

Attachment B to Resolution No. R4-2014-010

Revision of the TMDL for Chloride in the Upper Santa Clara River

Revised by the California Regional Water Quality Control Board, Los Angeles Region on October 9, 2014.

Amendments

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Chapter 7. Total Maximum Daily Loads (TMDLs) Upper Santa Clara River TMDL

This TMDL was adopted by: The Regional Water Quality Control Board on October 24, 2002.

This TMDL was remanded by: The State Water Resources Control Board on February 19, 2003

This TMDL was adopted by: The Regional Water Quality Control Board on July 10, 2003.

This TMDL was revised and adopted by:

The Regional Water Quality Control Board on May 6, 2004.

This TMDL was approved by:

The State Water Resource Control Board on July 22, 2004

The Office of Administrative Law on November 15, 2004

The U.S. Environmental Protection Agency on April 28, 2005

This TMDL was revised and adopted by:

The Regional Water Quality Control Board on August 3, 2006.

This TMDL revision was approved by:

The State Water Resource Control Board on May 22, 2007.

The Office of Administrative Law on July 3, 2007.

This TMDL was revised and adopted by:

The Regional Water Quality Control Board on December 11, 2008.

This TMDL revision was approved by:

The State Water Resource Control Board on October 20, 2009.

The Office of Administrative Law on January 26, 2010.

The U.S. Environmental Protection Agency on April 6, 2010.

This TMDL was revised and adopted by:

The Regional Water Quality Control Board on October 9, 2014.

This TMDL revision was approved by:

The State Water Resource Control Board on December 16, 2014.

The Office of Administrative Law on March 18, 2015.

The U.S. Environmental Protection Agency on April 28, 2015.

Table 7-6.1 Upper Santa Clara River Chloride TMDL: Elements

Element	Regulatory Provisions															
<i>Problem Statement</i>	Elevated chloride concentrations are causing exceedances of the water quality objectives in Reach 5 and Reach 6 of the Santa Clara River (SCR). These reaches have been on the Clean Water Act (CWA) section 303(d) lists of impaired water bodies as impaired due to chloride since 1998. The objectives for these reaches were set to protect all beneficial uses; the agricultural supply beneficial use has been determined to be the most sensitive in the Upper Santa Clara River (USCR). Irrigation of salt sensitive crops such as avocados, strawberries, and nursery crops with water containing elevated levels of chloride results in reduced crop yields. Chloride levels in groundwater are also rising in Piru Basin, which underlies the reach downstream of Reach 5.															
<i>Numeric Target (Interpretation of the numeric water quality objective, used to calculate the allocations)</i>	<p>For Reach 4B and Reach 5 downstream of the Valencia Water Reclamation Plant (WRP) outfall 001, the numeric target for chloride in the surface water is 100 mg/L, measured as a 3-month rolling average, which is required to attain the water quality objective and protect the agricultural supply beneficial use.</p> <p>For Reach 6 and Reach 5 upstream of the Valencia WRP outfall 001, the numeric target for chloride in the surface water is equivalent to site specific objectives (SSOs) of 150 mg/L, measured as a 3-month rolling average, contingent upon the Santa Clarita Valley Sanitation District's (SCVSD) operation of flow-weighting projects. As described in the waste load allocation (WLA) section of this table, 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.</p> <p>Surface water quality objectives for Reaches 4B, 5, and 6 of the Santa Clara River are as follows:</p> <table border="1" data-bbox="459 1396 1360 1793"> <thead> <tr> <th data-bbox="459 1396 824 1528">Reach</th> <th data-bbox="824 1396 1182 1528">Surface Water Quality Objective for Chloride (mg/L)</th> <th data-bbox="1182 1396 1360 1528">Rolling Averaging Period</th> </tr> </thead> <tbody> <tr> <td data-bbox="459 1528 824 1577">6</td> <td data-bbox="824 1528 1182 1577">150*</td> <td data-bbox="1182 1528 1360 1577">3-month</td> </tr> <tr> <td data-bbox="459 1577 824 1661">5 (upstream of Valencia WRP outfall 001)</td> <td data-bbox="824 1577 1182 1661">150*</td> <td data-bbox="1182 1577 1360 1661">3-month</td> </tr> <tr> <td data-bbox="459 1661 824 1745">5 (downstream of Valencia WRP outfall 001)</td> <td data-bbox="824 1661 1182 1745">100</td> <td data-bbox="1182 1661 1360 1745">3-month</td> </tr> <tr> <td data-bbox="459 1745 824 1793">4B</td> <td data-bbox="824 1745 1182 1793">100</td> <td data-bbox="1182 1745 1360 1793">3-month</td> </tr> </tbody> </table> <p data-bbox="435 1829 1430 1898">* The SSO 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 water</p>	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
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														

Element	Regulatory Provisions
	<p>quality objectives of 100 mg/L as a 3-month rolling average only when flow weighting projects are in operation by the SCVSD according to the implementation section below. As described in the WLA section of this table, 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 3-month rolling average immediately downstream of the Valencia WRP outfall 001. The interim milestones listed in the implementation schedule in Table 7-6.2 ensure that the facilities needed to attain flow-weighted WLAs are constructed in time for the Saugus and Valencia WRPs to attain the final WLAs.</p>
<p>Source Analysis</p>	<p>The principal source of chloride into Reaches 5 and 6 of the Santa Clara River is discharges from the Saugus WRP and Valencia WRP, which are estimated to contribute 70% of the chloride load in Reaches 5 and 6. These sources of chloride accumulate and degrade groundwater in the lower area east of Piru Creek in the basin.</p>
<p>Linkage Analysis</p>	<p>A groundwater-surface water interaction (GSWI) model was developed to assess the linkage between chloride sources and in-stream water quality and to quantify the assimilative capacity of Reaches 4A, 4B, 5, and 6 and the groundwater basins underlying those reaches. GSWI was then used to predict the effects of WRP discharges on chloride loading to surface water and groundwater under a variety of future hydrology, land use, and water use assumptions, including future discharges from the Newhall Ranch WRP, in order to determine appropriate wasteload allocations (WLAs) and load allocations (LAs) and evaluate the effect of using WLAs expressed as a flow-weighted average between the Saugus and Valencia WRPs.</p> <p>The linkage analysis demonstrates that beneficial uses can be protected through a combination of SSOs for surface water and reduction of chloride levels from the Valencia WRP effluent through advanced treatment.</p>
<p>Waste Load Allocations (for point sources)</p>	<ul style="list-style-type: none"> • Conditional WLAs for Saugus and Valencia WRPs <p>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 the implementation section below. If these flow-weighting conditions are not met, WLAs for each plant shall be based on water quality objectives for chloride of 100 mg/L as a 3-month rolling average.</p> <p>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 follows:</p>

Element	Regulatory Provisions						
	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">WRP</th> <th style="text-align: center;">Concentration-based Conditional WLA for Chloride (mg/L)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Saugus</td> <td style="text-align: center;">150 (3-month Rolling Average) 230 (Daily Maximum)</td> </tr> <tr> <td style="text-align: center;">Valencia</td> <td style="text-align: center;">$C_{VAL, 3mo.av}$ (3-month Rolling Average) 230 (Daily Maximum)</td> </tr> </tbody> </table> <p>Where:</p> $C_{VAL,3mo.av} = 1/3 \sum_{m_i=1}^3 \left[\frac{Q_{SAU,m_i}(100 - C_{SAU,m_i})}{Q_{VAL,m_i}} + 100 \right]$ <p> Q_{SAU,m_i} = Saugus WRP monthly effluent flow in million gallons per day (MGD) Q_{VAL,m_i} = Valencia WRP monthly effluent 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 </p> <p>Q_{SAU,m_i} and Q_{VAL,m_i} shall not exceed the design flow during dry-weather periods</p> <ul style="list-style-type: none"> • WLAs for other NPDES discharges <p>Other NPDES discharges receive WLAs equal to 100 mg/L as a 3-month rolling average.</p>	WRP	Concentration-based Conditional WLA for Chloride (mg/L)	Saugus	150 (3-month Rolling Average) 230 (Daily Maximum)	Valencia	$C_{VAL, 3mo.av}$ (3-month Rolling Average) 230 (Daily Maximum)
WRP	Concentration-based Conditional WLA for Chloride (mg/L)						
Saugus	150 (3-month Rolling Average) 230 (Daily Maximum)						
Valencia	$C_{VAL, 3mo.av}$ (3-month Rolling Average) 230 (Daily Maximum)						
<p>Load Allocation (for non point sources)</p>	<p>The source analysis indicates nonpoint sources are not a major source of chloride.</p> <p>LAs are based on water quality objectives of 100 mg/L as a 3-month rolling average.</p>						

<p><i>Implementation</i></p>	<p>Refer to Table 7-6.2.</p> <p><u><i>Implementation of Upper Santa Clara River Site Specific Objectives and WLAs for Chloride</i></u></p> <p>The SSOs and WLAs for chloride will be implemented through effluent and receiving water limits, monitoring requirement and other conditions in NPDES permits for the Valencia and Saugus WRPs. The SSOs for chloride in the surface water of the USCR watershed shall apply and supersede the existing water quality objectives in Table 3-10 of the Basin Plan only when flow-weighting projects are in operation by SCVSD as described in the WLA section of this table and listed in Table 7-6.2. In addition, permit conditions will include participation by SCVSD in the Salt and Nutrient Management Plan (SNMP) stakeholder-led group or other efforts to reduce the effects of the SSOs and WLAs on the quality of the underlying groundwater basins, including the alluvial basins underlying Reaches 5 and 6 and the Saugus Formation.</p> <p>Prior to the deadline for achieving the final conditional WLAs, compliance shall be evaluated relative to the interim WLAs, below.</p> <p>The interim WLAs for chloride for the Saugus and Valencia WRPs are equal to the interim effluent limits for chloride specified in Resolution No. R4-2004-004. However, prior to the issuance/reissuance of the Saugus and Valencia NPDES permits, SCVSD shall, for each WRP, 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 effluent limits during the NPDES permit renewal/reissuance process to reflect current water quality conditions.</p> <p><u>Other Major NPDES Permits (including Newhall Ranch WRP):</u></p> <p>WLAs for other NPDES discharges will be implemented through effluent limits, monitoring requirements, and other permit conditions in NPDES permits.</p>
<p><i>Monitoring</i></p>	<p><u>NPDES monitoring:</u> NPDES Permittees will conduct chloride effluent and receiving water monitoring to ensure that chloride water quality objectives and waste load allocations are being met.</p> <p><u>Trend monitoring:</u> The SCVSD will submit to the Regional Board and implement upon approval a monitoring plan to conduct chloride trend monitoring to ensure that water quality objectives and waste load allocations are being met, downstream surface water quality is not</p>

	<p>degraded, and groundwater underlying Reach 5 upstream of the Valencia WRP outfall 001 and Reach 6 is not degraded due to implementation of compliance measures by SCVSD. The monitoring plan shall include a plan to collect water samples and analyze them for chloride in surface water for Reaches 4B, 5, and 6 at a minimum of once per month, and in groundwater in the alluvial basins underlying Reaches 5 and 6 and the Saugus Aquifer at a minimum of twice per year. At a minimum, the monitoring plan should include a network of three groundwater wells with multiple screens to evaluate impacts to groundwater. The plan should include 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 and groundwater quality. This TMDL shall be reconsidered if chloride trend monitoring indicates degradation of groundwater or surface water due to implementation of compliance measures.</p>
<p><i>Margin of Safety</i></p>	<p>An implicit margin of safety is incorporated through conservative model assumptions and statistical analysis.</p>
<p><i>Seasonal Variations and Critical Conditions</i></p>	<p>During dry weather conditions, less surface flow is available to dilute effluent discharge, groundwater pumping rates for agricultural purposes are higher, groundwater discharge is lower, poorer quality groundwater may be drawn into the aquifer, and evapotranspiration effects are greater than in wet weather conditions. During drought, reduced surface flow and increased groundwater extraction continues through several seasons with greater impacts on groundwater resources and discharges. Dry and critically dry periods affecting the Sacramento and San Joaquin River Valleys reduce fresh-water flow into the Sacramento-San Joaquin Delta and result in higher than normal chloride concentrations in the State Water Project supply within the California aqueduct system. These increased chloride levels are transferred to the upper Santa Clara River. These critical conditions were included in the GSWI model to determine appropriate allocations and implementation scenarios for the TMDL.</p>

Table 7-6.2. Upper Santa Clara River Chloride TMDL: Implementation Schedule

Implementation Tasks	Completion Date
<p>1. Alternate Water Supply</p> <p>a) Should (1) the in-river concentration at Blue Cut, the Reach 4B boundary, exceed the water quality objective of 100 mg/L, measured for the purposes of this TMDL as a three-month rolling average, (2) each agricultural diverter provide records of the diversion dates and amounts to the Regional Board and Santa Clarita Valley County Sanitation Districts of Los Angeles County (SCVSD) for at least 2 years after the effective date of the TMDL and (3) each agricultural diverter provides photographic evidence that diverted water is applied to avocado, strawberry or other chloride sensitive crop and evidence of a water right to divert, then the SCVSD will be responsible for providing an alternative water supply, negotiating the delivery of alternative water by a third party, or providing fiscal remediation to be quantified in negotiations between the SCVSD and the agricultural diverter at the direction of the Regional Board until such time as the in-river chloride concentrations do not exceed the SSO.</p> <p>b) Should the instream concentration exceed 230 mg/L more than two times in the three year period, the discharger identified by the Regional Board Executive Officer shall be required to submit, within ninety days of a request by the Regional Board Executive Officer, a workplan for an accelerated schedule to reduce chloride discharges.</p>	<p>05/04/2005 (Does not apply upon completion of Task 4)</p>
<p>2. Trend monitoring: The SCVSD will submit to the Regional Board and upon approval implement a revised monitoring plan to conduct chloride trend monitoring to ensure that water quality objectives and waste load allocations are being met, downstream surface water quality is not degraded, and groundwater underlying Reach 5 upstream of the Valencia WRP outfall 001 and Reach 6 is not degraded due to implementation of compliance measures by SCVSD. The monitoring plan shall include a plan to collect water samples and analyze them for chloride in surface water for Reaches 4B, 5, and 6 at a minimum of once per month. The monitoring plan shall also include a plan for chloride trend monitoring in the alluvial groundwater basins underlying Reaches 5 and 6 and in the Saugus Aquifer at a minimum of twice a year. At a minimum, the monitoring plan should include a network of three groundwater wells with multiple screens to evaluate impacts to groundwater. The plan will include 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 and groundwater quality. This TMDL shall</p>	<p>9/30/2015</p>

Implementation Tasks	Completion Date
be reconsidered if chloride trend monitoring indicates degradation of groundwater or surface water due to implementation of compliance measures.	
3. Begin monitoring per approved SCVSD revised monitoring plan completed in Task 2.	Six months after Executive Officer approval of Task 2 revised monitoring plan for SCVSD
<p>4. Implementation of Compliance Measures by SCVSD</p> <p>a) Deep Well Injection Test Well</p> <p> i. Complete design for deep well test well</p> <p> ii. Award contract for deep well injection test well</p> <p> iii. Construction and testing of test well</p> <p>b) UV Disinfection Facilities at Valencia and Saugus WRPs</p> <p> i. Complete design of UV disinfection facilities</p> <p> ii. Award contract for UV disinfection facilities</p> <p> iii. Start onsite construction of UV disinfection facilities</p> <p> iv. Start-up of UV disinfection facilities</p> <p>c) Microfiltration/Reverse Osmosis (MF/RO) and Brine Minimization Facilities</p> <p> i. Complete design of MF/RO and brine minimization facilities</p> <p> ii. Award contract for MF/RO and brine minimization facilities</p> <p> iii. Start onsite construction of MF/RO and brine minimization facilities</p> <p> iv. Start-up of MF/RO and brine minimization facilities</p> <p>d) Final Deep Well Injection Production Wells</p> <p> i. Complete design for the final deep well injection production</p>	<p></p> <p>09/30/15</p> <p>01/20/16</p> <p>11/08/16</p> <p></p> <p>4/12/2017</p> <p>7/10/2017</p> <p>3/10/2018</p> <p>7/1/2019</p> <p></p> <p>4/12/2017</p> <p>7/10/2017</p> <p>3/10/2018</p> <p></p> <p>7/1/2019</p>

Implementation Tasks	Completion Date
<p>wells</p> <p>ii. Start onsite construction</p> <p>iii. Start-up of the deep well injection production wells</p> <p>e) Brine Force Main and Pump Station</p> <p>i. Complete 50% design of brine force main and pump station</p> <p>ii. Complete design of brine force main and pump station</p> <p>iii. Start-up of the brine force main and pump station</p> <p>The Regional Board may consider extending some of the completion dates of this task as necessary to account for events beyond the control of the SCVSD.</p>	<p>6/6/2017</p> <p>12/29/2018</p> <p>7/1/2019</p> <p>11/6/2017</p> <p>5/6/2018</p> <p>7/1/2019</p>
<p>5. Progress reports will be submitted by the SCVSD to the Regional Board on a semiannual basis for Task 4 and an annual basis for Task 3. Progress reports shall include supporting documentation that tasks were completed by the deadline.</p>	<p>Semiannually for Task 4 (10/31/15, 4/30/16, 10/31/16, 4/30/17, 10/31/17, 4/30/18, 10/31/18, 4/30/19, 10/31/19); Annually for Task 3 (Eighteen months after Executive Officer approval of Task 2 monitoring plan for SCVSD, and annually thereafter)</p>
<p>6. The interim WLAs for chloride shall remain in effect until the deadline for completion of the SCVSD flow weighting project facilities identified in Task 4. By that date, SCVSD shall achieve compliance with the applicable water quality objectives and WLAs for chloride in the USCR.</p>	<p>07/01/2019</p>