



Santa Ana Watershed Project Authority

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One Water One Watershed

AWRA INTEGRATED WATER RESOURCES MANAGEMENT AWARD
HARVARD KENNEDY SCHOOL'S TOP 25 INNOVATIONS IN AMERICAN GOVERNMENT

March 6, 2017

SUBMITTED VIA EMAIL

Susan Lien Longville
Commission
Chair

Heather Boyd
Santa Ana Regional Water Quality Control Board
3737 Main St., Suite 500
Riverside, CA 92501

Celeste Cantú
General
Manager

RE: Comments on 303(d) Listing Decisions Related to Salinity

Dear Ms. Boyd:

Orange
County
Water
District

The following comments are submitted on behalf of the Basin Monitoring Program Task Force (BMPTF). The Santa Ana Watershed Project Authority (SAWPA) formed the BMPTF in 2005 composed of over 20 water, wastewater and groundwater management agencies to implement the regional water quality monitoring program required¹ and approved² by the Regional Board. The BMPTF is responsible for preparing and submitting the Annual Report of Santa Ana River Water Quality and the Triennial Ambient Water Quality Update (for groundwater) to the Regional Board. As such, we have a deep understanding of the regional water quality monitoring data related to salinity. And, our comments will focus on the listing decisions associated with these constituents.

Western
Municipal
Water District

We note, for the record, that the draft Integrated Report recently posted for review and comment does not propose any new 303(d) listing for TDS, chloride, sodium or sulfate. However, alleged exceedances of water quality objectives for salinity were used as Lines of Evidence (LOE) to partially justify a new listing for Benthic Community Effects (BCE) in Reach 3 of the Santa Ana River.³ A more detailed review of this LOE reveals significant errors in the underlying data analysis and are described later in this comment letter.

San
Bernardino
Valley
Municipal
Water
District

On February 24, 2017, the Regional Board published a notice that it was no longer proposing to list Reach 3 of the Santa Ana River for Benthic Community Effects because the dataset did not contain the minimum number of California Stream Condition Index (CSCI) scores required to support a listing. While the Task Force supports the decision to withdraw the proposed BCE listing, we are concerned that the numerous errors that have been identified in LOE #8263 will remain "in the record." Therefore, the Task Force petitions the Regional Board to delete or revise LOE #8263. Such direction is necessary to ensure proper interpretation and application of salinity-related water quality standards in all future 303(d) assessments including the proposed BCE listing for Santiago Creek which has not been withdrawn (Decision ID #65202) and which also references exceedances of salinity objectives to support the listing.⁴ Our specific concerns are presented below.

Inland
Empire
Utilities
Agency

¹ Res. No. R8-2004-0001 (Jan. 22, 2004)

² Res. No. R8-2005-0063 (Apr. 15, 2005)

³ Decision ID#: 65478, LOE#: 8263 (subsequently withdrawn by notice dated Feb. 24, 2017).

⁴ LOE #4433



- 1) The water quality objective for TDS in Reach 3 was not established to protect "Warm Freshwater Habitat" as indicated in LOE #8263. Rather, as stated in the Santa Ana Regional Water Quality Control Plan (aka "Basin Plan") and in Regional Board Resolution No. R8-2004-0001, the TDS objective was established to protect agricultural irrigation (AGR) and Orange County's groundwater supply (GWR).⁵ There is no evidence in the Administrative Record to demonstrate that an exceedance of the TDS objective would adversely affect aquatic organisms living in Reach 3 of the Santa Ana River.
- 2) LOE #8263 states that there were 734 exceedances of the TDS objective (700 mg/L) among the 4,182 samples collected between 11/4/1966 and 12/27/2009. However, state and federal authorities have reviewed this data and concluded that it "does not exceed the allowable frequency shown in Table 3.2 of the Listing Policy" and should not be listed (see Decision ID #39666).
- 3) Virtually all of the exceedance referenced in LOE #8263 occurred more than 30 years ago.⁶ Water quality data collected prior to 1983, when the Regional Board enacted a Waste Load Allocation for TDS in the Santa Ana River, is no longer representative of current conditions or treatment practices. Since then, the Santa Ana Regional Interceptor (SARI) brine line has been installed and all of the Publically Owned Treatment Works (POTWs) have implemented comprehensive industrial pre-treatment programs designed to reduce TDS in recycled water discharged to the Santa Ana River. The success of these various salt management initiatives explains why LOE #82353 concluded there were no exceedances of the TDS objective in Reach 3 of the Santa Ana River from 1994-2009. Only this more recent data, collected since significant salt management practices have been implemented, should be used to assess attainment.⁷
- 4) The conclusions suggested by LOE #8263, that "Salinity/TDS/Chloride" may be partially responsible for adverse effects on benthic organisms, is directly contradicted by a two separate determinations (Decision ID #63257 & #39991) that Reach 3 should not be listed for TDS⁸ or Chloride⁹ because there were zero exceedances for either parameter in 297 samples (including the time before, during and after the benthic sample was collected at Mission Ave. in 2007).
- 5) LOE #8263 describes the pollutant of concern as: "Salinity/TDS/Chlorides." However, there is no evidence in the Administrative Record to demonstrate that the water quality objective for Chloride has been exceeded in Reach 3 of the Santa Ana River. Moreover, LOE #5776 and LOE #7956 reference a U.S. EPA document which indicates that chloride concentrations less than 860 mg/L are safe for aquatic organisms.¹⁰ There is no evidence that chloride concentrations came close to exceeding 860 mg/L anywhere in Reach 3 and especially above the MWD-crossing near where the benthic community impacts were reported to have occurred in June of 2007.

⁵ Basin Plan, Feb. 2016, pg. 4-10

⁶ SAWPA. 2008 Annual Report of Santa Ana River Water Quality: Final Report. July, 2009; see Fig. 3-1 & Fig. 3-4 (copies attached to this comment letter as Appendix A). This document was already in the Regional Board's possession when the official data solicitation was published on January 14, 2010.

⁷ SWRCB. Policy for Developing California's CWA §303(d) List. February 3, 2015 (see §6.1.5.3 @ pg. 23).

⁸ LOE #82353

⁹ LOE #82397

¹⁰ U.S. EPA. National Recommended Water Quality Criteria - 2006 (see pg. 13 of 24).

- 6) The benthic community impact was observed near where Mission Avenue crosses the Santa Ana River during a biosurvey conducted in June of 2007.¹¹ Data collected below Prado Dam, at a station more than 15 miles downstream, is not representative of water quality that occurs where the benthic survey was performed. Long-term water quality monitoring data collected from a sampling station just 3 miles downstream from Mission Avenue demonstrates that TDS and chloride concentrations consistently comply with the relevant water quality objectives.¹² And, the highest measured chloride concentration at MWD crossing from 1990-2009 was less than 120 mg/L - 85% lower than the threshold EPA recommends to protect aquatic organisms.
- 7) The TDS and chloride objectives for Reach 3 of the Santa Ana River are applicable to "Base Flow" conditions.¹³ Compliance with the salinity objectives is evaluated using the average of five (or more) samples usually collected in August and/or September of each year when the potential influence of stormwater runoff is at its lowest level. Results of this routine analysis are provided to the Regional Board in the Annual Reports of Santa Ana River Water Quality that are prepared by SAWPA on behalf of the BMPTF. Compliance has never been determined by comparing the result of individual sample data to the objective in the manner that was used in LOE #8263 or LOE #83253. The Regional Board has always applied the salinity objectives as Base Flow averages not as Instantaneous Maximum values that must be met under all flow conditions.
- 8) The water quality objective for chloride in Reach 3 of the Santa Ana River was established to protect water quality better than necessary to protect the GWR and AGR beneficial uses.¹⁴ The Basin Plans states that a "safe value for irrigation is considered to be less than 175 mg/L chloride."¹⁵ In 1975, when the objectives were adopted, the average chloride concentrations measured under Base Flow conditions were only 140 mg/L. Consequently, the water quality objective was set at 140 mg/L to preserve that better water quality consistent with the state Antidegradation Policy (Res. No. 68-16). Exceedances of the water quality objective for chloride may trigger an Antidegradation Review and Analysis,¹⁶ but such exceedances cannot be construed as evidence of potential impairment to designated beneficial uses unless the average concentration under Base Flow conditions exceeds 175 mg/L.¹⁷ And, even then, it would only suggest that the AGR use may be threatened. There is no evidence or citation in the Administrative Record to support the conclusion that chloride concentrations greater than 140 mg/L (as individual or average data values) are injurious to aquatic organisms or would impair the WARM beneficial use in Reach 3 of the Santa Ana River.

¹¹ LOE#: 82390

¹² SAWPA. 2008 Annual Report of Santa Ana River Water Quality: Final Report. July, 2009; see Fig. 3-9 & Fig. 3-12 (copies attached to this comment letter as Appendix A). This document was already in the Regional Board's possession when the official data solicitation was published on January 14, 2010.

¹³ Basin Plan, Feb., 2016; Table 4-1 (see pg. 4-49)

¹⁴ Reach 3 of the Santa Ana River was exempted from the MUN designation in accordance with the state Sources of Drinking Water Policy (Res. No. 88-63).

¹⁵ Basin Plan, Feb., 2016 (see pg. 4-22 & 4-23)

¹⁶ State Water Resources Control Board. Administrative Procedures Update 90-004: Antidegradation Policy Implementation for NPDES Permitting. July 2, 1990.

¹⁷ Because it is exempt from the MUN designation, the Secondary MCL for chloride (500 mg/L) is not relevant to Reach 3 of the Santa Ana River.

- 9) Alleged exceedances of the "Salinity/TDS/Chloride" objectives are also offered as a Line of Evidence (#4433) to support a BCE listing in Santiago Creek (Decision ID #65202). In this instance, the LOE properly acknowledges that the salinity objectives were established to protect the MUN beneficial use. However, the LOE improperly concludes that exceedances of salinity standards intended to protect drinking water somehow impairs the WARM beneficial uses. There is no evidence or citation provided in the Administrative Record to support an inference that ambient salinity concentrations are detrimental to aquatic organisms. Moreover, LOE #4433 states that there were zero exceedances for zero samples and indicates that this LOE is a "placeholder" for pre-2006 determinations without providing any access to the supporting data.

For the reasons given above, the BMPTF recommends that LOE #8263 and LOE #4433 be deleted and no longer referenced in any BCE listing decisions. Alternatively, these LOE's must be revised to identify the correct (relevant) beneficial uses for the salinity objectives, apply the correct averaging period, consider the correct use protection thresholds for aquatic life, and include only the monitoring data that is representative of current (1986-2010) water quality conditions and discharge requirements.

There are numerous other water quality assessments in Appendix G of the Integrated Report where the salinity data and related objectives were improperly analyzed but the final decision was to "Not List" a given waterbody (see Table 1). In most cases, the LOE's indicate that the TDS, chloride, sodium or sulfate objectives were established to protect WARM or COLD Freshwater Habitat. This is never true. Rather, the salinity objectives were almost always established to protect water quality that was better than necessary to protect the MUN, GWR or AGR uses. An exceedance of these particular objectives may elicit antidegradation concerns but it does not provide evidence that any beneficial use (particularly WARM or COLD) is impaired by salinity concentrations that are no somewhat higher than those measured 45 years ago to establish the baseline condition pursuant to Res. No. 68-16.

The large number of errors in these assessments demonstrate why it is important for the Regional Board to provide some official direction on this issue. It also illustrates why future 303(d) assessments should be prepared by Regional Board staff based on their superior understanding of local requirements and conditions. For example, it appears that water quality data collected from the valley reach of Day Creek at the Lucretia Rd. crossing (33.967045°, -117.531897°) were mistakenly compared to water quality objectives for Day Canyon Creek in the San Gabriel mountains (see Table 4-1 on pg. 4-45 of the Basin Plan).¹⁸

In another example, 565 individual data points were compared to the TDS objective for Reach 2 of the Santa Ana River.¹⁹ This is not correct. The TDS objective for Reach 2 is specified as a "five-year moving average." And, the Regional Board has directed that compliance with the TDS objective for Reach 2 should be determined using the arithmetic mean of the five volume-weighted annual averages from the previous five years.²⁰ So, for the period from 1994 to 2009 that is referenced in LOE #82397, it is only possible to calculate 12 compliance values (not 565) using the mathematical procedure mandated by the Regional Board.

¹⁸ See Decision ID#43269, LOE #7996 and Decision ID#43349, LOE #7999 and Decision ID #38523, LOE #8027.

¹⁹ Decision ID #62558, LOE #82387.

²⁰ Basin Plan, Feb., 2016 (see pg. 4-28 and pg. 5-38). This is the method the BMPTF has used to compute and report compliance in the Annual Reports of Santa Ana River Water Quality submitted to the Regional Board in compliance with Res. No. R8-2005-0063.

Table 1: Errors in Other 303(d) Listing Decisions Related to Salinity

Waterbody	Decision ID#	LOE#	Improperly assumed the salinity WQO was set to protect aquatic life	Improperly assumed that an exceedance of Antidegradation-based WQO implies that the beneficial use is impaired
Bear Creek	61702	81220	Yes-COLD	Yes, CL Obj. = 10 mg/L
Bear Creek	61703	81221	Yes-COLD	Yes, CL Obj. = 75 mg/L
Cajon Creek	65146	81353	Yes-COLD	Yes, CL Obj. = 10 mg/L
Cajon Creek	63197	81356	Yes-COLD	Yes, CL Obj. = 20 mg/L
Chino Creek-Reach 1b	39369	81368	Yes-WARM	Yes, TDS Obj. = 550 mg/L
Chino Creek-Reach 1b	62184	81362	Yes-WARM	Yes, CL Obj. = 75 mg/L
Chino Creek-Reach 1b	43216	7892	No	Yes, Na Obj. = 75 mg/L
Chino Creek-Reach 1b	62185	81366	Yes-WARM	Yes, SO4 Obj. = 60 mg/L
Chino Creek -Reach 2	39530	7949	Yes-WARM	Yes, Na Obj. = 75 mg/L ²¹
City Creek	39814	5776	Yes-WILD	No ²²
Cucamonga-Reach 1	39194	7959	Yes-WARM	Yes, Na Obj. = 110 mg/L
Cucamonga-Reach 1	39533	7968	Yes-WARM	Yes, SO4 Obj. = 150 mg/L
Deer Creek (valley reach)	65148	81442	Yes-COLD ²³	Yes, CL Obj. = 15 mg/L ²⁴
Fuller Mill Creek	63200	81523	Yes-COLD	Yes, SO4 Obj. = 20 mg/L
Lytle Creek ²⁵	65154	81761	Yes-COLD	Yes, CL Obj. = 4 mg/L
Lytle Creek	63225	81752	Yes-COLD	Yes, SO4 Obj. = 25 mg/L
Mountain Home Creek	65149	81799	Yes-COLD	Yes, CL Obj. = 10 mg/L
Mountain Home Creek	63242	81800	Yes-COLD	Yes, SO4 Obj. = 20 mg/L
San Diego Creek	32990	2976	Yes-WARM	No
SAR-Reach 6	65153	82372	Yes-COLD	Yes, CL Obj. = 10 mg/L
SAR-Reach 6	63252	82375	Yes-COLD	Yes, SO4 Obj. = 20 mg/L
SAR-Reach 3	39991	82397	Yes-WARM	Yes, CL Obj. = 140 mg/L
SAR-Reach 3	39552	8262	Yes-WARM	Yes, SO4 Obj. = 150 mg/L
SAR-Reach 3	39641	8260	Yes-WARM	Yes, Na Obj. = 110 mg/L
SAR-Reach 4	62559	82358	Yes-WARM	Yes, TDS Obj. = 550 mg/L
SAR-Reach 5	65150	82359	Yes-WARM	Yes, CL Obj. = 20 mg/L
SAR-Reach 5	63262	82360	Yes-WARM	Yes, SO4 Obj. = 60 mg/L
Strawberry Creek	65151	82534	Yes-COLD	Yes, CL Obj. = -15 mg/L
Strawberry Creek	63275	82544	Yes-COLD	Yes, SO4 Obj. = 20 mg/L

²¹ LOE #7949 misstates WQO as ".5 mg/L" and misapplies tributary rule to an antidegradation-based WQO.

²² LOE #5776 cites EPA's 304(a) chloride criteria for aquatic life as if it were applicable to terrestrial wildlife.

²³ The valley reach of Deer Creek is designated Intermittent WARM, not COLD as stated in LOE #81442.

²⁴ LOE #81442 for Deer Creek mistakenly cites the chloride WQO for Fuller Mill Creek. There is no chloride WQO for the valley reach of Deer Creek (see Table 4-1 on pg. 4-46 of the Basin Plan).

²⁵ LOE #81761 & LOE #81752 cite the WQO for "mountain reaches" Lytle Creek. However, samples were collected in the valley reach of Lytle Creek where there are no salinity objectives (see Table 4-1 on pg. 4-45 of Basin Plan).

In several instances, stream monitoring data were compared to the Secondary Maximum Contaminant Level (SMCL) values shown in 22 CCR §64449-Table B. However, these drinking water criteria are specified as a "Range" that includes both "Recommended" and acceptable "Upper" concentrations for TDS, specific conductance, chloride and sulfate. It appears that the analyses done for the current 303(d) assessment improperly concluded that any measured concentration greater than the "Recommended" threshold would impair the beneficial use despite the fact that "no fixed consumer acceptance contaminant level has been established" for the SMCL constituents identified in Table B and the "Upper" end of the concentration range is also considered "acceptable."²⁶

In addition, compliance with the SMCLs is supposed to be determined based on the average of four quarterly samples collected in a given year. It appears that the analyses done for the current 303(d) assessment improperly concluded that an exceedance occurred each time a single sample result exceeded one of the "Recommended" SMCL values rather than computing an annual average, using a minimum of four samples, as required by state regulations. For all of the reasons given above, the LOE's identified in Table 2 should be revised or withdrawn.

Table 2: Errors in Interpreting and Applying the SMCL Consumer Acceptance Ranges

Waterbody	Decision ID#	LOE#	Pollutant	Improper Threshold?	Improper Average?
Fullerton Creek	65564	81724	Chloride	Yes	Yes
Fullerton Creek	65563	95768	Specific Conductance	Yes	Yes
Fullerton Creek	65421	95762	Sulfate	Yes	Yes
Little Mill Creek	65152	81724	Chloride	Yes	Yes
Little Mill Creek	63217	81738	Specific Conductance	Yes	Yes
Little Mill Creek	63218	81739	Sulfate	Yes	Yes

The Basin Monitoring Program Task Force understands the vast amount of data that must be analyzed during the 303(d) assessment and the very limited resources available to the Regional Board to complete this task. If a waterbody is placed on the 303(d) in error, it will divert scarce resources needed to address genuine water quality problems in the region. Therefore, the Task Force would like to offer its assistance. Together, we can ensure that all readily available and reliable data is considered and that this data is compared to the most appropriate water quality standards.

Sincerely,



Mark Norton, PE, LEED AP, ENV SP,
Basin Monitoring Program Task Force Administrator
SAWPA Water Resources & Planning Manager

Encl: Appendix A: excerpts from the 2008 Annual Report of Santa Ana River Water Quality (5 pages).

²⁶ 22 CCR §64449(d) *et seq.*

Appendix A:

Excerpts from the:

2008 Annual Report of Santa Ana River Water Quality

(previously submitted to the Regional Board in July, 2009)

Section 3: Analysis of Monitoring Data

Fig. 3-1 Total Dissolved Solids (TDS) at below Prado Dam

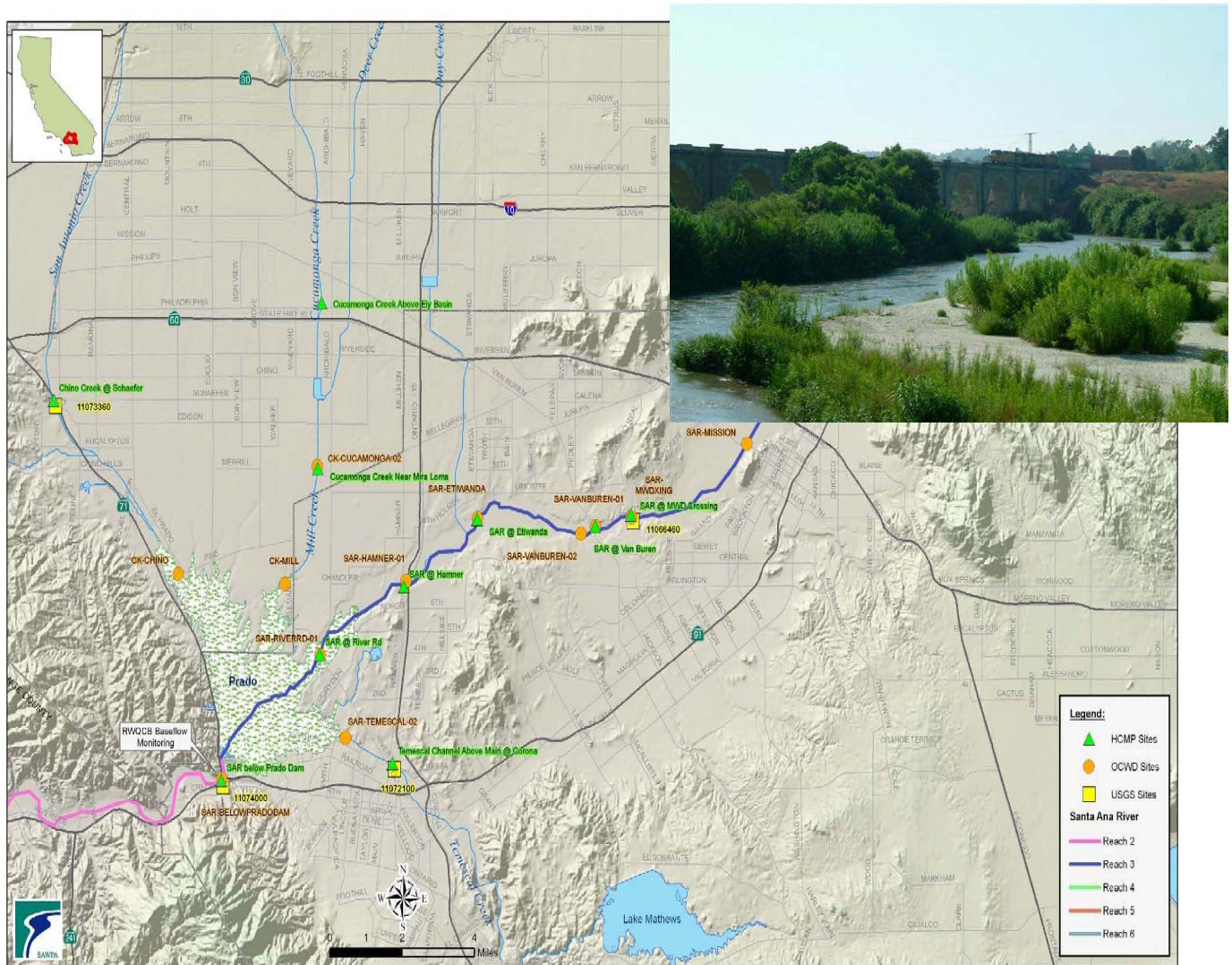
Fig. 3-4: Chloride (Cl) at below Prado Dam

Fig. 3-9: Total Dissolved Solids (TDS) at MWD Crossing

Fig. 3-12: Chloride (Cl) at MWD Crossing

2008 ANNUAL REPORT OF SANTA ANA RIVER WATER QUALITY

Final Report



Prepared by:



July 2009

Figure 3-1. Total Dissolved Solids (TDS) at below Prado Dam

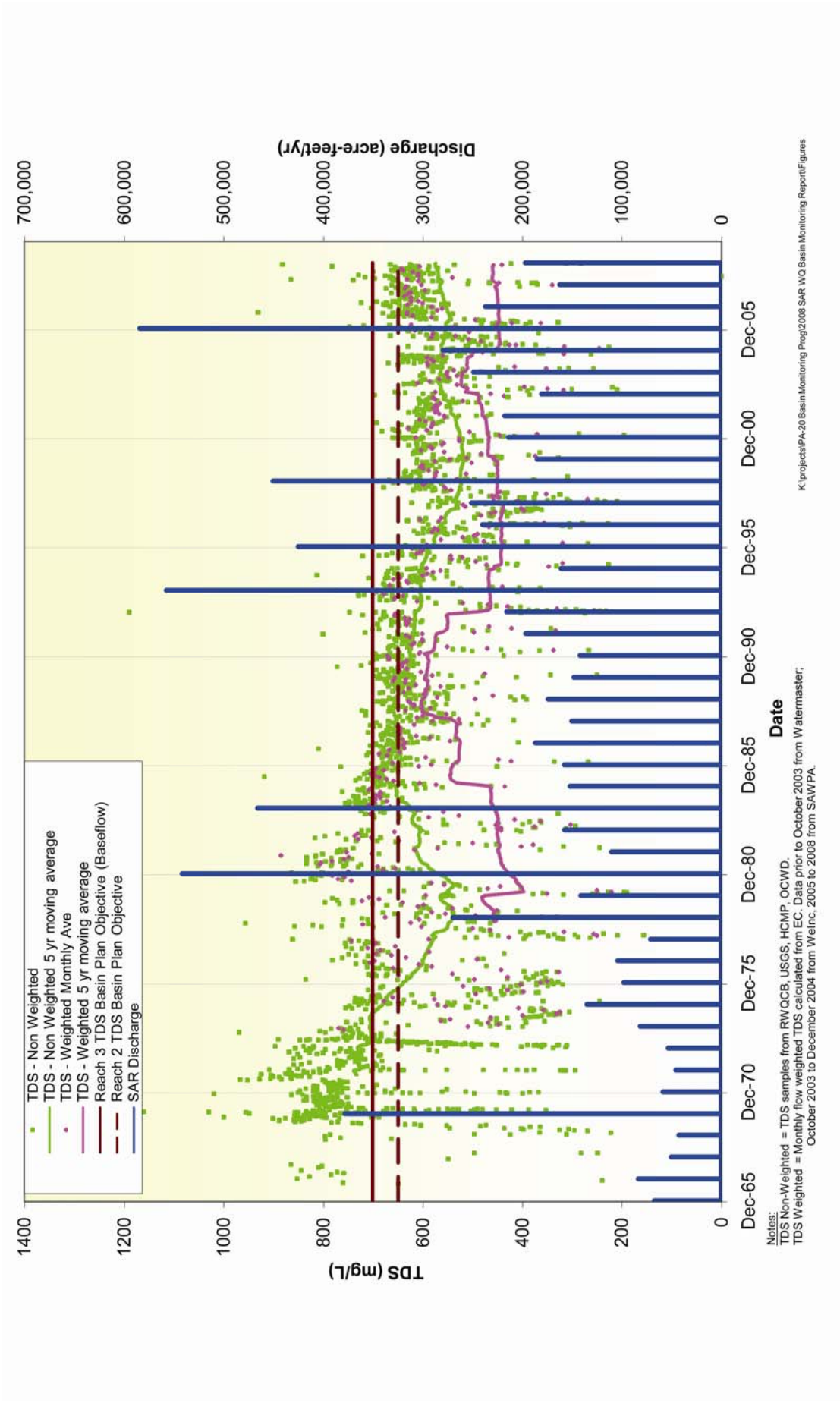


Figure 3-4. Chloride (Cl) Below Prado Dam

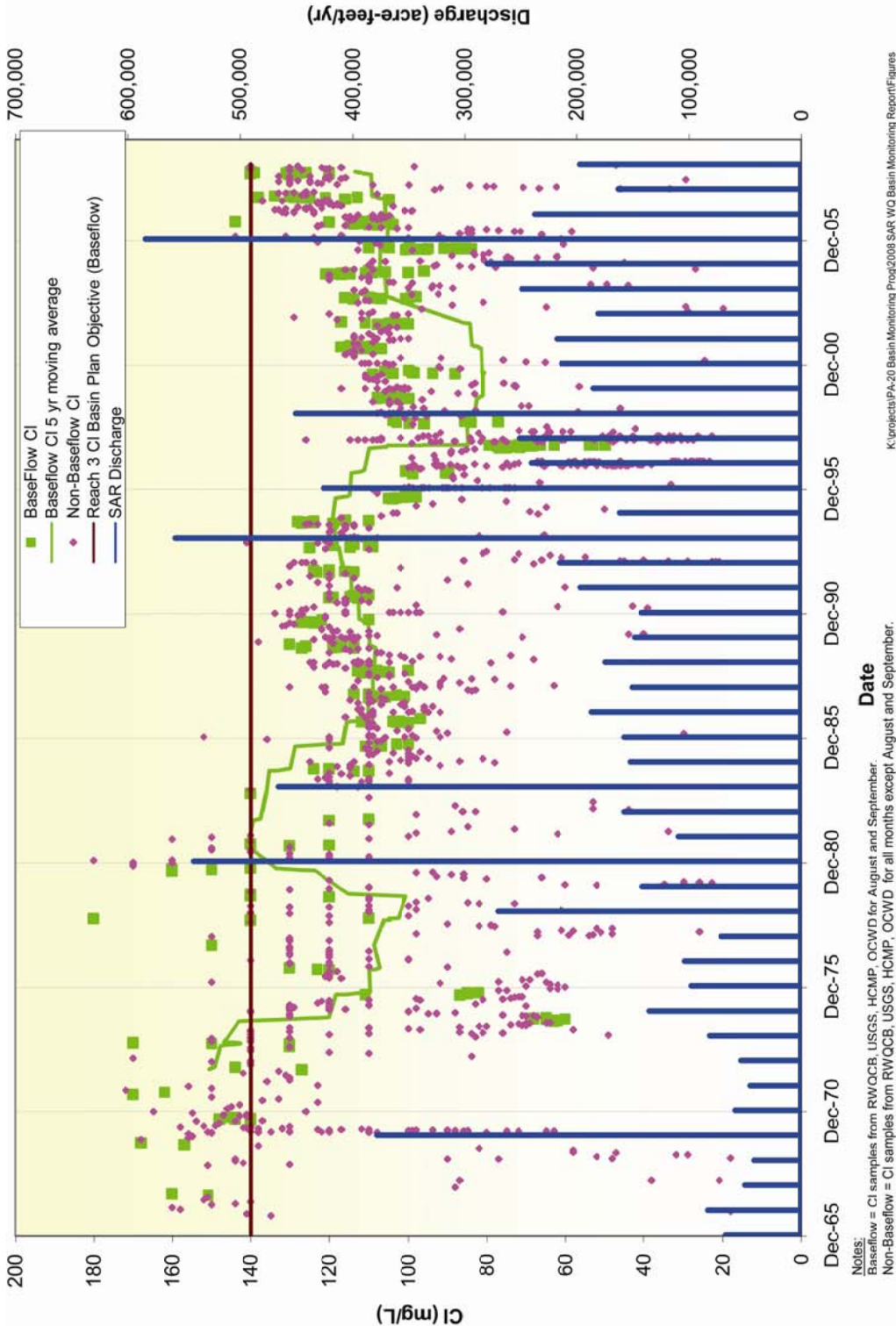


Figure 3-9. Total Dissolved Solids (TDS) MWD Crossing

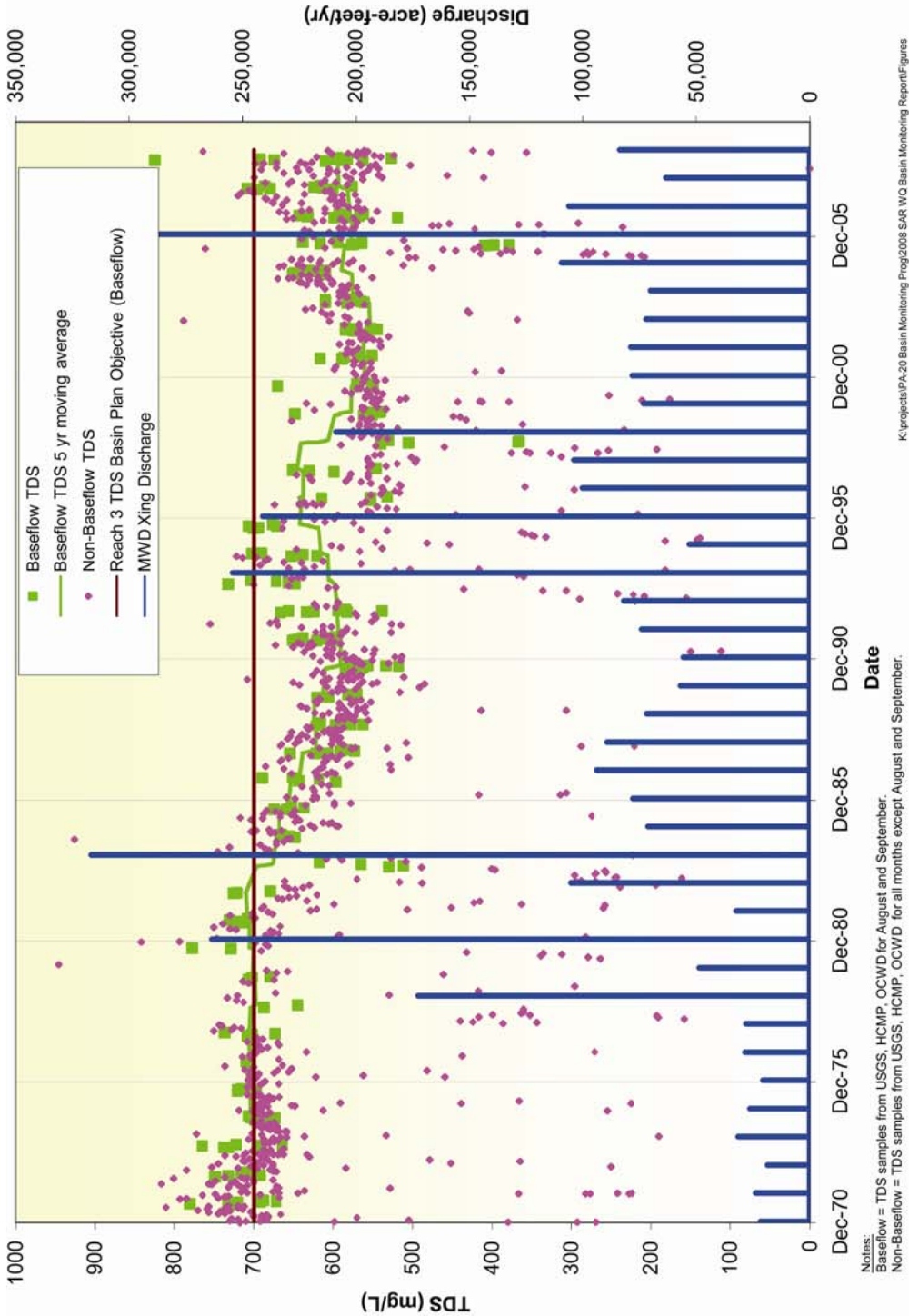


Figure 3-12. Chloride (Cl) MWD Crossing

