

**UPPER SANTA CLARA RIVER**

**AMENDMENTS TO THE WATER QUALITY CONTROL PLAN  
FOR THE LOS ANGELES REGION TO INCORPORATE AN  
AVERAGING PERIOD FOR CHLORIDE WATER QUALITY  
OBJECTIVES IN REACHES 4B, 5 AND 6; INCORPORATE NEW  
CONDITIONAL SITE SPECIFIC OBJECTIVES IN REACHES 5  
AND 6; AND REVISE THE CHLORIDE TMDL**

**Staff Report**

**CALIFORNIA REGIONAL WATER QUALITY CONTROL  
BOARD - LOS ANGELES REGION**

**August 4, 2014**

# List of Acronyms

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ACLC – Administrative Civil Liability Complaint  
AGR – Agricultural Supply Beneficial Use  
AWRM – Alternative Water Resources Management  
CLWA – Castaic Lake Water Agency  
COLD – Cold Freshwater Habitat Beneficial Use  
DWI – Deep Well Injection  
EIR – Environmental Impact Report  
FRSH – Freshwater Replenishment Beneficial Use  
GWR – Groundwater Recharge Beneficial Use  
GSWI – Groundwater and Surface Water Interaction Study  
GSWIM – Groundwater/Surface Water Interaction Model  
IND – Industrial Service Supply Beneficial Use  
LA – Load Allocation  
LRE – Literature Review and Evaluation  
MCL – Maximum Contaminant Level  
MF/RO – Microfiltration-Reverse Osmosis  
MGD – million gallons per day  
MIGR – Migration of aAquatic Organisms Beneficial Use  
MUN – Municipal and Domestic Supply Beneficial Use  
mg/L – milligrams per liter  
NOV – Notice of Violation  
NPDES – National Pollutant Discharge Elimination System  
OAL – Office of Administrative Law  
PROC – Industrial Process Supply Beneficial Use  
RARE – Rare and Endangered Species Habitat Beneficial Use  
REC-1 – Water Contact Recreation Beneficial Use  
REC-2 – Non-Contact Water Recreation Beneficial Use  
RO – Reverse Osmosis  
SCVSD – Santa Clarita Valley Sanitation District of Los Angeles County  
SEP – Supplemental Environmental Project  
SNMP – Salt and Nutrient Management Plan  
SSO- Site Specific Objective  
SWP – State Water Project  
SWRCB – State Water Resources Control Board  
TAP – Technical Advisory Panel  
TMDL – Total Maximum Daily Load  
USCR – Upper Santa Clara River  
USEPA – United States Environmental Protection Agency  
UWMP – Urban Water Management Plan  
WARM – Warm Freshwater Habitat Beneficial Use  
WET – Wetland Habitat Beneficial Use  
WILD – Wildlife Habitat Beneficial Use  
WLA – Waste load Allocation

WQO – Water Quality Objective  
WRP – Water Reclamation Plant

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# 1. Introduction

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This staff report discusses the scientific and regulatory basis for proposed Basin Plan amendments to incorporate an averaging period for the chloride water quality objectives applicable in Reaches 4B, 5 and 6 of the Upper Santa Clara River (USCR); incorporate conditional site-specific water quality objectives (SSOs) for chloride in Reaches 5 and 6 of the USCR; and revise the USCR Chloride Total Maximum Daily Load (TMDL). The resolution also provides additional findings relevant to these Basin Plan amendments.

The Los Angeles Regional Water Quality Control Board (Regional Water Board) adopted a TMDL to address the chloride impairments of the USCR on July 10, 2003 (Resolution 03-008). The Regional Water Board amended the TMDL in 2004 (Resolution No. 04-004) and 2006 (Resolution No. 06-016) to revise the interim wasteload allocations (WLAs) and implementation schedule. The TMDL found that the primary sources of chloride are imported source water from the State Water Project and chloride added by domestic uses, including self-regenerating water softeners. These chloride sources are loaded into the USCR in effluent from the Saugus and Valencia Water Reclamation Plants (WRPs) that serve residents and industries in the Santa Clarita Valley. At the time the TMDL was adopted and approved, there were scientific uncertainties regarding the sensitivity of certain crops to chloride and the complex interactions between surface water and groundwater in the Upper Santa Clara River watershed.

The TMDL discusses the possibility of revised chloride water quality objectives (WQOs) based on subsequent scientific studies and committed the Regional Water Board to consider SSOs. The TMDL required the Santa Clarita Valley Sanitation District of Los Angeles County (SCVSD<sup>1</sup>) to conduct several special studies to characterize the sources, fate, transport, and specific impacts of chloride in the Upper Santa Clara River, including impacts to downstream reaches and underlying groundwater basins. Once the special studies were conducted, and based on the results, SCVSD proposed a regional watershed solution to the chloride impairments through an alternative TMDL implementation plan called alternative water resources management, or “AWRM.”

On December 11, 2008, the Regional Water Board revised the USCR Chloride TMDL (Resolution No. 08-012) to accommodate AWRM. The amended TMDL was approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and United States Environmental Protection Agency (USEPA), and became effective on April 6, 2010. The TMDL numeric targets, waste load allocations, and implementation plan were based on conditional SSOs for chloride in surface water and groundwater of the USCR watershed that were conditioned on SCVSD’s full and ongoing implementation of the AWRM program, which was required in SCVSD’s National Pollutant Discharge Elimination System (NPDES) permits

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<sup>1</sup>Prior to 2005, the Santa Clarita Valley was historically served by the County Sanitation District Number 26 of Los Angeles County (Saugus WRP) and County Sanitation District Number 32 of Los Angeles County (Valencia WRP). Both of these Districts were collectively referred to as the County Sanitation Districts of Los Angeles County or CSDLAC in previous documents related to the Upper Santa Clara River Chloride TMDL. These two districts were merged into a single district, the Santa Clarita Valley Sanitation District of Los Angeles County or SCVSD as of July 1, 2005.

for the WRPs. The revised TMDL allowed SCVSD until May 5, 2015 to achieve the conditional SSOs and included several interim implementation tasks. However, after adoption of the TMDL, the SCVSD Board of Directors voted not to increase service charge rates, which was necessary in order to fund planning and design of the AWRM program. As a result, SCVSD missed two interim deliverables required by the NPDES permit that implemented the 2008 TMDL revision and the Regional Water Board took enforcement actions in 2011 and 2012.

Following Regional Water Board enforcement actions of the NPDES permit, on October 10, 2013, SCVSD released a Facilities Plan and EIR, in which they proposed to construct MF/RO facilities at the Valencia WRP. In order to reduce the costs of this project, SCVSD staff requested a schedule extension, a revision to the WLAs to eliminate the need for an RO product water pipeline to the Saugus WRP from the Valencia WRP, and the incorporation of a 3-month averaging period for the chloride water quality objectives in Reaches 4B, 5 and 6. The Basin Plan amendments to revise the TMDL and establish new SSOs are being proposed in response to SCVSD's requests.

This Staff Report first presents background on the TMDL, including regulatory history, and status of implementation measures. The Report then discusses the results and conclusions of the studies that led to the development of the proposed new conditional SSOs and revisions to the TMDL being recommended by staff. The Report then discusses the Site Specific Objectives/Antidegradation Analysis, which provides the regulatory basis for the incorporation of a 3-month averaging period for the chloride water quality objectives and for the new conditional SSOs. Finally, the Report discusses how the recommended averaging periods, conditional SSOs, and TMDL revisions would be implemented.

## **2. History and Status of the TMDL**

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The Santa Clara River is the largest river system in southern California that remains in a relatively natural state. The River originates in the San Gabriel Mountains in Los Angeles County, runs through Ventura County, and flows into the Pacific Ocean between the cities of San Buenaventura (Ventura) and Oxnard. Land uses within the watershed include agriculture, open space, and residential uses. Reaches 5 and 6 of the Santa Clara River are located upstream of the Blue Cut gauging station, near the Los Angeles/ Ventura County line, between the cities of Fillmore (in Ventura County) and Santa Clarita in Los Angeles County; Reach 4B is in Ventura County.

In 1975, the Regional Water Board established water quality objectives (WQOs) for chloride in the Santa Clara River in its Water Quality Control Plan for the Los Angeles Region (Basin Plan). The 1975 WQOs for surface waters were established at a chloride concentration of 90 mg/L in Reach 5 and 80 mg/L in Reach 6. The 1975 WQOs were based on background concentrations of chloride and intended to protect the beneficial uses identified in the 1975 Basin Plan, including agricultural irrigation. The Basin Plan included chloride WQOs between 50 and 150 mg/L for the remaining reaches of the Santa Clara River. When the Regional Water Board established the WQOs in 1975, it assumed the chloride concentrations in imported waters would remain relatively low. However, in the years following, chloride concentrations in the imported water

supply into the Los Angeles Region increased, and in 1978 the Regional Water Board modified the WQOs for chloride to 100 mg/L.

In 1990 the Regional Water Board adopted a resolution responding to the changing conditions of the imported water supply related to drought (the “Drought Policy”). For dischargers into the Santa Clara River who applied for relief under the Drought Policy, chloride concentrations were permitted to be the lesser of: (1) 250 mg/L; or (2) the chloride concentration of supply water plus 85 mg/L. The Regional Water Board renewed the Drought Policy in 1993 and 1995 because the chloride levels in supply waters remained higher than the chloride levels before the onset of the drought. In 1997, the Regional Water Board rescinded the Drought Policy and revised the WQOs for chloride for the Los Angeles River, Rio Hondo, and the San Gabriel River, but not for the Santa Clara River, due to the potential for future adverse impacts to agricultural resources in Ventura County. The Regional Water Board granted temporary variances to certain dischargers in the Santa Clara River watershed, including the Valencia and Saugus WRPs. The interim effluent limits of 190 mg/L were applied for three years to the two facilities.

In 1998 the Santa Clara River was added to the state’s federally required 303(d) list of impaired waterbodies due to elevated chloride concentrations. Reaches 5 and 6 of the Upper Santa Clara River did not meet the 100 mg/L WQO for chloride. The Valencia and Saugus WRPs, which are owned and operated by the SCVSD, are two major point sources that discharge to USCR. The two WRPs are responsible for approximately 70 percent of the chloride loading to the River. The Valencia and Saugus WRPs were not designed to remove chloride from waste water, and also contribute to elevated chloride concentrations due to the use of chlorine disinfection.

The Regional Water Board first adopted a TMDL for chloride in the USCR on October 24, 2002 (Resolution No. 2002-018). The TMDL found that the chloride sources are primarily chloride contained in the imported source water from the State Water Project and chloride added by domestic uses, including self-regenerating water softeners. These chloride sources are loaded into the USCR in effluent from the Saugus and Valencia Water Reclamation Plants (WRPs), which are owned and operated by the Santa Clarita valley Sanitation District (SCVSD) and serve residents and industries in the Santa Clarita Valley. The TMDL source analysis also showed that the WQOs could not be met with source control alone, and assigned waste load allocations to the Valencia and Saugus WRPs equal to the chloride water quality objective of 100 mg/L. The TMDL established an 8-1/2 year implementation schedule to attain chloride WQOs.

On February 19, 2003, the State Water Board adopted Resolution No. 2003-0014, remanding the TMDL to the Regional Water Board due to concerns about length of the implementation schedule and concerns that the original implementation plan could have required the SCVSD to embark on planning and construction of advanced treatment facilities prior to completion of studies on the applicability of the chloride WQO of 100 mg/L.

In response to the Remand Resolution, the Regional Water Board revised the TMDL on July 10, 2003 (Resolution No. 03-008). The revision provided a 13-year implementation schedule, and required require several special studies to characterize the sources, fate, transport, and specific impacts of chloride in the Upper Santa Clara River, including impacts to downstream reaches and underlying groundwater basins. Those studies included:



- A Chloride Threshold Study for Protection of Sensitive Agricultural Supply
- A Chloride Threshold Study for Protection of Endangered Species
- A Groundwater/Surface Water Interaction Model

The TMDL was subsequently amended in 2004 (Resolution No. 04-004) to conform the interim wasteload allocations for the Saugus and Valencia WRPs to the effluent limits in 1994 Time Schedule Orders associated with NPDES permits. The TMDL was approved by the State Water Board; the OAL; and USEPA and became effective on May 4, 2005. In May 2004, the Regional Water Board and SCVSD signed a Settlement Agreement and Stipulation Concerning Chlorides in the UCSR. The Regional Water Board and SCVSD agreed that, if or when new or revised NPDES permits were subsequently issued to the Saugus or Valencia WRPs prior to the date that a revised WQO or final waste load allocations took effect in accordance with the UCSR Chloride TMDL amendments, interim chloride effluent limitations reflecting the interim wasteload allocations in the TMDL, including any revisions thereto, would be included in the subsequent revised NPDES permits.

On August 3, 2006, the Regional Water Board reconsidered the TMDL and amended the TMDL schedule (Resolution No. 06-016). The Board considered the results of the special studies completed at that time and found it appropriate to accelerate the study period provided by the implementation plan based on the Literature Review and Evaluation, which showed that the range of chloride values protective of agriculture supply and groundwater recharge beneficial uses was significantly smaller than originally anticipated.

In 2007, the Regional Water Board amended the Basin Plan to divide Reach 4 into two separate reaches (Resolution No. 07-018). This action was based on historical and current water quality, flow, and land use data showing significant water quality differences between the western and eastern portions of Reach 4. The Board found that Reach 4 of the SCR contains unique hydrogeologic conditions due to the significant alterations to land uses and waste discharges within the UCSR watershed that supported the separation of the reach into two separate reaches, 4A and 4B, divided at the confluence of Piru Creek.

Once the special studies were conducted, and based on the results, SCVSD developed an alternative TMDL implementation plan called alternative water resources management, or "AWRM." The AWRM Program consisted of chloride source reduction actions, chloride load reduction through advanced treatment (microfiltration and reverse osmosis) of a portion of the Valencia WRP effluent, supplemental water to enhance assimilative capacity of local groundwater or surface water, alternative water supply to protect salt-sensitive agricultural beneficial uses of the Santa Clara River, and expansion of recycled water uses within the Santa Clarita Valley. The AWRM Program depended upon the development of conditional SSOs for chloride by the Regional Water Board in reach 4B, 5, and 6, and in the groundwater basins underlying those reaches. The Board determined that relaxation of the chloride water quality objectives for Reaches 4B, 5, and 6 was appropriate based on the cost of constructing and operating desalination treatment facilities, improvements to groundwater quality to be attained through the AWRM program, and the adequate protection of beneficial uses.

On December 11, 2008, the Regional Water Board revised the TMDL and adopted SSOs (Resolution No. 08-012) to accommodate the AWRM program. The conditional SSOs were 150 mg/L in Reaches 5 and 6 as a 12-month average and 117 mg/L for Reach 4B as a 3-month

average, which would be adjusted to 130 mg/L as a 3-month average when the supply water had chloride levels above 80 mg/L. The corresponding conditional WLAs for the Valencia and Saugus facilities were also 150 mg/L for discharges to Reaches 5 and 6, and 117 mg/L to 130 mg/L for discharges to Reach 4B. The SSOs for Reaches 5 and 6 were justified because studies indicated that there are no existing or potential salt-sensitive agricultural uses of the Santa Clara River in Reaches 5 and 6, and concentrations of 150 mg/L in Reaches 5 and 6 would not impair beneficial uses or impede attainment of more stringent water quality objectives downstream. The conditional SSO of 117 to 130 mg/L for Reach 4B was based on the study indicating that chloride levels of 100-117 mg/L were sufficient for irrigation of salt-sensitive crops in this and lower reaches, and a requirement that the District provide an alternate water supply to growers of salt-sensitive crops during periods of sustained drought when chloride limitations were relaxed. Conditional SSOs were also developed for local groundwater basins – objectives were raised from 100 mg/L to 150 mg/L in the groundwater below Reach 5 and 6 and lowered from 150 mg/L to 100 mg/L in East Piru Basin downstream. AWRM resulted in an overall reduction in chloride loading as well as water supply benefits, including increased flows in reaches 4A downstream of the USCR, improvement of groundwater quality in East Piru Basin, and increased availability of irrigation and barrier water. The SSOs were conditioned on SCVSD's full and ongoing implementation of the AWRM program; if SCVSD did not build and operate the AWRM system, the applicable water quality objectives for chloride in Reaches 4B, 5, and 6 would be 100 mg/L as an instantaneous maximum. The revised TMDL allowed SCVSD until May 5, 2015 to attain compliance with the conditional SSOs and included several interim implementation tasks. The SSOs and the revisions to the TMDL were approved by the State Water Board, OAL; and USEPA and became effective on April 6, 2010. The TMDL implementation tasks were then incorporated into the NPDES permits for the Saugus and Valencia WRPs (Order Nos. R4-2009-0074 and R4-2009-0075, adopted on July 24, 2009).

## **3. Implementation to date**

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### **3.1. Implementation Actions**

At their May 26, 2009 and July 27, 2010 Board Hearings, the SCVSD Board of Directors rejected the service charge rate increases necessary to fund planning and design of the AWRM program.

The SCVSD's NPDES permits required SCVSD to complete a Facilities Plan and Environmental Impact Report (EIR) to comply with final chloride effluent limits (Task 17(a)) by May 4, 2011. On May 2, 2011, SCVSD submitted a Wastewater Facilities Plan; a copy of Notice of Exemption from the requirement to prepare an EIR; and a feasibility study of an alternative compliance plan to achieve the conditional SSOs. The Regional Water Board determined that this submittal did not meet the NPDES permit requirements. Furthermore, the alternative compliance plan neither included the chloride export components that are integral to the AWRM program and are a condition for applicability of the SSOs, nor would the alternative plan attain the existing chloride objective of 100 mg/L.

On May 27, 2011, the Regional Water Board issued a Notice of Violation (NOV) to SCVSD for failure to complete task 17(a). On November 26, 2012, the Executive Officer issued an Administrative Civil Liability Complaint (ACLC) (R4-2012-0160) to SCVSD for \$280,250 for failure to comply with Task 17(a). The Prosecution Team for the Regional Water Board comprised of staff from the Regional Water Board and counsel from the Office of Enforcement entered into settlement negotiations with SCVSD. After negotiation, the parties agreed to the imposition of \$225,000 in liability against SCVSD, \$97,500 of which would be allocated to a Supplemental Environmental Project (SEP). In addition to the fine, SCVSD was required to circulate a draft Facilities Plan and EIR by April 30, 2013, and to consider for approval a final Plan and EIR by October 31, 2013.

SCVSD has complied with the terms of the settlement agreement. On April 22, 2013, SCVSD submitted a draft chloride compliance Facilities Plan and EIR for public comments. The plan described four potential alternatives to comply with the current Chloride TMDL. On October 10, 2013, SCVSD released a final chloride compliance Facilities Plan and EIR (Sanitation District of Los Angeles County, 2013), in which it proposed implementation of Alternative 4, designated as Phased AWRM and derived from the original AWRM Program, and proposed Alternative 2 as an alternative recommendation. Alternative 2 included MF/RO facilities with brine disposal via deep well injection (DWI) in order to attain the existing chloride objective of 100 mg/L. On October 28, 2013, the SCVSD Board of Directors voted on the final Plan and EIR, and directed staff to implement Alternative 2.

## **3.2. Selected Implementation Plan**

The Implementation Plan selected by the SCVSD Board of Directors, identified as Alternative 2 in the final Plan and EIR, consists of the following components:

- *Ultraviolet light (UV) disinfection facilities*

As part of Alternative 2, the existing chlorination system at the Valencia and Saugus WRP would be replaced with UV disinfection facilities that would minimize the addition of chloride during wastewater treatment and produce effluent with improved water quality.

- *MF/RO facilities*

MF/RO facilities would be constructed at the Valencia WRP to remove chloride and would be sized such that the blend of the RO product water and non-RO treated water would meet the chloride limit under worst case conditions (i.e., drought conditions).

Brine would be minimized (concentrated) by use of second-pass RO facilities and then disposed via DWI as described above.

- *Second-pass RO facilities*

Brine produced by the primary MF/RO system would be treated by a second-pass RO system at Valencia WRP. The product water from second-pass RO system would be combined with the product water from the primary MF/RO system and blended with tertiary-treated wastewater to meet discharge limits.

- *RO product water conveyance system to Saugus WRP*

A portion of the RO product water would be conveyed to the Saugus WRP for blending with Saugus tertiary-treated water to comply with the Chloride TMDL. Conveyance would be accomplished via construction of a pump station at the Valencia WRP and a pipeline.

- *Brine disposal system via deep well injection (DWI)*

The brine produced as a byproduct of the RO process would be conveyed to a DWI site and injected over one mile beneath the earth's surface in permeable soil through dedicated disposal wells.

### **3.3. SCVSD Requested revisions to the TMDL**

In order to reduce costs of SCVSD's proposed project (Alternative 2), SCVSD staff made the following requests, which require regulatory action by the Regional Water Board:

(1) Because the recommended project will not be completed by the current TMDL implementation deadline of May 4, 2015, SCVSD requested that the Regional Water Board extend the TMDL compliance deadline to July 2019 to provide the needed time for permitting, design, construction, and start-up. This would require the Regional Water Board to revise the current Chloride TMDL through an amendment to Chapter 7 of the Basin Plan to modify the implementation schedule to include a new final implementation deadline.

(2) SCVSD requested that the Regional Water Board modify discharge requirements in a way that would eliminate the need for the RO product water conveyance system described in section 3.2. This would require the Regional Water Board to revise the WQO applicable to Reach 5 upstream of the Valencia WRP and Reach 6 from 100 mg/L to 150 mg/L and make corresponding modifications to the TMDL WLAs through amendments to Chapters 3 and 7 of the Basin Plan.

(3) SCVSD requested that the Regional Water Board modify the chloride water quality objectives for the USCR to allow their application as a 3-month rolling average concentration rather than their current application as an instantaneous maximum concentration. Such change would require a modification of WQOs for Reaches 4B, 5 and 6 through an amendment to Chapter 3 of the Basin Plan.

SCVSD's requested revisions for SSOs would be conditioned on the construction and operation of an RO facility of sufficient capacity to treat wastewater from the Valencia WRP as needed to offset discharges from the Saugus WRP up to 150 mg/L, such that the combined flow from the two WRPs is less than or equal to 100 mg/L over a three month average. The chart below (Table 1) compares existing water quality objectives to the conditional SSOs provided by the AWRM program and the proposed SSOs for the implementation plan currently proposed by SCVSD.

**Table 1: Comparison of WQOs and SSOs under AWRM and the SCVSD proposal**

<b>Reach</b>	<b>Existing WQOs</b>	<b>AWRM SSOs</b>	<b>Revised SSOs</b>
<b>6</b>	100 mg/L (instantaneous)	150 mg/L (12-month average)	150 mg/L (3-month average)
<b>5 upstream of Valencia WRP</b>	100 mg/L (instantaneous)	150 mg/L (12-month average)	150 mg/L (3-month average)
<b>5 downstream of Valencia WRP</b>	100 mg/L (instantaneous)	150 mg/L (12-month average)	100 mg/L (3-month average)
<b>4B</b>	100 mg/L (instantaneous)	117/130 mg/L (3-month average)	100 mg/L (3-month average)

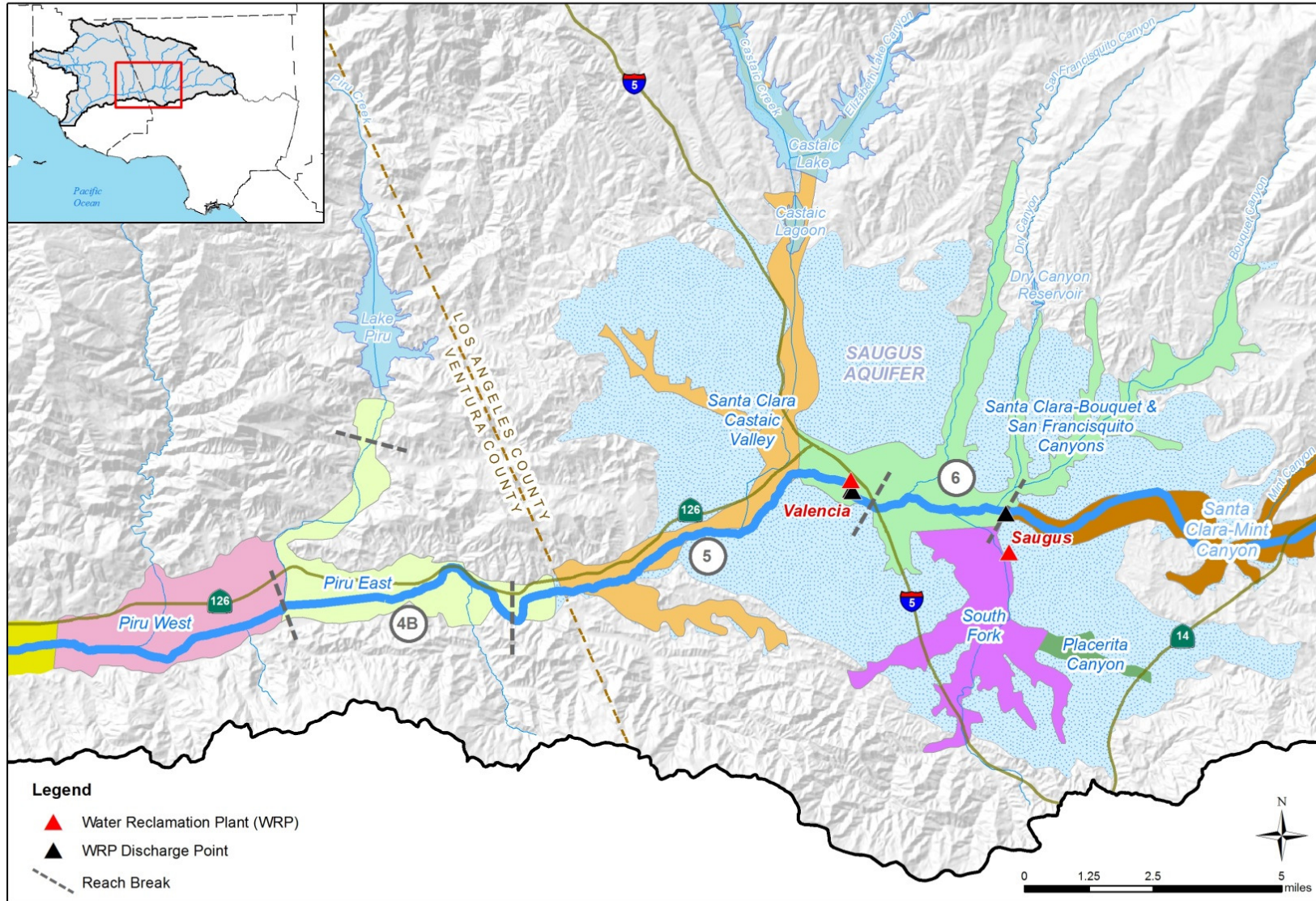
The existing water quality objectives are the applicable objectives because the conditions to support application of the AWRM SSOs have not been met. The conditional SSOs requested by SCVSD for all reaches are less stringent than the existing, applicable water quality objectives as adopted by Resolution R08-012. The justification for the relaxation of water quality objectives is provided in Sections 6 and 7, and Appendix C of this staff report.

While the AWRM SSOs are not applicable, it is useful to compare them to the SSOs requested by SCVSD. The conditional SSOs requested by SCVSD for Reach 4B are more stringent than the SSOs under the AWRM because (1) the SSOs under AWRM were conditioned on groundwater pumping to remove salts from the East Piru Groundwater Basin, which is not included in the new implementation plan proposed by SCVSD and (2) the 117 mg/L objective is at the high end of the concentration range found to be protective of salt-sensitive agricultural uses that occur in Reach 4B. The conditional SSOs requested by SCVSD for Reach 5 above the Valencia WRP and Reach 6 are the same as the SSOs under the AWRM program, with the exception of a shortening of the averaging period from one year to three months. This is proposed in order to ensure that the water quality objective of Reach 4B is attained.

The costs of implementing the conditional SSOs proposed by SCVSD are lower than the costs of implementing both the existing water quality objectives and the AWRM SSOs. According to Appendix C, the capital and operation and maintenance costs of implementing the existing water quality objectives are \$145 million and \$5 million, respectively. The capital and operation and maintenance costs of implementing the conditional SSOs proposed by SCVSD are \$120 million and \$4 million, respectively. And according to documents supporting the 2008 SSOs, the capital and operation and maintenance costs of implementing the AWRM SSOs are \$348 million and 9 million, respectively.

Figure 1 shows the Upper Santa Clara River, including the location of the Saugus and Valencia WRPs, relevant reaches, and groundwater basins.

**Figure 1: The Upper Santa Clara River**



## 4. Technical analysis of requested revisions

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### 4.1. Averaging period

The Basin Plan designates fourteen beneficial uses to the Santa Clara River including agricultural supply (AGR), industrial process supply (PROC), industrial service supply (IND), groundwater recharge (GWR), freshwater replenishment (FRSH), cold freshwater habitat (COLD), wildlife habitat (WILD), water contact recreation (REC-1) and non-contact water recreation (REC-2), municipal and domestic supply (MUN), migration of aquatic organisms (MIGR), warm freshwater habitat (WARM), wetland habitat (WET), and rare, threatened, and endangered species habitat (RARE). Of these beneficial uses, the agricultural supply beneficial use (AGR) is the use that is most sensitive to chloride. Therefore, proposed SSOs designed to protect this use will be protective of other uses in the waterbody.

The first TMDL special study, the Literature Review and Evaluation (LRE), reviewed approximately 200 technical articles on the chloride and salinity sensitivities of avocado, strawberry and nursery plants (CH2M Hill, 2005). The LRE found a guideline concentration range for chloride sensitivity for avocado of 100 -117 mg/L. There was not sufficient technical literature to determine a guideline range for strawberry and nursery crops. The LRE concluded that a conservative guideline concentration for chloride hazard is 100-117 mg/L. The LRE was reviewed by an independent technical advisory panel (TAP), consisting of experts in the field of agriculture, chemistry, and soil science, and the majority TAP opinion concurred with the 100 – 117 mg/L guideline concentration range. One minority TAP opinion advocated a higher guideline concentration and another minority TAP opinion recommended a maximum guideline concentration of 100 mg/L.

As a supplement to the LRE, a memorandum on averaging period analysis was prepared by Newfields Agricultural and Environmental Resources (Newfields, 2007), in consultation with the TAP co-chairs, to determine what the applicable compliance averaging periods should be for the LRE guideline concentration. The memorandum recommended a 3-month compliance averaging period for chloride in the Upper Santa Clara River. The recommendation was based on the following factors:

(1) The studies evaluated in the literature review indicated that the minimum time between the beginning of exposure to chloride stress and signs of visible leaf chloride injury to avocado trees is between two and nine weeks when high chloride concentrations are applied (at least 170 mg/L). This likely reflects the time it takes for equilibrating processes between soil and water to take place in the root zone, resulting in chloride accumulation that causes injury.

Therefore, the compliance period should be long enough for equilibrating processes to occur, but short enough to approximate the minimum time it takes for chloride excess to cause visible leaf injury. Although 3 months is longer than the observed minimum period that resulted in injury, it was concluded that this averaging period allows for the fact that lower rates of chloride would apply than those found in the literature review.

(2) Short, intense periods of stress have been shown to affect avocado growth; therefore the compliance period needs to be short enough to represent the fluctuations of chloride concentrations in the waters, and not entirely average out the fluctuations.

To resolve this matter, rolling averages of chloride concentrations at SCVSD station RF over 6 years (2000-2006) were calculated for 12-month, 6-month, 3-month, 2-month and 1-month periods. The difference between each rolling average and the mean chloride concentration over the entire period was calculated as a residual, and the residuals were compared through a linear regression analysis to determine which averaging period best represented the pattern of chloride data. The results showed that a 3-month averaging period was optimum.

As discussed in sections 6 and 7, SCVSD prepared a SSO/Antidegradation Report to support the proposed SSOs (Attachment C). The report found that surface waters in Reaches 5 and 6, and groundwater potentially impacted by these surface waters, are not currently and have not historically been used as an irrigation supply for salt-sensitive crops. This situation is unlikely to change due to climatic conditions that impact the ability to grow salt sensitive crops and because the use of irrigation water for crops is anticipated to decline in Reaches 5 and 6 due to planned urban development. Thus, the 3-month average period is protective of salt sensitive agricultural beneficial uses in Reach 4B and is also protective of less sensitive beneficial uses in Reaches 5 and 6.

## **4.2. Flow weighting**

### **4.2.1. Introduction**

In order to eliminate the need for the RO product water conveyance system, the SCVSD proposed to implement concentration-based conditional WLAs for chloride expressed as a flow-weighted average between the Saugus and Valencia WRPs. To implement this option, the amount of RO to be treated at Valencia would be calculated to meet a combined discharge of chloride from the Saugus and Valencia WRPs equal to 100mg/L as a 3-month average. However, instead of conveying a portion of the RO product water to the Saugus WRP for blending with Saugus tertiary-treated water to comply with the Chloride TMDL in Reach 6 and Reach 5 upstream of the Valencia WRP, all of the RO-treated water would be discharged to the USCR at the Valencia WRP. This would allow discharges from the Saugus WRP of up to 150 mg/L, while limiting discharges from the Valencia WRP to a concentration less than 100 mg/L, such that the combined discharge from the two plants would be 100 mg/L in Reach 5 downstream of the Valencia WRP.

In order to assess the impact of the flow weighing option on the surface water and groundwater of the USCR watershed, two operational scenarios (one with flow weighting and one with both WRPs discharging at 100 mg/L as a 3-month average) were compared using the USCR Groundwater/Surface Water Interaction Model (GSWIM), a calibrated model developed as part of the larger Groundwater/Surface-Water Interaction (GSWI) Study conducted jointly by SCVSD and the Regional Water Board in support of the USCR Chloride TMDL. The GSWI calibrated model is documented in the report titled "Task 2B-1 Numerical Model Development



and Scenario Results: East and Piru Subbasins” (CH2M Hill and HydroGeoLogic, 2008) (Task 2B-1 Report).

As described in the Task 2B-1 Report, GSWIM was developed to simulate potential impacts to chloride concentrations in groundwater and surface water under a variety of potential future water management and advanced treatment options. Several scenarios were developed by SCVSD and the Regional Water Board to assess the impacts of various water management and treatment options on chloride concentrations within the USCR watershed.

The alternative model simulations summarized in this report represent a continuation of the GWSI Study. More details about the model and the simulation results are presented in detail in the technical memorandum found in Appendix A, titled “Upper Santa Clara River Groundwater/Surface-Water Interaction Model Results of RO Scenarios,” dated April 2012, and prepared by AMEC.

#### **4.2.2. Modeled scenarios**

The model was run for a period of 24 years including drought, average, and wet conditions to evaluate the relative impacts of the following two RO scenarios in implementing a 100 mg/L 3-month average discharge concentration limit:

- *Flow-Weighted Scenario* – This scenario incorporates RO-treated water discharged at the Valencia WRP only. The volume of RO treatment required for any month within the model simulation is calculated to meet a flow-weighted, 3-month average concentration of 100 mg/L for flows from both the Saugus WRP and the Valencia WRP. In this scenario, RO-treated water is discharged to the USCR only at the Valencia WRP along with water that has not been treated with RO. Water discharged at the Saugus WRP does not discharge RO-treated water to the Santa Clara River. Regular treated water will continue to be discharged from the Saugus WRP. The flow-weighted, 3-month average of the combined discharge of the Saugus and Valencia WRPs must be below 100 mg/L.
- *Non Flow-Weighted Scenario* – This scenario incorporates RO-treated water discharged at both the Valencia WRP and Saugus WRP. All RO treatment occurs at the Valencia WRP, but a portion of the permeate discharge is routed to the Saugus WRP via a pipeline. This scenario is governed by a non-flow weighted, 3-month average discharge of 100 mg/L. Therefore, the 3-month average for the Saugus WRP is independent of the 3-month average for the Valencia WRP, and discharges to the Santa Clara River from both the Saugus WRP and the Valencia WRP must individually be under an average of 100 mg/L over 3 months.

#### **4.2.3. Model results**

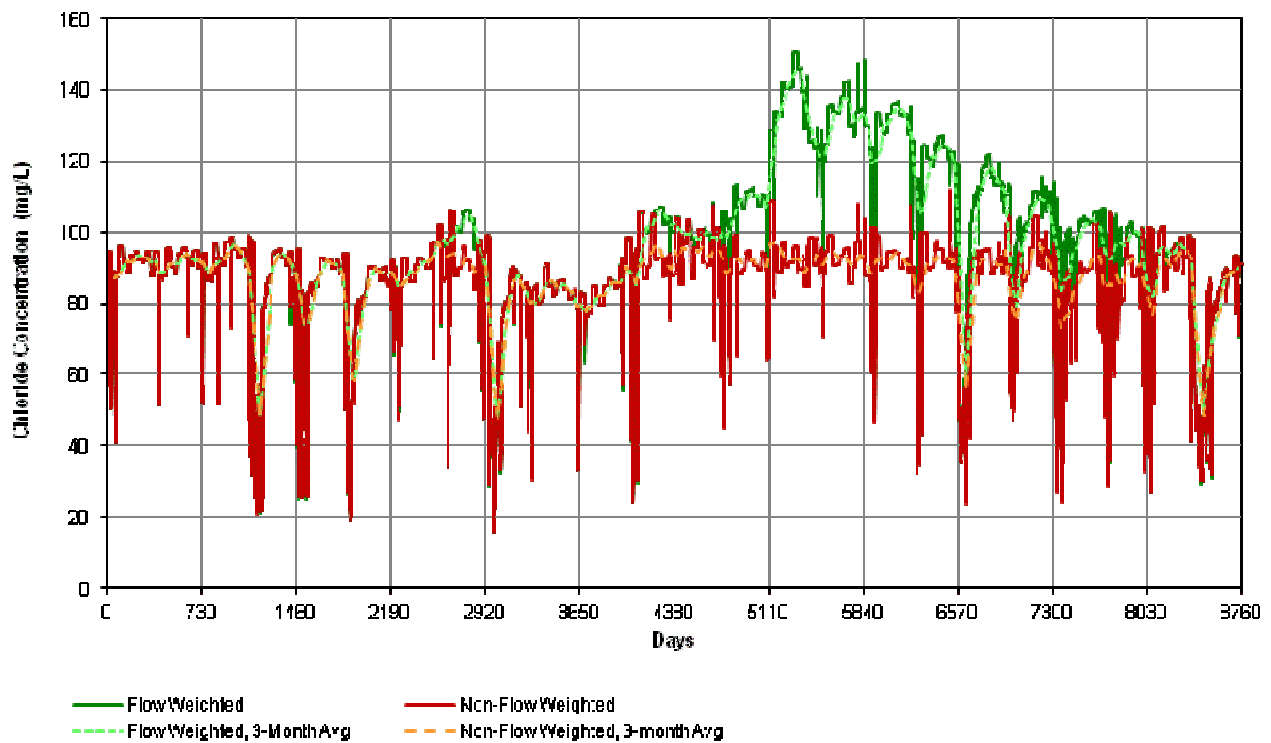
The difference between the two modeled scenarios occurs mainly between the Saugus WRP and the Valencia WRP. The flow-weighted simulation results in higher chloride concentrations in surface water and groundwater in a localized area between the Saugus WRP and the Valencia WRP as compared to the non-flow weighted simulation. Downstream of the Valencia WRP,

there is little difference in the simulated chloride concentrations in surface water or groundwater under the flow-weighted and non-flow weighted scenarios.

#### 4.2.3.1. Surface Water

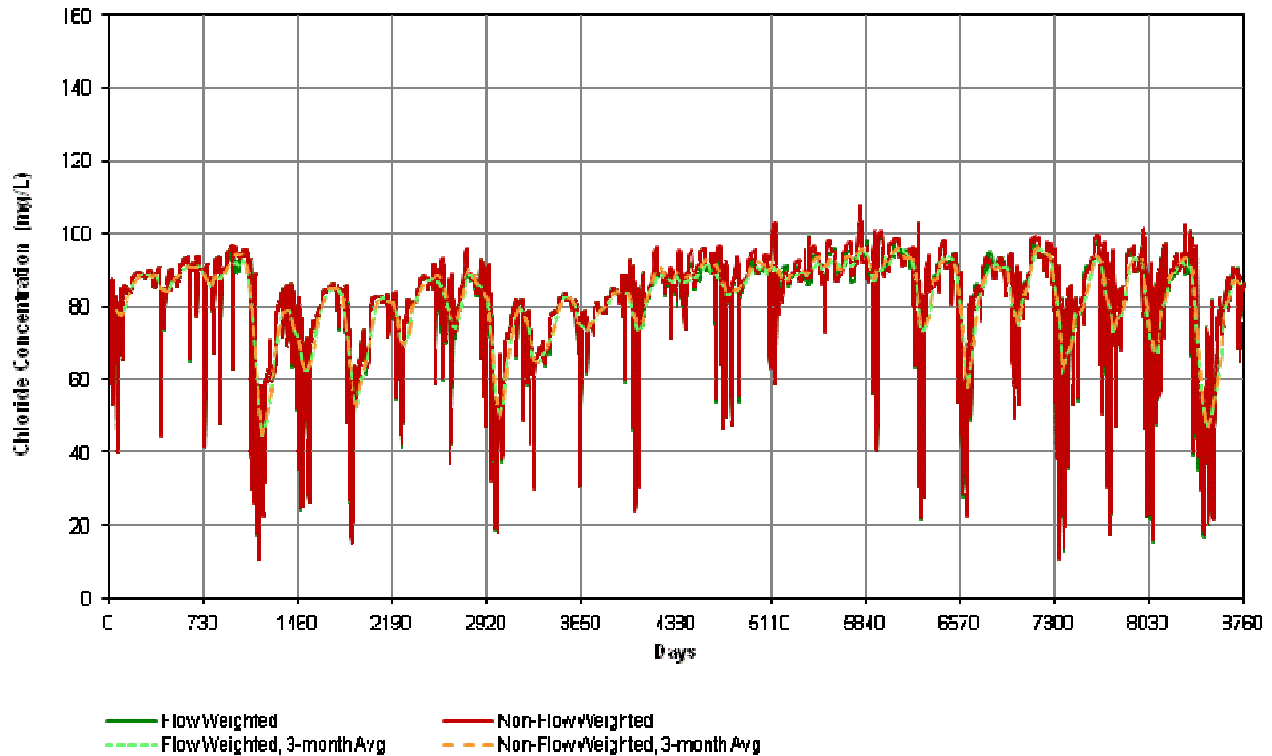
The largest differences in surface water chloride concentrations occurred in Reach 6, downstream of the Saugus WRP around the peak drought time in the model simulation, as chloride levels rose to 150mg/L (145mg/L 3-month average) in the flow-weighted scenario, while they remained consistently below 100 mg/L (with a peak of 112 mg/L) in the non-flow weighted scenario (Figure 2).

**Figure 2: Simulated surface water chloride concentrations in Reach 6, downstream of the Saugus WRP**



Downstream of the Valencia WRP, in Reach 5 and 4B, chloride concentrations vary only slightly between the two simulations, and both scenarios have chloride concentrations consistently below 100 mg/L as a 3-month average. Surface water chloride concentrations at Blue Cut (Figure 3), the reach break between reach 4B and 5, were below 100 mg/L for 99.6% of the simulated model days using the flow-weighted option and 98.9% of the simulated days using the non-flow weighted option, which indicates a slightly higher frequency of better water quality in the flow-weighted simulation.

**Figure 3: Simulated surface water chloride concentrations at Blue Cut.**



#### **4.2.3.2. Groundwater**

In general, differences in chloride levels in the groundwater basins between the flow-weighted and non-flow weighted simulations were limited to the modeled drought period and subsequent years in small localized areas between the Saugus and Valencia WRPs, with the majority of the impacts affecting the overlying alluvial aquifers, and less impacts in the deeper Saugus formation. Downstream of the Valencia WRP, chloride concentrations for both simulations were very similar over time in both surface water and groundwater.

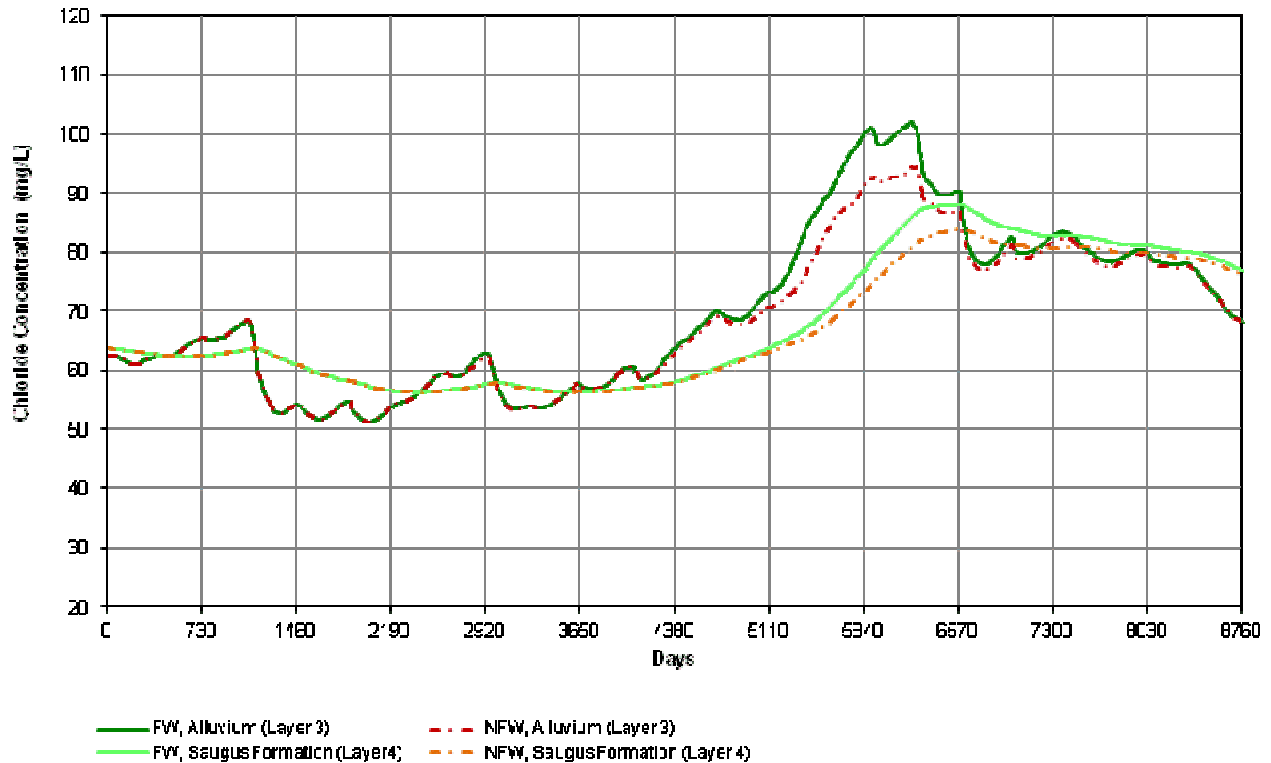
##### Alluvial Aquifers

The majority of the largest differences between the flow weighted and non-flow weighted simulations occur within the alluvium in the Bouquet and San Francisquito Canyons Groundwater Subbasin. The simulated groundwater chloride concentrations in the alluvial layer increase along the Santa Clara River between the Saugus and Valencia WRPs during the drought period and then decrease somewhat during the after-drought period. This effect is greater in the flow weighted simulation than in the non-flow weighted simulation, with a difference in chloride concentration between the two scenarios that is larger during the peak drought period and smaller in the after drought period.

The maximum difference in chloride concentrations between the flow weighted and non-flow weighted simulations was observed in a well downstream of the Saugus WRP (VWC-S6) in the

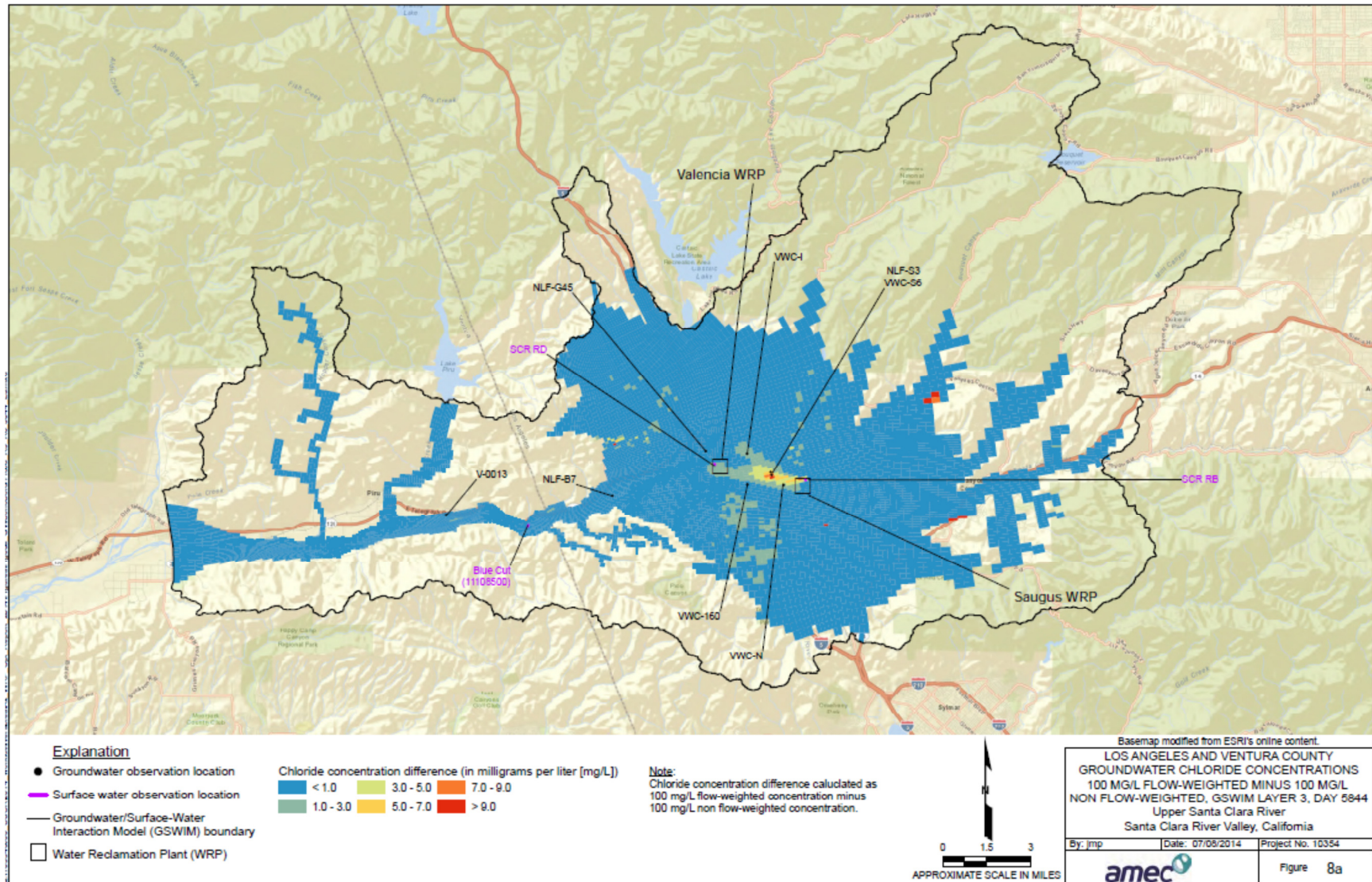
Bouquet and San Francisquito Canyons Subbasin. The difference in concentration between the two scenarios at this well peaked at 8.9 mg/L during peak drought conditions. These chloride concentration differences decreased to almost zero in the eight subsequent years of simulation. Overall, the average difference in chloride concentrations between the flow-weighted and non-flow weighted simulations at this well was 1.3 mg/L over the 24-year simulation period (Figure 4).

**Figure 4: Simulated groundwater chloride concentrations at VWC-S6**



By area, during the peak drought, 85.37% of the Bouquet and San Francisquito Canyons Subbasin showed a difference of less than 1 mg/L in chloride concentration between the flow weighted and non-flow weighted simulations (Table 2). The area showing the greatest difference (> 9.0 mg/L) accounted for 0.09% of the subbasin (Figure 5). During the after-drought period, 76.45% of the subbasin had a difference of less than 1 mg/L in chloride concentration. The area showing the greatest difference (3.0 - 5.0 mg/L) accounted for 1.74% of the subbasin.

**Figure 5: Difference in chloride concentrations between the flow-weighted and non-flow weighted scenarios under drought conditions in the alluvial aquifer**



Downstream of the Valencia WRP, concentrations in the Castaic Valley and Piru East Subbasins exhibit very little difference between the flow weighted and non-flow weighted scenario. By area, 98.55% and 99.75% of the Castaic Valley and Piru East Subbasins, respectively, showed chloride concentrations between the two scenarios differing by less than 1 mg/L during the peak drought period. During the after-drought period, 99.81% and 99.95% of these respective basins had a concentration difference of less than 1 mg/L.

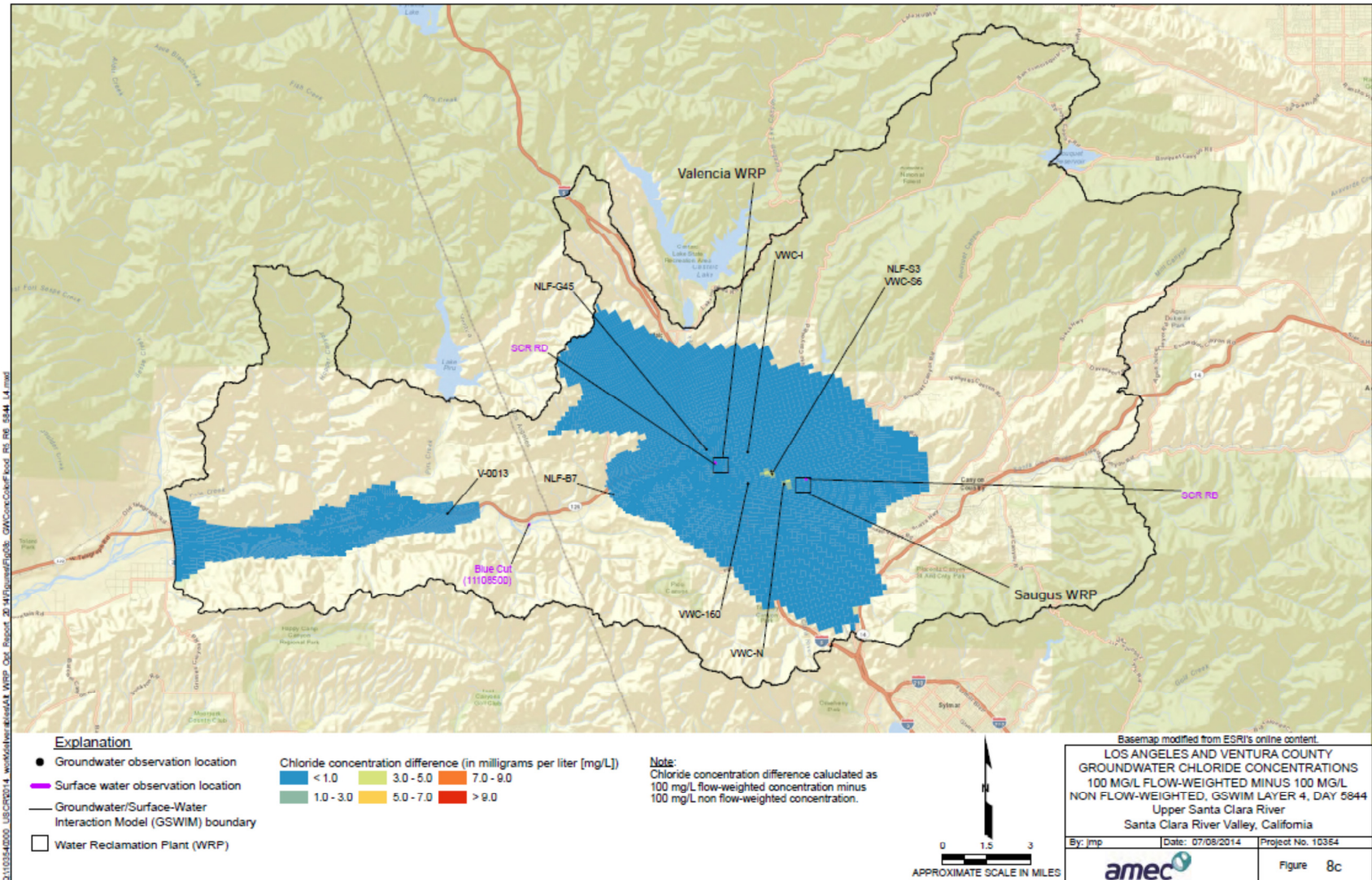
Saugus Formation

The difference in chloride concentration between the two modeled scenarios was much less in the Saugus Formation, and was concentrated in the upper layer of the aquifer, in small pockets underlying the Bouquet and San Francisquito Canyons Subbasin. The lesser impact to the Saugus Formation can be related to the fact that much of the flow in the model is occurring in the higher conductivity material of the alluvium. For example, well VWC-S6 showed a difference in chloride concentrations of 5.2 mg/L in the Saugus Formation, compared to 8.9 mg/L in the alluvium. By area, 99.76% of the upper layer of the Saugus Formation had a chloride concentration difference between the two scenarios of less than 1 mg/L during the peak drought period (Figure 6). Only 0.06% of the formation area showed a difference ranging from 3.0 to 5.0 mg/L. During the non-drought period, 99.38% of the Saugus Formation had a concentration difference of less than 1 mg/L, and 0.10% of the formation area had a concentration difference ranging between 3.0 and 5.0 mg/L.

**Table 2: Percent area in each aquifer exhibiting a difference in chloride concentration between the two scenarios of less than 1 mg/L during and after the simulated drought**

<b>Aquifer</b>	<b>Peak Drought</b>	<b>After Drought</b>
Bouquet and San Francisquito Canyons	85.37%	76.45%
Castaic Valley	98.55%	99.81%
Piru East	99.75%	99.95%
Saugus (upper layer)	99.76%	99.38%

**Figure 6: Difference in chloride concentrations between the flow-weighted and non-flow weighted scenarios under drought conditions in the Saugus Aquifer**



### 4.3. Schedule extension

To complete the project necessary to implement the TMDL in as short a time as practicable, the effort will be divided into a number of tasks to be designed and constructed concurrently. This division will include concurrent construction of:

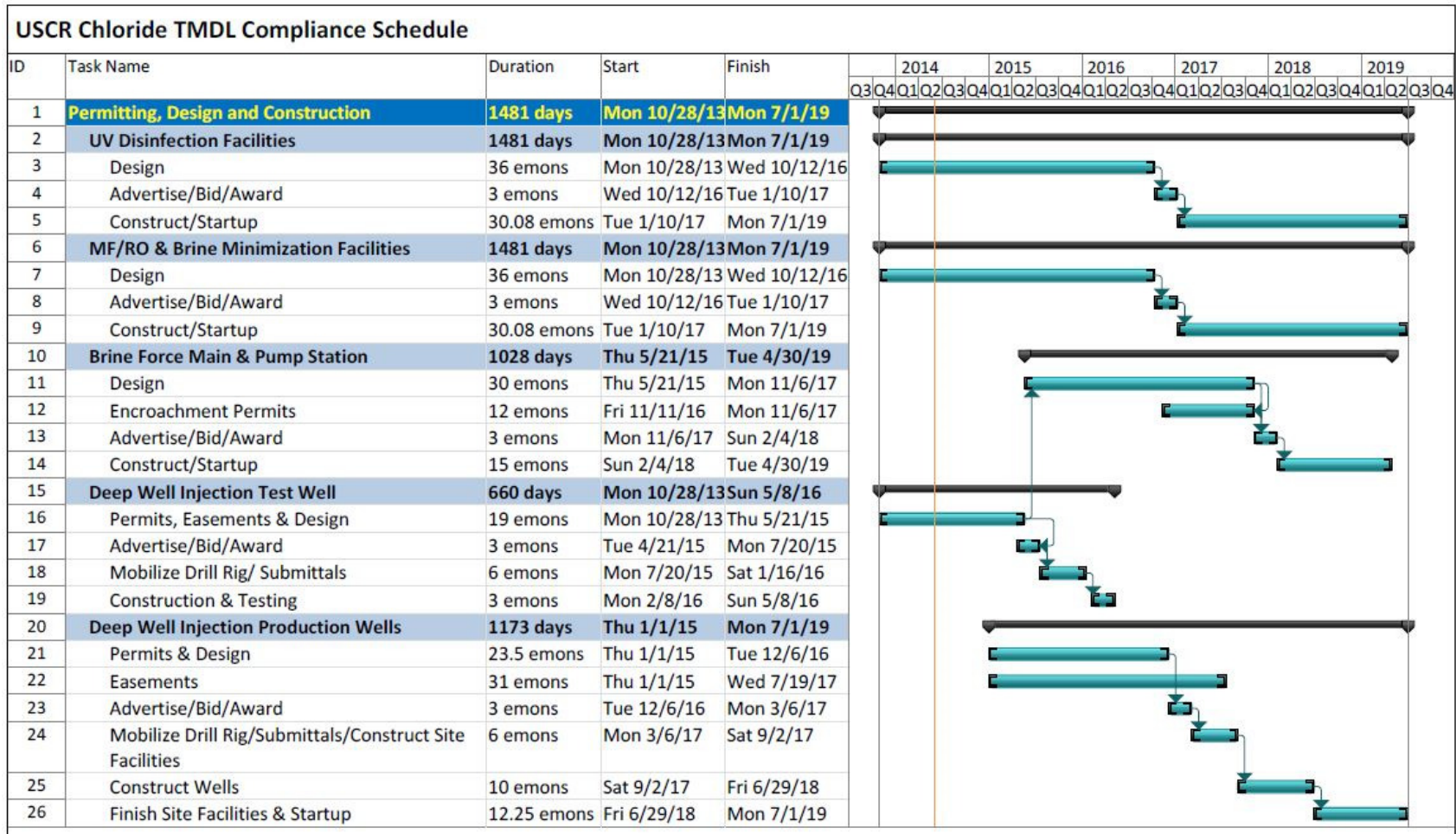
- UV disinfection facilities at Valencia and Saugus WRPs (69 months),
- MF/RO and brine minimization facilities at Valencia WRP (69 months),
- the brine force main and pump station (60 months),
- a deep well injection test well (31 months),
- final deep well injection production wells (86 months).

Due to the magnitude of the project, none of the alternatives can be completed by the current TMDL deadline of May 4, 2015. The SCVSD requests that the Regional Water Board extend the TMDL implementation deadline to July 2019 to provide the needed time for permitting, design, construction, and start-up. A chart that includes these activities with their associated durations, start dates and finish dates is presented in figure 7. A detailed description of the schedule justification is provided in Appendix B.

The revised TMDL contains enforceable interim deliverables based on the schedule in figure 7. The interim deliverables in the implementation schedule of the TMDL (Table 7-6.2 in the Basin Plan amendment) are approximately 6 months after the estimated completion dates in figure 7 and Appendix B to account for potential delays not under the control of SCVSD. The final compliance deadline is the same in the TMDL as in Appendix B; thus, it is reasonable to allow a six-month cushion for interim deliverables.



**Figure 7: USCR Chloride TMDL implementation schedule**



## 5. Proposed revisions

### 5.1. Water Quality Objectives

Implementation of the flow weighting option will not result in compliance with the 100 mg/L WQO in Reach 5 above Valencia WRP or Reach 6. In order to provide flexibility to the SCVSD, reduce compliance costs, and avoid the need to pump RO permeate upstream from the Valencia WRP to the Saugus WRP, staff proposes conditional SSOs that support the flow weighting compliance option, while still being protective of beneficial uses (see Sections 6 and 7).

SSOs for surface water are presented in Table 3. For Reach 4B and Reach 5 downstream of the Valencia WRP, the chloride WQO and the corresponding TMDL numeric target will remain 100 mg/L, but will be measured as a 3-month rolling average, which is required to protect the agricultural supply beneficial use. For Reach 6 and Reach 5 upstream of the Valencia WRP, the conditional chloride WQO and corresponding numeric target is 150 mg/L, measured as a 3-month rolling average. Application of the SSOs for Reach 6 and Reach 5 upstream of the Valencia WRP is contingent upon the operation of the described flow weighting projects.

**Table 3: Surface water objectives for Reaches 4B, 5, and 6 of the Santa Clara River**

Reach	Surface Water Quality Objective for Chloride (mg/L)	Rolling Averaging Period
6	150*	3-month
5 (upstream of Valencia WRP outfall 001)	150*	3-month
5 (downstream of Valencia WRP outfall 001)	100	3-month
4B	100	3-month

\* The conditional SSO of 150 mg/L for chloride in the surface water of Reach 6 and Reach 5 upstream of the Valencia WRP outfall 001 shall apply and supersede the existing WQOs of 100 mg/L only when flow weighting projects are in operation. Flow weighting means that discharges from the Saugus WRP can be permitted up to 150 mg/L, but that discharges from the Valencia WRP will vary based on the discharge quality of the Saugus WRP, always remaining under 100 mg/l, such that the combined flow-weighted concentration of chloride discharged from the two WRPs meets WQOs below the Valencia WRP. As described in section 5.2.1, the Valencia WRP is assigned a variable WLA less than 100 mg/L as a 3-month rolling average, which allows the Saugus WRP to discharge up to 150 mg/L as a 3-month rolling average, while still meeting the numeric target of 100 mg/L as a three-month rolling average immediately downstream of the Valencia WRP outfall 001. The interim milestones listed in Table 4 will ensure that the

facilities needed to attain flow-weighted WLAs are constructed in time for the Saugus and Valencia WRPs to attain final WLAs.

The objectives for chloride in Reaches 4B, 5 and 6 are applied as 3-month rolling averages because there is salt-sensitive agriculture in the area of Reach 4B and the LRE supplemental study recommended a 3-month averaging period for salt-sensitive crops (Newfields, 2008). The averaging period for the objectives in Reaches 5 and 6 must be at least as protective as a 3-month average because they flow into Reach 4B.

The proposed WQO for Reach 4B of 100 mg/L as a 3-month rolling average is not expected to cause exceedances of the existing WQO of 100 mg/L as an instantaneous maximum in Reach 4A. The results of previous modeling scenarios using GSWIM were evaluated to make this determination. Under the previous modeling scenarios, the concentrations in Reach 4A were predicted for situations when the Valencia WRP equaled 130 mg/L as a 3-month average. Under this scenario, concentrations in Reach 4 A were not predicted to exceed 100 mg/L as an instantaneous maximum except during the model-predicted period of August 2008. Based on these results for a discharge of 130 mg/L as a 3-month rolling average, it is not likely that a discharge of 100 mg/L as a 3-month rolling average would ever cause an exceedance of 100 mg/L as an instantaneous maximum downstream in Reach 4A.

## 5.2. Load and Waste Load Allocations

### 5.2.1. Conditional WLAs for Saugus and Valencia WRPs

The final conditional WLAs for chloride for the Saugus and Valencia WRPs shall apply only when flow-weighting projects are in operation by the SCVSD according to Table 4. If these flow-weighting conditions are not met, WLAs for each plant shall be based on WQOs for chloride of 100 mg/L as a 3-month rolling average.

The Saugus and Valencia WRPs will have final concentration-based conditional WLAs for chloride expressed as a flow-weighted average of the combined effluent of the Saugus and Valencia WRPs as presented in Table 3.

**Table 4: Conditional WLAs for Saugus and Valencia WRPs**

WRP	Concentration-based Conditional WLA for Chloride (mg/L)
Saugus	150 (3-month Average) 230 (Daily Maximum)
Valencia	$C_{VAL,3mo.av}$ (3-month Average) 230 (Daily Maximum)

Where:

$$C_{VAL,3mo.av} = \frac{1}{3} \sum_{m_i=1}^3 \left[ \frac{Q_{SAU,m_i}(100 - C_{SAU,m_i})}{Q_{VAL,m_i}} + 100 \right]$$

$m_i$  = month

$Q_{SAU,m_i}$  = Saugus WRP monthly flow in units of million gallons per day (MGD)

$Q_{VAL,m_i}$  = Valencia WRP monthly flow in MGD

$C_{SAU,m_i}$  = Saugus WRP monthly effluent chloride level in mg/L

$C_{VAL,m_i}$  = Valencia WRP monthly effluent chloride level in mg/L

$Q_{SAU}$  and  $Q_{VAL}$  shall not exceed the design flow

The WLA of 230 mg/L as a daily maximum for chloride is to protect threatened and endangered species. The Endangered Species Protection study (Advent-Environ, 2007), completed as part of the TMDL requirements, provided a review of technical literature regarding the chloride sensitivity of several endangered aquatic and riparian species to better understand the potential exposure and tolerance of these species to chloride in the Upper Santa Clara River. The study results supported the conclusion that the existing U.S. Environmental Protection Agency national freshwater aquatic life criterion for chloride (acute = 860 mg/L and chronic = 230 mg/L) was protective of threatened and endangered species in the Santa Clara River.

### **5.2.2. WLAs and LAs for other NPDES discharges and nonpoint sources**

Other NPDES discharges and nonpoint sources receive WLAs and LAs for chloride equal to 100 mg/L with a 3-month averaging period. These sources are not major sources of chloride and the nature of their discharges does not allow for flow weighting.

## **5.3. Schedule extension**

The proposed amendment to the TMDL provides SCVSD until July 1, 2019 to achieve the SSOs and wasteload allocations. The implementation schedule includes time for completion of planning, engineering design, and construction of the various phases of the project. More details about implementation tasks and milestones are provided in section 8 of this report.

## **5.4. Additional Changes for Clarity**

The majority of the proposed changes to the Basin Plan are to remove implementation measures associated with AWRM and to add new objectives based on the LRE that support SCVSD implementation projects. However, additional changes are also proposed to the Basin Plan for

clarity and to be consistent with the formatting of recent updates to Chapter 7 of the Basin Plan. The Problem Statement has been revised to remove references to the reach numbering scheme used in older Clean Water Act section 303(d) lists because the new reach numbering scheme has been in place for the past two 303(d) lists. In addition, the interim WLAs have been revised to include a narrative description of how interim effluent limits should be calculated in future permits based on the most recent discharge data.

## **6. Water Code Section 13241 Analysis**

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SCVSD submitted a report (Attachment C) containing technical and regulatory analysis to support site specific objectives for Reaches 4B, 5, and 6 of the Santa Clara River, including consideration of the factors set forth in Water Code section 13241 and an antidegradation analysis.

Water Code section 13241 requires the Regional Water Board to consider the following when establishing a water quality objective:

1. The past, present, and probable future beneficial uses of water,
2. The environmental characteristics of the hydrographic unit under consideration,
3. Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area,
4. Economic considerations,
5. The need for developing housing within the region, and
6. The need to develop and use recycled water.

The report considered all beneficial uses assigned to the Upper Santa Clara River and determined that the agricultural supply beneficial use (AGR) is the most sensitive use. Therefore, proposed SSOs designed to protect this use will be protective of other uses in the waterbody. The report found that the proposed SSOs and averaging periods for surface water within Reaches 5 and 6 are protective of the AGR beneficial use because surface waters and groundwater potentially impacted by these surface waters are not currently and have not historically been used as an irrigation supply for salt-sensitive crops. This situation is unlikely to change due to climatic conditions that impact the ability to grow salt-sensitive crops and because the use of irrigation water for crops is anticipated to decline in Reaches 5 and 6 due to planned urban development. The irrigation of salt-sensitive crops is a past, present, and probable future beneficial use of Reach 4B surface water. The proposed SSO in Reach 4B, including a 3-month rolling averaging period, will be fully protective of salt-sensitive agricultural uses in the area.

The environmental characteristics of the USCR were considered, as well as the impact the proposed SSOs would have on in-stream and riparian species and habitat. The proposed SSOs are substantially below the existing USEPA aquatic life chloride criteria, which according to the TES Study are protective of the most chloride-sensitive organisms for which data are available. Therefore, it is not expected that the proposed SSOs will result in any harm to in-stream or riparian species or habitat.

The report also considered water quality conditions that could reasonably be achieved through the coordinated control of all factors. Source control measures for the various sources of chloride in the Upper Santa Clara River were evaluated. Self-regenerating water softener control measures have been implemented. UV disinfection was identified as a control measure for wastewater disinfection along with end-of-pipe microfiltration/reverse osmosis. As detailed in the report, given the potential negative impacts of the additional RO, pipe, and associated pumping that would result from implementation of the non-flow weighted scenario, the flow-weighted scenario is the preferred compliance option for SCVSD. The coordinated control of all factors in the manner described above will result in water quality sufficient to achieve the proposed SSOs. Therefore, the conditions that can be achieved by the flow-weighting scenario and the self-regenerating water softener controls are those that can be reasonably achieved.

Baseline economic conditions were evaluated as well. The report evaluates costs necessary to implement an advanced treatment alternative for compliance with final effluent chloride limits of 100 mg/L applied as instantaneous maxima for the Saugus and Valencia WRPs. The non-flow weighted scenario would require the construction of an 8.8 MGD MF/RO facility at the Valencia WRP, a RO product line to the Saugus WRP, and a brine disposal pipeline to a series of deep wells for injection disposal. The capital costs for constructing the facility at the Valencia WRP and the pipelines were estimated at \$145,000,000. An additional \$5,000,000 in annual costs would be needed to operate and maintain the advanced treatment and brine disposal systems. The flow-weighted scenario capital costs would be \$120,400,000 and the annual operation and maintenance costs would be \$4,170,000. The rates per sewage unit for the flow-weighted scenario will be about \$2 per month less than the rates per sewage unit for the non-flow weighted scenario. Santa Clarita's existing sewage rate is well below the statewide and local averages, and this project will not raise the rates about these averages.

The report found that the proposed WQOs would not restrict the development of housing near the affected reaches of the Santa Clara River. The SSOs will not result in discharge requirements that affect housing or economic costs related to housing development. Much of the development needs for housing in the Upper Santa Clara River watershed will be accommodated by the planned Newhall development, which has its own treatment facility with a planned discharge limit of 100 mg/L. In addition, the proposed SSOs and implementation of the flow-weighting scenario will support the ability of the Valencia and Saugus WRPs to accommodate new connections.

Finally, the report found that the proposed SSOs, including their averaging periods, will not cause any reduction in the amount of recycled water available for use in the Santa Clarita Valley and will support objectives of the Castaic Lake Water Agency's (CLWA) 2010 Urban Water Management Plan (UWMP). The UWMP projects that water demand in the area will continue to increase, and that additional sources of water including recycled water will be necessary to meet projected demand. The proposed SSOs are consistent with the secondary MCLs in Title 22 and will not result in chloride concentrations that exceed these levels. However, without the proposed SSOs, additional advanced treatment would be required, leading to the potential loss of up to 0.13 MGD of available recycled water supplies (if all water was recycled) to brine disposal for deep well injection.

## 7. Antidegradation analysis

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The report considered whether the proposed SSOs are consistent with the State's Antidegradation Policy as contained in State Water Resource Control Board Resolution 68-16, as well as the federal antidegradation policy (Appendix C). The report found that when implemented with existing efforts to reduce chloride discharges from residences, the revised water quality objectives will be consistent with the maximum benefit to the people of the State and protective of all beneficial uses that apply to the affected waters, and will result in the best practicable treatment or control of discharges necessary to assure that pollution or nuisance will not occur and the highest quality water consistent with the maximum benefit of the people of the State will be maintained.. This assessment is based on the following findings:

- The highest water quality in the Santa Clara River since adoption of the state anti-degradation policy occurred in the 1970s, when water quality consistently met the water quality objective of 100 mg/L. Since the 1970s, there have been temporary allowances of increased chloride levels in the receiving water to accommodate emergency drought conditions and to allow time to address increasing chloride levels in supply water. Therefore, the appropriate baseline for comparison under Resolution 68-16 and the federal antidegradation policy is 100 mg/L, while recognizing that higher levels of chloride were historically permitted during drought conditions.
- While the proposed SSOs allow for an increase in chloride loading and higher in-stream concentrations above existing water quality objectives, the increased loading will not adversely affect existing or probable beneficial uses of the Santa Clara River.
- The additional chloride loading and higher allowable in-stream concentrations resulting from the proposed SSOs are offset by important economic and social development gained through the implementation of the SSOs as compared to the existing WQOs. These benefits include:
  - Reduced costs and associated impacts from higher sewer rates.
  - Reduced environmental impacts from the construction of additional RO capacity and the additional pump station and pipeline from the Valencia WRP to the Saugus WRP.
  - Reduced energy use and greenhouse gas emissions, which will support reduction goals for greenhouse gases outlined in AB32.
  - Potential for additional water resources for recycled water and/or salt-sensitive agriculture and aquatic habitat through the reduction of water loss to brine waste and the discharge of high quality RO permeate in Reach 5, just upstream of salt-sensitive agriculture.
- The implementation plan upon which the SSOs are conditioned requires construction and operation of an 8.8 MGD RO/MF facility at the Valencia WRP for advanced treatment of

discharged wastewater, with an estimated capital cost of \$120M and yearly operating cost of \$4.2M.

While site-specific objectives for groundwater are not proposed, the antidegradation analysis considered the impacts of the proposed surface water quality objective changes and expected discharges on groundwater quality. As discussed in section 4.2.3, the model results to date show that the impacts on groundwater from the proposed SSOs are limited temporally and spatially (figures 4 to 6). While impacts to the alluvial basins are predicted to occur during some time periods over the 24-year simulation period, impacts to the deeper Saugus aquifer may take longer to occur. Additional studies of groundwater impacts associated with the proposed SSOs should be addressed through additional GSWI modeling. Additionally, the Salt and Nutrient Management Plan (SNMP) for the Santa Clara River Valley East Subbasin will provide a comprehensive analysis of the groundwater basins and identify any potential mitigation measures that may be needed to address sources of salts to the groundwater basins. The SNMP will include a basinwide monitoring program that will allow evaluation of changes in groundwater concentrations. In addition, SCVSD will be required to conduct groundwater monitoring to evaluate project impacts and ensure that groundwater is not degraded, as described in section 8.3.2.

## 8. Implementation

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The conditional SSOs proposed in Section 4.1 for Reach 5 above Valencia WRP outfall 001 and Reach 6 are conditioned upon the construction and operation of flow weighting projects as described in section 4.2.2. The Valencia WRP will have effluent limits calculated on a rolling 3-month average based upon the relative flows of the Saugus and Valencia WRPs and the concentration of chloride in the Saugus WRP effluent over the preceding 3 months. If flow weighting projects are not in operation, the WQOs are 100 mg/L as a 3-month rolling average.

The conditional WLAs will be implemented through NPDES permits for the Valencia and Saugus WRPs. Permit conditions will be contingent upon participation by SCVSD in the Salt and Nutrient Management Plan (SNMP) stakeholder-led group or other efforts to reduce the effects of flow weighting on the quality of the underlying groundwater basins, including the alluvial basins underlying Reaches 5 and 6 and the Saugus Formation as well as monitoring to assess any impacts to groundwater over time.

### 8.1. Implementation of Reach 5 and 6 Conditional WLA

Beginning July 1, 2019, conditional WLAs for the Saugus and Valencia WRPs (Table 3) will become effective contingent upon completion and operation of the flow-weighted projects. Prior to July 1, 2019, Saugus and Valencia WRPs will have interim WLAs for chloride equal to the interim limit for chloride specified in the TMDL revision adopted by Resolution No. R4-04-004. However, prior to the issuance/reissuance of the Saugus and Valencia NPDES permits, the Saugus and Valencia WRPs shall submit recent potable water chloride concentration data, final



effluent chloride data, and the change between the two. These data shall be used to recalculate the interim limits during the NPDES permit renewal/reissuance process to reflect current water quality conditions.

## **8.2. Implementation Schedule**

The TMDL provides SCVSD until July 1, 2019 to achieve the SSOs and wasteload allocations. The implementation schedule includes time for completion of planning, engineering design, and construction of the various phases of the project with a final date for completion of all tasks of July 1, 2019. The implementation schedule contains enforceable interim deliverables based on the schedule in figure 7. The interim deliverables in the implementation schedule of the TMDL (Table 7-6.2 in the Basin Plan amendment) are approximately 6 months after the estimated completion dates in figure 7 and Appendix B to account for potential delays not under the control of SCVSD. The final compliance deadline is the same in the TMDL as in Appendix B; thus, it is reasonable to allow a six-month cushion for interim deliverables. The proposed implementation of compliance measures schedule and 9-month deliverables are summarized in Table 5 below.

SCVSD will provide detailed semi-annual progress reports documenting the initiation and conclusion of each related task and sub-task outlined in Figure 7 until completion of the complete project wastewater facilities.

**Table 5: Implementation schedule and 9-month deliverables.**

Project	Sub-Task	Implementation Deadlines	9-month Deliverable Schedule					
			4/1/15 to 12/31/15	1/1/16 to 9/30/16	10/1/16 to 6/30/17	7/1/17 to 3/30/18	4/1/18 to 12/31/18	1/1/19 to 9/30/19
Deep Well Injection Test Well	Complete Design	9/30/2015	X					
	Award Contract	1/20/2016		X				
	Construction and Testing	11/8/2016			X			
UV Disinfection Facilities at Valencia and Saugus WRPs	Complete Design	4/12/2017			X			
	Award Contract	7/10/2017				X		
	Start Onsite Construction	3/10/2018				X		
	Startup	7/1/2019						X
MF/RO and Brine Minimization Facilities	Complete Design	4/12/2017			X			
	Award Contract	7/10/2017				X		
	Start Onsite Construction	3/10/2018				X		
	Startup	7/1/2019						X
Final Deep Well Injection Production Wells	Complete Design	6/6/2017			X			
	Start Construction of Site Facilities	12/29/2018					X	
	Startup	7/1/2019						X
Brine Force Main and Pump Station	Complete 50% Design	11/6/2017				X		
	Complete Design	5/6/2018					X	
	Startup	7/1/2019						X

## **8.3. Monitoring**

### **8.3.1. NPDES monitoring**

The SCVSD along with other NPDES permittees will conduct effluent and receiving water monitoring associated with each discharge to ensure that chloride waste load allocations are being met. This monitoring will be consistent with and at least equivalent to monitoring specified in existing permits.

### **8.3.2. Trend monitoring**

#### *Surface water*

The SCVSD will submit a monitoring plan to conduct chloride trend monitoring to ensure that WQOs are being met, and downstream surface water quality is not degraded due to implementation of compliance measures to attain the proposed WQO and TMDL revisions. The monitoring plan shall include a plan to collect surface water samples from Reaches 4B, 5 and 6 and analyze them for chloride at a minimum of once per month. The plan should propose a monitoring schedule that extends beyond the final implementation deadline of this TMDL to support continual evaluation of impacts of compliance measures to surface water quality.

#### *Groundwater*

The SCVSD will submit a monitoring plan to conduct chloride trend monitoring to ensure that groundwater is not degraded due to implementation of compliance measures. The SCVSD monitoring plan shall include plans to monitor chloride in groundwater and identify representative wells to be approved by the Regional Water Board Executive Officer, in the groundwater basins underlying Reaches 5 and 6 (Santa Clara Bouquet/San Francisquito Canyon basin and Saugus basin). The groundwater monitoring plan shall include plans to monitor chloride at a minimum of twice per year. At a minimum, the monitoring plan should propose a network of three groundwater wells with multiple screens to evaluate impacts to groundwater. The plan should propose a monitoring schedule that extends beyond the final implementation deadline of this TMDL to support continual evaluation of impacts of compliance measures to groundwater quality.

This TMDL shall be reconsidered if chloride trend monitoring indicates degradation of surface water or groundwater due to implementation of compliance measures.

## **9. State Mandates**

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Article XIII B, Section 6(a) of the California Constitution provides that whenever “any state agency mandates a new program or higher level of service on any local government, the state shall provide a subvention of funds to reimburse that local agency for the costs of the program or increased level of service.” The requirements of this action do not constitute state mandates that

are subject to a subvention of funds for several reasons, including, but not limited to, the following.

First, this action does not mandate a new program or higher level of service because the chloride water quality objectives for the Santa Clara River was first established in 1975. The purpose of this action is to incorporate less stringent requirements by adding an averaging period to the existing chloride water quality objectives for Reaches 4B, 5, and 6 of the USCR, establishing conditional SSOs for Reaches 5 and 6 of the USCR, and revising the USCR Chloride TDML in order to support SCVSD's proposed flow-weighted projects. Thus, this action imposes a lower level of service in order to make it less expensive for the SCVSD to comply with federal water quality standards. Further, if the United State Environmental Protection Agency were to have adopted a TMDL for chloride in the USCR, it would have done so without an implementation plan, meaning that final WLAs and load allocations would take effect immediately upon adoption of the TMDL, rather than the lengthy implementation time provided by the Regional Water Board in its TMDL.

Second, this action does not involve requirements unique to local government. When adopted, the TMDL analyzed all sources of chloride discharges and determined that the greatest load of chloride came from the WRPs that the SCVSD owns and operates. As such, the TMDL, and revisions to it, treat discharges with an even hand, irrespective of status and are not peculiar to local agencies such as the SCVSD.

Third, the revision of water quality objectives and TMDLs constitutes federal mandates pursuant to the Clean Water Act. Clean Water Act section 303 mandates the state to adopt water quality standards and TMDLs for waterbodies that fail to meet such standards. This action continues and refines previous planning goals and objectives that were set forth in prior versions of the Basin Plan and USCR Chloride TMDL based on special studies conducted pursuant to the TMDL in order to achieve water quality objectives. Pursuant to federal law, the Regional Water Board periodically reviews its Basin Plan and water quality standards. Based on special studies, the Regional Water Board has determined that it is appropriate to revise the existing water quality objectives, establish conditional SSOs, and revise the TMDL to provide flexibility to SCVSD and still be fully protective of beneficial uses.

Fourth, like the AWRM, the SCVSD specifically proposed that the Board take this action and advocated and urged the Board to add this Basin Plan amendment to reduce the compliance costs the SCVSD would otherwise incur. This Regional Water Board action is specifically being taken to implement the SCVSD's proposed flow-weighting projects.

Lastly, the SCVSD can avoid the expenditure of tax monies by raising service charges, fees, or assessments to pay for implementation of the provisions. The SCVSD is authorized to impose and increase fees and charges for wastewater management services under Health and Safety Code section 5471. On July 7, 2014, the SCVSD Board of Directors voted to fund Alternative 2 by increasing sewer service charge rates for homeowners and businesses. The SCVSD's project will take approximately 4 years to complete and sewage rates will increase by about \$2 per month for about four years and then cap out at approximately \$8 per month per household. Even with the increased sewer rates recently adopted by the SCVSD, Santa Clarita's sewage rate is well below the statewide and local averages, and this project will not raise the rates about these averages.

## References

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Advent-Environ, 2007. *Evaluation of Chloride Water Quality Criteria Protectiveness of Upper Santa Clara River Aquatic Life: An Emphasis on Threatened and Endangered Species*. May 2007.

California Code of Regulation, 2006. *Title 22, Division 4, Environmental Health. Chapter 15, Domestic Water Quality and Monitoring Regulations. Article 16, Secondary Water Standards (R-21-03)*, May 2006

CH2M Hill, 2005. *Final Report: Literature Evaluation and Recommendations, Upper Santa Clara River Chloride TMDL Collaborative Process*. September 2005.

CH2M Hill and HGL HydroGeologic, Inc., 2008. *Task 2B-1-Numerical Model Development and Scenario Results East and Piru Subbasins, Upper Santa Clara River Chloride TMDL Collaborative Process*. February 2008.

Kennedy/Jenks Consultants, Nancy Clemm, Luhdorff & Scalmanini Consulting Engineers, Stacy Miller Public Affairs, 2011. *2010 Urban Water Management Plan, prepared for Castaic Lake Water Agency (CLWA), CLWA Santa Clarita Water Division, Newhall County Water District, and Valencia Water Company*, June 2011.

Los Angeles Regional Water Quality Control Board, 1994. *Water Quality Control Plan - Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties*.

Los Angeles Regional Water Quality Control Board, 2002. Resolution No. 2002-018. *Amendment to the Water Quality Control Plan (Basin Plan) for the Los Angeles Region to incorporate a Total Maximum Daily Load for Chloride in the Upper Santa Clara River*, Resolution No. 2002-018.

Los Angeles Regional Water Quality Control Board, 2003a. Resolution No. 2003-0014. *Remanding an amendment to the Water Quality Control Plan for the Los Angeles Region to incorporate a Total Maximum Daily Load for Chloride in the upper Santa Clara River*, Resolution No. 2003-0014.

Los Angeles Regional Water Quality Control Board, 2003b. Resolution 03-008. *Amendment to the Water Quality Control Plan (Basin Plan) for the Los Angeles Region to incorporate a Total Maximum Daily Load for Chloride in the Upper Santa Clara River*, Resolution 03-008.

Los Angeles Regional Water Quality Control Board, 2004. Resolution No. 04-004. *Revision of Interim Waste Load Allocations and Implementation Plan for Chloride in the Amendment to the Water Quality Control Plan for the Los Angeles Region to Include a TMDL for Chloride in the Upper Santa Clara River*, Resolution 03-008.

Los Angeles Regional Water Quality Control Board, 2006. Resolution No. 06-016. *Amendment to the Water Quality Control Plan for the Los Angeles Region through revision of the Implementation Plan for the Upper Santa Clara River Chloride TMDL*, Resolution 04-004.

Los Angeles Regional Water Quality Control Board, 2007. Resolution No. 07-018. *Amendment to the Water Quality Control Plan for the Los Angeles Region to Subdivide Reach 4 of the Santa Clara River*, Resolution No. 07-018.

Los Angeles Regional Water Quality Control Board, 2008. Resolution No. 08-012. *Amendment to the Water Quality Control Plan for the Los Angeles Region to adopt Site Specific Chloride Objectives and to revise the Upper Santa Clara River Chloride TMDL*, Resolution No. 08-012.

Los Angeles Regional Water Quality Control Board, 2009a. Order No. R4-2009-0074. *Waste Discharge Requirements for the Santa Clarita Valley Sanitation District of Los Angeles County, Valencia Water Reclamation Plant discharge to Santa Clara River*. Order No. R4-2009-0074, NPDES Permit No. CA0054216, CI 4993.

Los Angeles Regional Water Quality Control Board, 2009b. Order No. R4-2009-0075. *Waste Discharge Requirements for the Santa Clarita Valley Sanitation District of Los Angeles County, Saugus Water Reclamation Plant discharge to Santa Clara River*. Order No. R4-2009-0075, NPDES Permit No. CA0054313.

Los Angeles Regional Water Quality Control Board, 2012. Administrative Civil Liability Complaint (ACLC) (R4-2012-0160). *Complaint No. R4-2012-0160 against Santa Clarita Valley Sanitation District of Los Angeles County, Valencia Water Reclamation Plant, 28185 The Old Road, Valencia CA (Order No. R4-2009-0074, NPDES Permit No. CA0054216, CI 4993) and Saugus Water reclamation Plant, 26200 Springbrook Avenue, Santa Clarita, CA (Order No. R4-2009-0075, NPDES Permit No. CA0054313, CI 2960)*.

Newfields, 2007. *Technical Memorandum Compliance Averaging Period for Chloride Threshold Guidelines in Avocado*. December 2007.

Sanitation District of Los Angeles County, 2013. *Final Santa Clarita Valley Sanitation District Chloride Compliance Facilities Plan and EIR*. SCH#2012011010. October 2013

State Water Resources Control Board, 1968, Resolution No. 68-16. *Statement of Policy with Respect to Maintaining High Quality of Waters in California*, October 1968.

U.S. EPA, 1987. *Federal Antidegradation Policy*. 40 C.F.R. § 131.12.

# Appendix A - Modeling Report

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## **Appendix B - Schedule Justification**

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## **Appendix C - SSO and Antidegradation Report**

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