U.S. Environmental Protection Agency

Region IX

Total Maximum Daily Load for Chloride in the Santa Clara River, Reach 3

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SECTION 1: INTRODUCTION

The Santa Clara River Reach 3 Total Maximum Daily Load (TMDL) for chloride is being established in accordance with Section 303 (d) of the Clean Water Act, because the State of California has determined that the water quality standard for chloride for Reach 3 of the Santa Clara River is exceeded. In accordance with Section 303(d), the State of California periodically identifies "those waters within its boundaries for which the effluent limitations … are not stringent enough to implement any water quality standard applicable to such waters."

Chloride levels in Reach 3 of the Santa Clara River exceed the water quality objective (WQO) of 80 mg/L for chloride in Reach 3 established in the Water Quality Control Plan, Los Angeles Region *(Basin Plan)*, (CRWQCB-LA, 1994). Due to excessive chloride, Santa Clara River (Reaches 3, 5, and 6) is listed on the State's 303(d) list of impaired water bodies.[1] The Clean Water Act requires that Total Maximum Daily Load (TMDL) be established to restore these reaches of the Santa Clara River and implement the established water quality standards for chloride.

EPA is establishing a TMDL for Reach 3 at this time. Although EPA proposed to establish TMDLs for Santa Clara River Reaches 3, 5, and 6, EPA is not establishing final chlorides TMDLs for Reaches 5 and 6 at this time. The State of California is currently in the process of adopting TMDLs for Reaches 5 and 6 (CARWQCB, 2003), and the State has indicated its intention to adopt these TMDLs during 2004 (personal communication with managers at the CARWQCB and State Water Resources Control Board, June 11, 2003). Based on our review of available data and information, EPA has concluded that Santa Clara River Reaches 5 and 6 exceed applicable water quality standards for a chloride and that TMDLs are necessary for this reason. However, based on the State's assurances that it will complete adoption of the TMDLs for Reaches 5 and 6 in the near future, EPA has decided not to establish them at this time. EPA

[1] The 303 (d) list identifies the impaired reaches as 3, 7 and 8. However, reaches 7 and 8 in fact correspond to those identified as reaches 5 and 6 in the Basin Plan and in this TMDL. We're using the designations of 5 and 6 in this TMDL to correspond to the Basin Plan. The incorrect identification of the reaches occurred during transmission of the 1998 list from State Board to EPA.

may reconsider this decision not to establish TMDLs for Reaches 5 and 6 if the State fails to complete the TMDLs as scheduled.

This TMDL establishes wasteload and load allocations for Reach 3. In accordance with a consent decree (Heal the Bay, Inc. et. al. v. Browner, No. 98-4825, March 22, 1999), June 20, 2003 is the deadline for establishment of the TMDL for Reach 3. Because the State will not be able to complete adoption of a Chloride TMDL for Reach 3 of the Santa Clara River by the June 20, 2003 deadline, EPA is establishing the TMDL for Reach 3 to fulfill its legal obligations. The chloride TMDL for Reach 3 (analytical unit 31 in the consent decree) is intended to satisfy the obligation in the consent decree to complete by the 2003 due date all required TMDLs for one additional analytical unit to be identified by EPA. EPA concludes that it is appropriate to establish the Santa Clara River Reach 3 chloride TMDL at this time because the analytical work necessary to support the TMDL is readily available based, in part, on the State's efforts to develop other TMDLs for Santa Clara River (CRWQCB, 2002; CRWQCB, 2003). On April 7, 2003, the Regional Board issued a public notice to consider adoption of its TMDLs for Reaches 5 and 6. The State's TMDL proposal does not address Reach 3. However, the EPA TMDL for Reach 3 is based on technical analysis performed by the California Regional Water Quality Control Board and EPA Region 9 staff.

The purpose of a TMDL is to identify the total load of a pollutant that a water body can receive without causing exceedances of Water Quality Standards, and to allocate the total load among the sources of the pollutant in the watershed. The goal of this TMDL is to calculate the loadings needed to meet the WQO for chloride in Reach 3 of the Santa Clara River and protect agricultural supply and groundwater recharge beneficial uses.

1.1. Organization

Section 303(d) of the federal Clean Water Act (CWA) requires that "each State shall identify those waters within its boundaries for which the effluent limitations are not stringent enough to implement any water quality standard applicable to such waters." The CWA also requires states

to establish a priority ranking for waters on the 303(d) list of impaired waters and establish TMDLs for such waters.

The elements of a TMDL are described in 40 CFR 130.2 and 130.7 and Section 303(d) of the CWA, as well as in USEPA guidance (U.S. EPA, 1991 and 2000). A TMDL is defined as the "sum of the individual waste load allocations for point sources and load allocations for nonpoint sources and natural background" (40 CFR 130.2) such that the capacity of the water body to assimilate pollutant loading is not exceeded. A TMDL is also required to account for seasonal variations and critical conditions, and to include a margin of safety (MOS) to address uncertainty in the analysis (U.S. EPA, 2000).

The Regional Board identified over 700 waterbody-pollutant combinations in the Los Angeles Region where TMDLs would be required (RWQCB-LA, 1996, 1998). A schedule for the development of TMDLs in the Los Angeles Region was established in a consent decree (Heal the Bay Inc., et al. v. Browner, C 98-4825 SBA) approved on March 22, 1999.

For the purpose of scheduling TMDL development, the consent decree combined over 700 waterbody-pollutant combinations into 92 TMDL analytical units. The waterbody-pollutant combinations addressed in this TMDL include the segment identified in analytical unit 31 (Santa Clara River Reach 3 for chloride) of the consent decree. As discussed above, EPA is establishing the TMDL for analytical unit 31 to meet the consent decree requirement to identify and establish by 2003 a TMDL for one additional analytical unit.

EPA's TMDL addresses chloride sources that contribute to Reach 3 of the Santa Clara River. It defines a numeric target in Reach 3, identifies sources, calculates the total loading capacity (TMDL) for the reach and allocates the chloride loads among point sources, nonpoint sources, and upstream background sources.

1.2. Watershed Characteristics

This section describes the environmental setting of the Santa Clara River and the Santa Clara River watershed.

1.2.1. Reach 3

This TMDL is being established for Santa Clara River Reach 3, which extends upstream of Freeman Diversion to Street A Bridge and Fillmore. The Regional Board is currently in the process of establishing TMDLs for Reaches 5 and 6, which are located upstream from Reach 3.

1.2.2. Overview of Watershed

The Santa Clara River is the largest river system in southern California that remains in a relatively natural state and is a high quality resource for much of its length. The river originates in the northern slope of the San Gabriel Mountains in Los Angeles County, traverses Ventura County, and flows into the Pacific Ocean through the Santa Clara River Estuary between the cities of San Buenaventura and Oxnard.

Much of the watershed was originally Spanish land grants used for grazing cattle and dry-land farming. Urbanization since the late 1940's has continuously modified the land use, resulting in discharge of imported water and municipal wastewater. Since the 1950's, agriculture has changed from seasonal dry-land farming to predominantly year-round irrigated farming of citrus, avocado and row crops. More recently, land use in the Santa Clara River watershed has changed with the construction of residential neighborhoods and the municipal, recreational, commercial and industrial infrastructure to support them. Some rural neighborhoods remain with septic use, animal facilities and open space. The use of open land for grazing is still prevalent. Mining of minerals, sand and gravel, and oil extraction are also present. The Los Padres and Angeles National Forests protect and preserve open space and natural ecosystems while providing recreational opportunities.

The climate in this region is Mediterranean, typical of the Southern California Coast. Average annual precipitation varies from 14 inches (in.) along the coast, to about 17 in. near Santa Paula in the intermediate altitudes, to more than 25 in. in the surrounding mountains. Temperatures range from 90+ ^{o}F at the coast in late summer and early fall to below freezing during the winter in the surrounding mountains. The mountains are composed of marine and terrestrial sedimentary and volcanic rocks. The basins are filled with deposits of sands, silts, and clays resulting from the exposure of the underlying formations.

The Regional Board has granted National Pollutant Discharge Elimination System (NPDES) permits to two major dischargers (average effluent flow rate exceeds 0.5 million gallons per day (MGD)) and numerous minor dischargers in the portion of the Santa Clara River watershed covered by this TMDL. The major dischargers relevant to Reach 3 of the Santa Clara River are two Water Reclamation Plants (WRP) that discharge into Reach 3 of the Santa Clara River- the Fillmore and Santa Paula WRPs. Minor discharges to the Santa Clara River are typically related to dewatering and construction projects and are covered by general NPDES permits. The number of minor discharge permits varies in number and duration each year. The major and minor discharges are discussed in Section 4.5, Source Assessment.

Among the minor NPDES discharge permits are those for storm runoff from construction sites. In 2000, there were 310 sites enrolled under the construction storm water permit in the Santa Clara River watershed. The majority of these are residential sites 10 acres or larger in size.

SECTION 2: PROBLEM STATEMENT

The Regional Board's 303(d) listings are based on exceedances of water quality standards. Water quality standards consist of the following elements: 1) numeric and/or narrative objectives, 2) beneficial uses, and 3) an antidegradation policy. In California, beneficial uses are designated by the nine regional water quality control boards in their respective Water Quality Control Plans (*Basin Plans*). Water quality objectives are contained in both regional and Statewide Water Quality Control Plans. This section summarizes the applicable water quality

standards. Three of the eight reaches of the Santa Clara River are listed on the State's 1998 and 2002 303(d) lists, as summarized in Table 1.

TABLE 1. SUMMARY OF SANTA CLARA RIVER AND CHLORIDE IMPAIRMENTS BY REACH

Reach*	Reach Name	Geographic Description	Listing Status	Miles Impaired
1	Estuary	Tidally influenced mouth of Santa Clara River upstream to the 101 Bridge	Not listed	None
2	Highway 101	Upstream (east) of Highway 101 Bridge to the Freeman Diversion	Not Listed	None
3	Santa Paula	Upstream of Freeman Diversion to Street A Bridge in Fillmore	Listed	13.24
4	Fillmore	Upstream of Street A Bridge in Fillmore to the Blue Cut Gauging Station	Not Listed	None
5	Blue Cut	Upstream of USGS Blue Cut Gauging Station to the West Pier Highway 99	Listed	9.21
6	Highway 99	Upstream of Highway 99 to Bouquet Canyon Bridge	Listed	3.42
7	Bouquet Canyon	Upstream of Bouquet Canyon to Lang Gauging Station	Not Listed	None
8	Above Lang Gauging Station	Lang Gauging Station to headwaters	Not Listed	None

*as noted above, Reaches 5 and 6 were erroneously identified in the 1998 303 (d) list as Reaches 7 and 8.

2.1. Water Quality Standards

In accordance with the Clean Water Act, TMDLs are set at levels necessary to implement the applicable water quality standards. Under the Clean Water Act, water quality standards consist of designated uses, water quality criteria to protect the uses, and an antidegradation policy. The State of California uses slightly different language (i.e., beneficial uses, water quality objectives, and a non-degradation policy). These are defined in the Regional Water Quality Control Plans (Basin Plans). This section describes the State water quality standards applicable to the Santa Clara River TMDL for Reach 3 using the State's terminology.

2.2. Water Quality Objectives

The WQO for chloride in Reach 3 of the Santa Clara River is 80 mg/L. The WQO for chlorides is interpreted by the State to apply as an instantaneous maximum (Total Maximum Daily Load for Chloride in the Santa Clara River, Staff Report, Regional Board, Nov. 25, 2002 and Responsiveness Summary, July 17, 2002; letter to EPA dated May 30, 2003). Consistent

with the State's interpretation, EPA is applying the chlorides WQO as an instantaneous maximum for this TMDL.

2.3. Beneficial Uses of the Watershed

The beneficial uses of Santa Clara River Reach 3 are those identified in the *Basin Plan* (1994). These uses are designated as existing (E), potential (P), or intermittent (I) uses. All beneficial uses must be protected. The Santa Clara River provides water for irrigation, for support of aquatic life, and for groundwater recharge. Groundwater is extracted along the Santa Clara River for agricultural and municipal supply uses, among others.

The State has indicated that among the designated beneficial uses, those most sensitive to chloride under current conditions are agricultural use for irrigation of chloride-sensitive crops and groundwater recharge, which also supports agricultural uses (CRWQCB, 2002).

WQOs for chloride associated with other beneficial uses such as municipal supply and aquatic habitat are less stringent than the WQOs associated with agricultural supply. Human health and aquatic life are not affected by current ambient conditions, and concentrations have not exceeded the aquatic life guidance value of 230 mg/L or the aesthetic standard of 250 mg/L since 1985. However, current in-river water quality trends and effluent data suggest that the aquatic life standard may be exceeded within the next 5-10 years without appropriate action. There are a number of rare and endangered species in this watershed. However, the State has determined that these species are not currently at risk due to chlorides in the Santa Clara River.

2.4. Water Quality Standards Exceedances

Chloride levels in the Santa Clara River exceed water quality standards associated with agricultural supply (AGR). Additionally, chloride levels in the Santa Clara River exceed the groundwater objective for chloride in certain basins underlying the Santa Clara River and thereby exceed water quality standards associated with groundwater recharge.

Reach 3 of the Santa Clara River is listed on the 1998 and 2002 303(d) lists of impaired waterbodies in California. A review of the Reach 3 data for 1997-2000 that were considered by the State in its 2002 Section 303(d) listing assessment found that the WQO was exceeded in 21% of samples (Smith, 2003). EPA recently approved the State's decision to include Reaches 3, 5, and 6 on the 2002 Section 303(d) list for chlorides. The State's review of the chloride concentrations at Blue Cut suggests that the chloride concentrations are increasing (CRWQCB, 2002).

SECTION 3: NUMERIC TARGET

The numeric target is defined as the in-river chloride concentration that will implement the Water Quality Standard. The *Basin Plan* establishes a numeric objective for chloride in Reach 3 of 80 mg/L. In this TMDL the numeric target is established as 80 mg/L for Reach 3 to be applied as an instantaneous maximum, as discussed in Section 2 above.

SECTION 4: SOURCE ANALYSIS

This TMDL assesses chloride loading from point sources and nonpoint sources in Reach 3. Point sources typically include discharges for which there is a defined discharge pipe such as wastewater treatment plant discharges or industrial discharges. These discharges are regulated through a National Pollutant Discharge Elimination System (NPDES) permit and the State's Waste Discharge Requirements (WDRs). Nonpoint sources include pollutant sources that reach waters from a number of diffuse sources. In the TMDL process, waste load allocations are established for point sources and load allocations are established for nonpoint sources and upstream background loading sources. The Source Analysis focuses upon the low flow condition defined as the critical flow condition for purposes of determining the TMDL and associated allocations. The definition of the critical low flow condition is discussed in Section 5 below.

4.1. Major Point Sources

There are two major point sources that discharge into Reach 3, the Santa Paula and Fillmore WRPs. The discharge volumes and estimated concentrations for the two WRPs that discharge into Reach 3, the Santa Paula and Fillmore, are summarized in Table 2. The discharge concentration and flow estimates are average discharge values; the actual chloride concentrations and loads discharged from the facilities during periods of very low flow could not be specifically estimated based on the information available to EPA at this time, and may be higher or lower than the values estimated. Total loads from the two WRPs may be significant; the two sources comprise approximately 80% of the total estimated load under low flow conditions.

4.2 Minor Point Source Discharges

The 1998 report by Kennedy/Jenks, referenced in the State's Staff Report for the TMDLs for Reaches 5 and 5, listed the minor discharges to the Santa Clara River in 1997 (CRWQCB, 2002). This list is considered sufficiently representative of the average character of minor discharges because the discharges change frequently and contribute flow only during a short period of time varying from a day to a few months. Minor point source discharges to Reach 3 include:

- stormwater regulated under the NPDES municipal stormwater permit
- runoff from construction sites regulated under the statewide construction general NPDES permit,
- stormwater regulated under the CalTrans statewide NPDES permit,
- runoff from industrial sites regulated under the statewide industrial facility general NPDES permit, and
- dewatering operations regulated under NPDES permits

Table 2 lists discharge volumes and estimated chloride concentrations from minor point sources in Reach 3. These values are average discharge values; the actual chloride concentrations and loads discharged from the facilities during periods of very low flow could not be specifically estimated based on the information available to EPA at this time, and may be higher or lower than the values estimated.

TABLE 2. ESTIMATED CHLORIDE LOADS TO REACH 3 UNDER LOW FLOW CONDITIONS

Sources	Flow (cfs)+	Chloride concentration (mg/L)	Chloride loads (lb/day)
Fillmore WRP	0.65	119*	415
Santa Paula WRP	3.02	165*	2671
Other minor NPDES discharges	<0.5	<80	<215
Sespe Creek	0.25	40	54
Upstream flows from Reach 4	0.42	187**	421
Total	~5 cfs		3776

+ WARMF flow modeling results for summer 1991 low flow period used as critical condition for TMDL

* 1999 average concentration from NPDES monitoring reports

**CRWQCB estimate based on proposed interim permit limits for upstream WRPs and estimates of current conditions (CRWQCB, June 4, 2003)

4.3. Diffuse Sources and Upstream Sources

Surface and irrigation runoff are examples of diffuse source chloride discharges.[2] These nonpoint source flows and concentrations are too small to constitute a major source of chloride. Groundwater discharge in the vicinity of Blue Cut contains chloride accumulated from both point and nonpoint sources in the watershed. Chlorides contained in the flows of Sespe Creek, the major tributary to Reach 3, are low in concentration (approximately 40 mg/L on average). During the critical low flow period of concern in this TMDL, Sespe Creek chloride loads and concentrations comprise less than 2% of total estimated loads and are believed to be relatively less significant than loads and flows from the upstream reach above Reach 3 and from the two WRPs that discharge to Reach 3.

Chloride loads and flows from the upstream reach above Reach 3 are potentially significant during the critical low flow period and are estimated to comprise approximately 11% of total estimated loads during this period.

SECTION 5: SEASONAL VARIATIONS AND CRITICAL CONDITIONS

TMDLs must take into account seasonal variations and "critical conditions for stream flow, loading, and water quality parameters" (40 CFR 130.7(c)(1)). These requirements are intended to ensure that TMDLs result in attainment of water quality standards throughout the

year, including periods in which receiving waters are most sensitive to the impacts associated with the pollutant(s) of concern. A commonly used approach to setting TMDLs at levels that will attain applicable water quality standards is to calculate TMDLs and allocations that meet water quality standards during periods of critically low flow (see EPA, 1991b). This approach is particularly appropriate in situations where the applicable standard is interpreted to have a very short averaging period or is expressed as an instantaneous, not to exceed value (see EPA, 1986, EPA, 1991a, EPA, 1991b, EPA, 2001b).[2] EPA is accounting for potential seasonal variations and critical conditions in the Santa Clara River by establishing TMDLs that assure compliance with water quality standards under critical low flow conditions, thereby ensuring that the standards are met under all flow conditions.[3]

In the case of the Santa Clara River, the key factors determining the critical TMDL design flow condition are:

1. the critical conditions concerning receiving water flows,
2. the critical period of most likely adverse beneficial use impacts, and
3. the State's design flow recommendation based on its interpretation of its water quality objective for chlorides.

EPA's analysis of available flow and loading data concluded that chloride concentrations in Reach 3 were higher during periods of lower flows and that all the chlorides measurements during the critical low flow period observed in the summer 1991 drought condition exceeded the applicable water quality objective (see Smith, 2003). This analysis supports the conclusion that exceedances of the chlorides objective are most likely to occur during low flow conditions. It

[2] EPA guidance concerning selection of TMDL design flows generally refers to water quality standards designed to protect aquatic life. In most cases, States adopt aquatic life protection standards to protect against short term acute effects and longer term chronic effects. The most restrictive water quality objective applicable to Santa Clara River Reach 3 is designed to protect an agriculture use, and the State applies it as an instantaneous maximum value. The EPA guidance concerning selection of design conditions to address standards that protect against very short term acute effects or apply as instantaneous values is reasonably applicable to the analogous water quality objective for chlorides that is to be applied as an instantaneous maximum.

[3] As discussed in the draft TMDLs, an analysis of the assimilative capacity of Reach 3 under average flow and discharge conditions indicates that the chlorides concentrations in flows from Reach 4 into Reach 3, and resulting Reach 3 concentrations, are significantly lower than observed under low flow conditions. In other words, the assimilative capacity for chlorides appears, not surprisingly, to be higher under average flow conditions than under low flow conditions (see Table 5 in the May, 2003 draft TMDL). Therefore, Reach 3 can be expected to meet the standard under all flows if it meets the standard under the critical low flow condition.

follows that setting the TMDL and associated allocations at levels sufficient to implement the objective during low flow conditions will also result in attainment of the objective during higher flow conditions.

The State's analysis found that surface waters in the Santa Clara River are most likely to be diverted for irrigation use (and are therefore most likely to cause adverse impacts on the agriculture designated use) during period of low flow because groundwater sources that supply most irrigation supply are less plentiful during drought conditions (CRWQCB, 2002, personal communication with Elizabeth Erickson, June 16, 2003). EPA concludes the State's argument that such impacts are most likely to occur during low flow conditions is reasonable and should be considered in selecting a TMDL design flow.

In its comments on the EPA's TMDLs, the State indicated that the TMDL analysis should be based on an analysis of critical low flow conditions rather than average flow conditions because a low flow critical condition approach is more consistent with the State's application of the water quality objective as an instantaneous maximum. EPA guidance suggests that state-specified design flows should be used in developing TMDLs where available (EPA, 1986, pp. 1-3 – 1-4).

SECTION 6: LINKAGE ANALYSIS AND ASSIMILATIVE CAPACITY

Based on the critical flow condition evaluated in Section 5, EPA developed a linkage analysis that demonstrates that the selected TMDL, load allocations, and wasteload allocations will result in attainment of the chlorides water quality objective during low flow conditions.

The State provided flow and discharge estimates for the main sources of chloride loading in to Santa Clara River Reach 3 (see Table 2 above):

1. upstream flows and loads from Reach 4,
2. discharges from the Fillmore WRP,
3. discharges from Santa Paula WRP,
4. flows and loads from Sespe Creek, and
5. minor discharges from NPDES permitted facilities.

To determine the assimilative capacity (i.e., the loading capacity) for these discharge sources, EPA used the discharge flow estimates from the source analysis (Table 2) and identified allowable discharge concentrations from the different source categories that would result in attainment of the 80 mg/L numeric target/water quality objective for Santa Clara River Reach 3. EPA calculated the instream chloride concentration that would result if chloride concentrations in the different discharge sources were reduced. This calculation was done by selecting possible concentration-based allocations for each source and multiplying them by the expected discharge flow volume during low flow conditions to yield an estimate of resulting chloride mass loads from each source. These mass loads for each source were summed to yield an estimate of total instream chloride mass that would result if these possible allocations were implemented. This instream mass load estimate was then divided by the estimated total Reach 3 flow during low flow conditions to yield of estimated resulting instream chloride concentrations. Table 3 presents the results of this simple mass balance calculation. The calculations found that if the proposed allocations were implemented, the resulting instream chloride concentration would fall just below the 80 mg/L numeric target concentration. This linkage analysis indicates that the WQO in Reach 3 of 80 mg/L will be attained if each point source receives a wasteload allocation equal to 80 mg/L, upstream loads receive a load allocation equal to 100 mg/L, and Sespe Creek receives a load allocation equal to 40 mg/L (current estimated concentration). Although no data were available to EPA to characterize chloride concentrations in other tributary streams that flow to Reach 3, there is no evidence of significant chloride sources in these other tributaries.

TABLE 3. MASS BALANCE ANALYSIS FOR CHLORIDES IN REACH 3

Source	Allowable Conc. (mg/L)	Flow (cubic feet per second)	Load (pounds per day)
Fillmore WRP	80	0.65	279
Santa Paula WRP	80	3.02	1295
Upstream (Reach 4)	100	0.42	214
Sespe Creek	39.9	0.25	54
Other minor NPDES discharges	80	<0.5	<215
Resulting Effect	79.6	<4.84	<2057

SECTION 7: TMDL and ALLOCATIONS

A TMDL includes the individual waste load allocations for point sources, and load allocations for nonpoint sources and natural background pollutants, calculated such that the loading capacity of the receiving water is not exceeded. The wasteload and load allocations are set in this TMDL based on the loading capacity linkage analysis provided in Section 5 and summarized in Table 3. A TMDL is established for Reach 3 at levels that will result in attainment of the numeric targets and applicable water quality standards. Wasteload allocations (WLAs) and load allocations (LAs) are being set for discharges directly to Reach 3 and to discharges from the Reach 4, located immediately upstream from Reach 3.

TABLE 4. WASTE LOAD AND LOAD ALLOCATIONS

Point Sources	Waste Load Allocations (mg/L)
Fillmore WRP	80
Santa Paula WRP	80
MS4 Stormwater	80
Construction General Permit	80
CalTrans Permit	80
Other minor permits	80
Nonpoint Sources	**Load Allocations**
Other tributaries to Reach 3*	80
Sespe Creek	40
Santa Clara River Reach 4	100
TMDL	**80**

*Although other tributaries to Reach 3 were not included in the linkage analysis above, their contributions to Reach 3 chloride loads and flows are believed to be insignificant.

The TMDL and associated allocations are expressed on a concentration basis. Federal regulations authorize TMDLs and associated allocations to be expressed in terms of "mass per time, toxicity, or other appropriate measure" (40 CFR 130.2(i)). EPA has concluded that a concentration based approach is appropriate based on several considerations:

- River flows and chloride loads in Santa Clara River Reach 3 are highly variable and difficult to characterize in order to derive mass-based TMDLs and allocations.

- Limited data and information are available to support calculation of mass-based TMDLs and allocations.

It is necessary to establish an allocation applicable to chlorides flowing from Reach 4 into Reach 3 in order to ensure that the applicable standards are met in Reach 3. This "Reach 4" allocation is applicable at the border between Reaches 3 and 4. This allocation is termed a load allocation in this TMDL because federal regulations generally provide that background sources receive load allocations (40 CFR 130.2(g)). However, the information available to EPA did not fully distinguish the portions of chloride loads into Reach 3 from Reach 4 that are discharged from point sources, nonpoint sources, and natural background sources. There is disagreement in the information provided to EPA by the State and other commenters as to the amount of upstream chloride loads associated with point source and other discharge sources. EPA expects the State to determine how best to implement the load allocation for chloride discharges from Reach 4 into Reach 3. It is possible that the State may determine that chloride effluent limitations on point sources discharging upstream from Reach 3 are necessary to implement the load allocation for Reach 4. To the extent any point sources discharges need to be regulated to ensure implementation of the Reach 4 allocation, the Reach 4 allocation is to be interpreted as a wasteload allocation applicable to those point sources (see 40 CFR 130.2(h) and 40 CFR 122.44(d)(1)).

Wasteload allocations are established for the following chloride sources:

- discharges from the Santa Paula and Fillmore Water Reclamation Plants that discharge to Reach 3;
- urban stormwater discharges to Santa Clara River Reach 3 or to any tributaries that discharge to Reach 3 that are regulated through the Los Angeles municipal stormwater permit;
- discharges of construction or industrial site runoff or CalTrans facility discharges to Santa Clara River Reach 3 or to any tributaries that discharge to Reach 3 that are regulated through the statewide Construction Activities Storm Water General Permit Order No. 99-08-DWQ, Industrial Activities Stormwater General Permit Order No. 97-03-DWQ, or CalTrans Permit Order No. 99-06-DWQ; and

- discharges associated with dewatering operations and other discharge sources regulated under NPDES permits.

Load allocations are established for the following source categories:

- chloride loadings from sources not regulated through NPDES permits to Santa Clara River Reach 3 or to any tributaries that discharge to Reach 3, and to Sespe Creek;
- chloride loadings from groundwater into Santa Clara River Reach 3 and to its tributaries.

SECTION 8: MARGIN OF SAFETY

A Margin of Safety (MOS) is required to account for uncertainties in the TMDL analysis (40 CFR 130.7). The required MOS may be provided explicitly by reserving (not allocating) a portion of available pollutant loading capacity, and/or implicitly by making conservative analytical assumptions in the supporting analysis. This TMDL provides an implicit MOS.

The approach of setting the TMDL and associated allocations on a concentration basis equal, in most cases, to the applicable standard, greatly reduces the uncertainty concerning the relationship between discharge limitations and the applicable water quality standards.

For Reach 3, the TMDL Linkage Analysis demonstrates that implementation of the WLAs and LAs will result in attainment of the 80 mg/L water quality standard applicable in this reach during critical low flow conditions. The linkage analysis performed in the draft TMDL for average flow conditions also demonstrates that the applicable standard would also be implemented under higher flow conditions.

WLAs and LAs are established for every potential chloride source to and upstream from Reach 3, including relatively minor chloride loading sources such as dewatering discharges, groundwater upwelling, and runoff from urbanized areas. As a result there is little uncertainty about whether these TMDLs are stringent enough to implement the applicable standard, and no need to provide an additional MOS.

SECTION 9: PUBLIC PARTICIPATION

EPA provided for public participation through two mechanisms. EPA published a public notice of its draft TMDL in the LA Times on May 1, 2003, and solicited public comments during the period from May 1, 2003 to June 1, 2003. Notice and a copy of the draft EPA TMDL were also posted on the EPA Region 9 website. EPA prepared a responsiveness summary that describes comments received and discusses how EPA considered those comments in its final decision.

SECTION 10: IMPLEMENTATION RECOMMENDATIONS

EPA understands that the State is in the process of reviewing and revising upward the numeric water quality objective for chloride in Santa Clara River Reach 3. Based on our review of the data used to support the State's listing of Reach 3 for chlorides on the 2002 California Section 303(d) list, it appears possible that this Reach would not exceed water quality standards if the objective is raised to 100 mg/L as proposed by the State. EPA believes it would be reasonable for the State to defer full implementation of the TMDL for Reach 3 until this objective change is completed. If the State does not complete its proposed action to raise the chloride objective for Reach 3, the State should determine the appropriate means of implementing the TMDL through its NPDES permitting decisions and other programs to address nonpoint sources for which allocations are included in this TMDL.

As discussed in Section 1, EPA is not establishing chloride TMDLs for Santa Clara River Reaches 5 and 6 at this time. EPA supports the State's proposed TMDLs and implementation provisions for Santa Clara River Reaches 5 and 6 and expects the State to proceed with TMDL adoption in the near future. EPA believes the implementation provisions proposed for the State TMDLs for Reaches 5 and 6 provide a reasonable approach for collecting information necessary to consider potential revisions to the chloride standards for Reaches 5 and 6, and for proceeding with TMDL implementation if the standards are not revised.

REFERENCES

1. California Regional Water Quality Control Board (CRWQCB, 2003), Amendment to the Water Quality Control Plan (Basin Plan) for the Los Angeles Region to Incorporated TMDL for Chloride in the Upper Santa Clara River, Tentative Resolution No. R03-0XX (June 5, 2003).

2. CRWQCB, LA Region, Email message from Elizabeth Erickson (LA Board) to Laura Gentile, USEPA, Region 9 (April 24, 2003).

3. CRWQCB, LA Region, Letter to David Smith, USEPA, Region 9 (April 29, 2003).

4. CRWQCB, LA Region, Systech Engineering, Inc., Final Task 1 Report For Santa Clara River Nutrient TMDL Analysis: Source Identification and Characterization (September 1, 2002).

5. CRWQCB, LA Region, Systech Engineering, Inc., Linkage Analysis For Santa Clara River Nutrient TMDL Analysis, Parts I and II: Hydrology and Water Quality, Prepared for Santa Clara Nutrient TMDL Steering Committee (September 1, 2002).

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