Secondary MCLs:

Summary of the WDR Permitting and Implementation Issues

1) The State Water Resources Control Board has established a policy that all surface and ground waters of the state should be presumed to support a drinking water use (MUN) unless the water body meets one of the exception criteria established in the Sources of Drinking Water Policy (Res. No. 88-63).

2) In the mid-1990's, the Central Valley Regional Water Quality Control Board adopted water quality objectives for salinity (TDS) and conductivity (EC) to protect the MUN beneficial use. These new objectives were established by reference to state drinking water standards identified in Table B of 22 CCR §64449. Only the tables themselves were included by reference. None of the other surrounding text from §64449, explaining how the Secondary MCLs were supposed to be implemented, was adopted with the table values. The Regional Board's Executive Officer later testified that this omission was an unintentional oversight.

3) Table 64449-B suggests a range of acceptable TDS and EC values. For TDS, the recommended value is 500 mg/L but concentrations ranging up to 1,000 mg/L are also "acceptable" if it is neither reasonable or feasible to provide more suitable waters. Traditionally, water quality objectives are not expressed as single value thresholds and the system is not set up to implement standards as a range.[1] Consequently, in the recent Lodi permit appeal, the State Board determined that the "recommended" value of 500 mg/L should be considered water quality objective when developing appropriate waste discharge requirements. Although the Regional Board testified that the objective was intended to be implemented as a "range" (as described in Table B), the SWRCB determined that this intent was not clearly expressed in the Basin Plan.

4) In the Rancho Caballero case (WQO 73-4) the State Board declared that when receiving water quality already exceeds a particular water quality objective, discharge limits must be set to a concentration at or below this objective. Therefore, where TDS in the receiving water exceeds 500 mg/L, the Regional Board may not allow discharges to those receiving waters to exceed 500 mg/L even if the TDS concentration in the discharge is actually less than the TDS concentration in the receiving water and would improve receiving water quality.

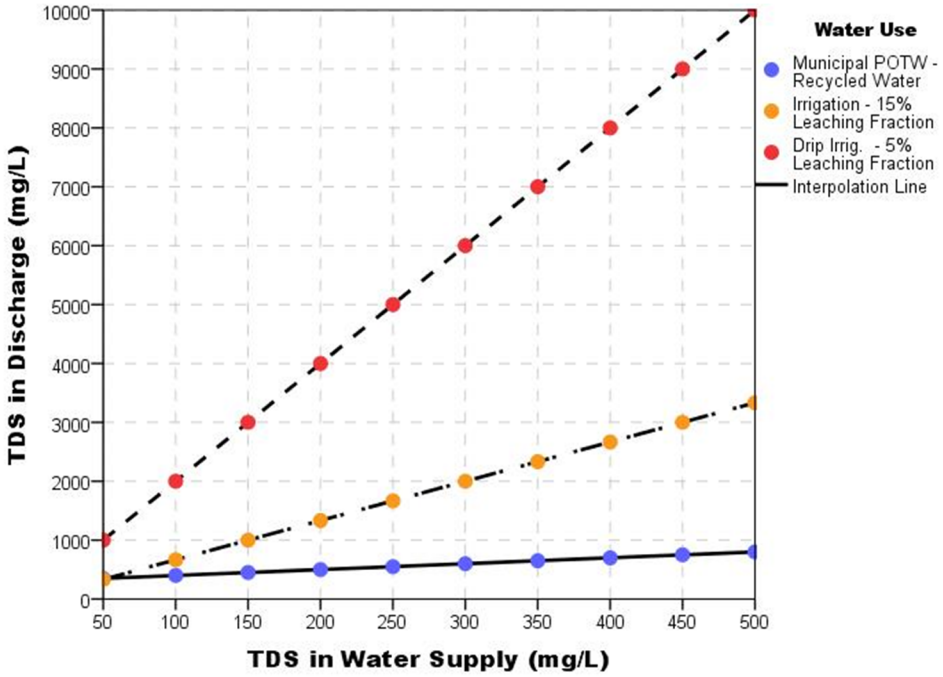
[1] An exception exists where water quality may be impaired by both excessively low or excessively high values; temperature and pH are among the few examples of water quality objectives expressed as a range

5) Table 7-7 (attached) from the CV-SALTS Initial Conceptual Model shows that the median TDS concentration in the upper (shallower) portion of 17 of the 22 Initial Analysis Zones (IAZ) already exceeds 500 mg/L. Therefore, only 5 of the IAZs may have assimilative capacity for TDS. Discharges to the other 17 IAZs will likely have to comply with Waste Discharge Requirements prohibiting TDS discharges in excess of 500 mg/L.

6) Since the Increment-of-Use adds approximately 300 mg/L of salinity to the initial TDS concentration, raw water supplies that meets the recommended TDS standard for drinking water (500 mg/L) will inevitably produce wastewater discharges near 800 mg/L. In order to ensure that their wastewater discharges do not exceed 500 mg/L municipalities will need a raw water supply with a TDS concentration less than 200 mg/L. Few cities start with such high quality supplies and most recycled water is discharged with a TDS concentration ranging between 600-900 mg/L.

7) The situation is even more difficult for agricultural discharges. Assuming a relatively standard 15% leaching fraction, agricultural operators must start with a TDS concentration no greater than 75 mg/L in the irrigation supply water in order to ensure percolation below the root zone does not exceed 500 mg/L. And, to avoid discharge TDS concentrations greater than 1000 mg/L, TDS in the irrigation supply water must be less than 150 mg/L. Drip irrigation systems, with much lower leaching fractions (<5%), concentrate TDS in the discharge to even higher levels (see Fig. 1 below)

Fig. 1: Increment-of-Use for TDS



8) The current regulatory approach makes it nearly impossible to recharge ground water basins with recycled water unless there is significant assimilative capacity (<500 mg/l0 available in the aquifer. This is contrary to statewide efforts to promote the use of recycled water for landscape irrigation and to recharge groundwater storage.

9) Similarly, applying the recommended TDS value in Table 64449-B (500 mg/L) as a maximum not-to-exceed value immediately below the root zone discourages the use of high efficiency drip irrigation systems with very low leaching fractions. This is contrary to state wide efforts to promote greater water conservation.

10) Table 7-7 also shows how the estimate of available assimilative capacity would likely change depending on whether the water quality objective is set to 500 mg/L or 700 mg/L or 1,000 mg/L.

11) The text of Title-22 recognizes that TDS concentrations up to 1,000 mg/L are "acceptable" if it is not reasonable or feasible to provide more suitable waters. CV-SALTS is recommending that the range of TDS values suggested in Table 64449-B be implemented for dischargers in the same manner that it is implemented for water supply agencies by referencing the full text and tables of 22 CCR §64449.

12) All of the normal Antidegradation requirements (Res. No. 68-16) would continue to apply when developing WDRs and effluent limitations for TDS. If a discharge is likely to lower downstream water quality, it will still be necessary to demonstrate that the discharge will not: 1) violate the downstream standards, 2) unreasonably affect beneficial use, or 3) cause pollution or nuisance. Dischargers will still be required to implement Best Practicable Treatment or Control consistent with Maximum Benefit to the people of the state. And, finally, the Regional Board must consider the long-term cumulative impact of all discharges to the same receiving water before authorizing any discharge that may further lower water quality.

13) Since the TDS and EC values shown in Table 64449-B are drinking water standards, and the state has not yet authorized direct potable reuse, it is more appropriate to judge the net effect of permitted discharges at downgradient well locations where ground water is extracted for community water systems. At such locations, the recommended TDS value (500 mg/L) would continue to apply subject to the same consideration for reasonability and feasibility already encouraged by the existing language of Title 22.

Table 7-7. Median TDS Concentrations Through Time and Assimilative Capacity (Based on the 2003-2012 Time Period)

Shallow TDS Median Concentration Through Time										
	IAZ	1910-1964	1965-1970	1971-1979	1980-1989	1990-2002	2003-2012	Assimilative capacity 500 mg/L TDS Threshold	Assimilative capacity 700 mg/L TDS Threshold	Assimilative capacity 1000 mg/L TDS Threshold
Nothern Central Valley	1			158	150		370	130	330	630
	2	179	145	270	230	195	201	300	500	800
	3	1023	572	347	398	588	583	0	117	417
	4		853	487	806	625	761	0	0	240
	5	164	183	216	219	435	329	0	371	671
	6		381	408	423	528	1060	0	0	0
	7	168	177	186	221	506	398	103	303	603
Middle Central Valley	8	163	164	187	166	336	438	62	262	562
	9	954	995	736	703	714	961	0	0	40
	10	473	870	870	1960	838	842	0	0	159
	11	315	173	257	227	640	565	0	135	435
	12	80	895		83	201	825	0	0	175
	13	235	423	180	204	258	648	0	53	353
	22	962	5630		2575	2410	1160	0	0	0
Southern Central Valley	14	942	836		4310		3375	0	0	0
	15	336	475	315	6490	783	1000	0	0	0
	16	419	124	303	378	497	575	0	125	425
	17	383		352	413	394	520	0	180	480
	18	160		356	1555	648	598	0	102	402
	19	1270			3370		11300	0	0	0
	20	518			290		870	0	0	130
	21	359		353	3420	420	335	165	365	665

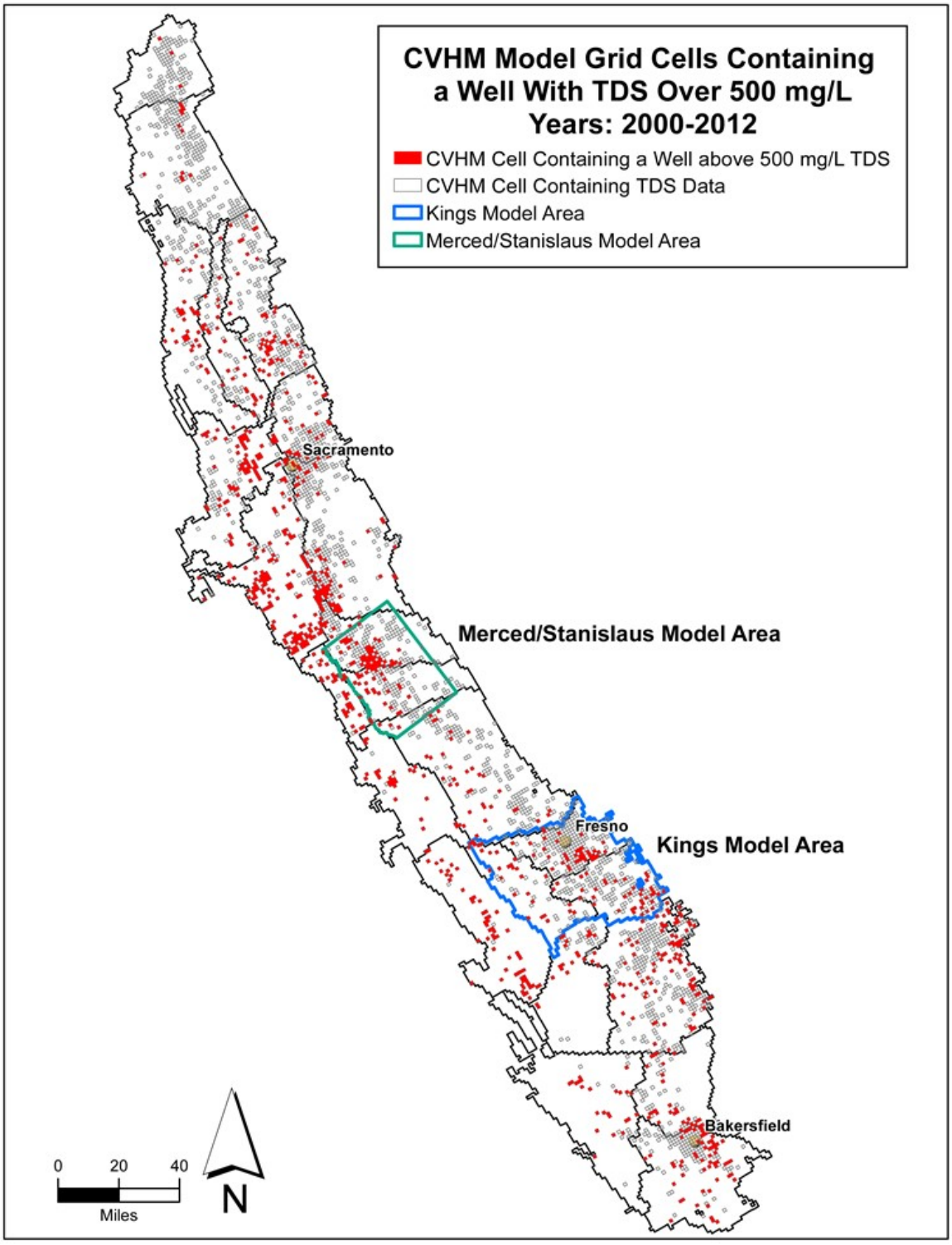


Figure 7-16. Identifying CVHM Model Grid Cells Containing a Well Test Over 500 mg/L TDS

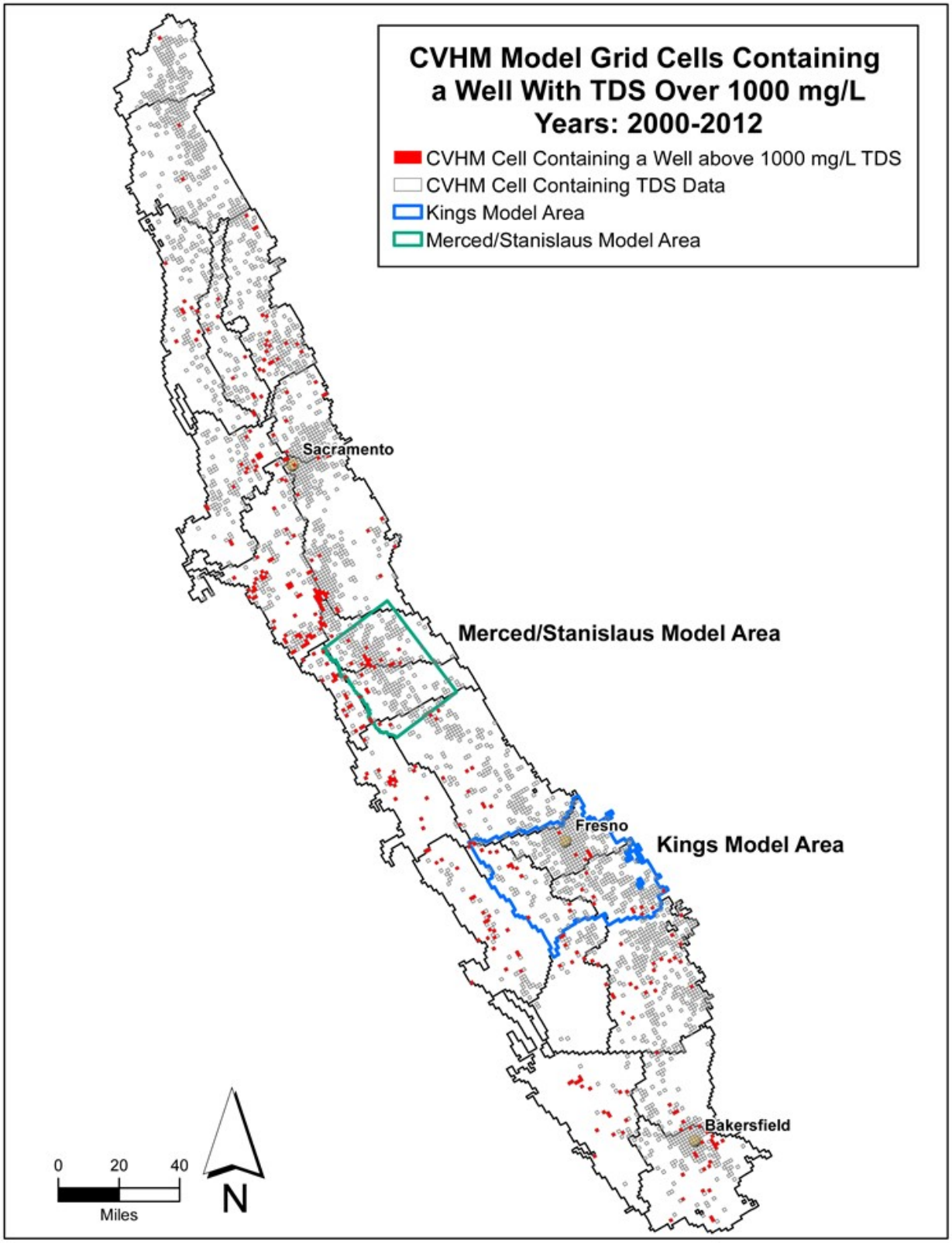


Figure 7-17. Identifying CVHM Model Grid Cells Containing a Well Test Over 1000 mg/L TDS