197	1,454	1,283	1,311
Critical	884	713	542	0	0	0	0	0	0	884	1,397	1,197	1,112
Merced River Subarea Base LAs in Tons													
Wet	3,502	7,210	9,837	1,906	6,180	2,678	0	0	412	3,811	8,292	3,708	3,039
Abv. Norm	3,760	7,210	5,459	2,215	6,026	1,165	0	0	0	3,811	4,841	2,987	2,781
Blw. Norm	1,906	2,009	2,678	979	3,863	670	0	0	0	3,245	3,451	2,884	2,575
Dry	2,421	3,399	2,112	412	2,112	52	0	0	0	2,163	2,627	2,318	2,369
Critical	1,597	1,288	979	0	0	0	0	0	0	1,597	2,524	2,163	2,009
Tuolumne River Subarea Base LAs in Tons													
Wet	2,006	4,130	5,635	1,092	3,540	1,534	0	0	236	2,183	4,750	2,124	1,741
Abv. Norm	2,154	4,130	3,127	1,269	3,452	679	0	0	0	2,183	2,773	1,711	1,593
Blw. Norm	1,092	1,151	1,534	561	2,213	384	0	0	0	1,859	1,977	1,652	1,475
Dry	1,387	1,947	1,210	236	1,210	30	0	0	0	1,239	1,505	1,328	1,357
Critical	915	738	561	0	0	0	0	0	0	915	1,446	1,239	1,151

* Beginning of April runs 4/1-4/14 ** VAMP runs from 4/15-5/15 *** End of May runs from 5/16-5/31