COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

GRACE ROBINSON HYDE
Chief Engineer and General Manager

February 15, 2019
File No. 36-01.02-55

Via Electronic Mail
Ms. Renee Purdy, Interim Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 West Fourth Street, Suite 200
Los Angeles, CA 90013

Dear Ms. Purdy:

Comments on Tentative Waste Discharge Requirements (WDR) and National Pollutant Discharge Elimination System (NPDES) Permit for the Newhall Ranch Water Reclamation Plant, (NPDES No. CA0064556, CI No. 9322)

The County Sanitation Districts of Los Angeles County (Sanitation Districts) appreciate the opportunity to provide comments on the Tentative Waste Discharge Requirements and National Pollutant Discharge Elimination System (NPDES) Permit (Tentative Permit) for the Newhall Ranch Water Reclamation Plant (NRWRP). The Sanitation Districts request that the Regional Board modify the Tentative Permit based on the two comments detailed below, and minor revisions in the attached table. In addition, attached is a *Technical Report in Support of a Regional Board Finding for Residential Salinity Control*, in support of the finding in Section II.D of the Waste Discharge Requirements.

1. *Page 7, Section IV.A.1.a, Table 4-Effluent Limitations: The Average Monthly Effluent Limitation (AMEL) for Mercury is listed as an annual average concentration of 0.012 ug/L, with a corresponding mass emission rate of 0.0002 pounds per day (lbs/day).*

   The 2018 State mercury provisions stipulate that "A water quality-based effluent limitation is not required unless the highest observed annual effluent concentration is greater than C [the lowest (most stringent) mercury water quality objective applicable to the receiving water]."[1] Per Table F-7, the highest observed annual average effluent mercury concentration at the Valencia WRP was less than C; therefore, a water quality-based effluent limitation is not required and should be removed from Table 4.

   The 2018 mercury provisions then stipulate that "if B [the highest observed annual average ambient background concentration] is greater than C, and mercury is detected in the effluent, effluent monitoring is required."[1] Per Table F-7, B was greater than C and mercury was detected in the Valencia WRP effluent; therefore, the effluent mercury monitoring requirements contained in the Monitoring and Reporting Program are warranted.

[1] California Water Boards. *Final Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California – Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions*. May 2017. Section IV.D.2.c.

2. *Page 21, Section VI.C.6.a.ii (Initial Notification): The final sentence of this section states, "In addition, the Permittee shall notify Heal the Bay of any such sewage spill."*

   Section VI.C.6 states that the Initial Notification "requirement is an appropriate mechanism to ensure that the agencies that do have first responder duties are notified in a timely manner in order to protect public health and beneficial uses." This section requires notification to the government agencies that are mandated to protect public health and handle public notification. Requiring notification to a specific non-governmental organization is an inefficient use of limited resources that would be better spent on handling the spill and the many essential reporting requirements already specified in the permit. Heal the Bay is not a first responder, does not have the same mandate to protect public health, and already has access to spill information through the California Office of Emergency Services. Moreover, the Sanitation Districts already has a system in place that notifies relevant parties of spills reported to our Spill Hotline. Because these notifications include spills that are not the responsibility of the Sanitation Districts, use of this system would likely be more informative to Heal the Bay, while being less onerous to the Sanitation Districts. Consequently, the Sanitation Districts reached out to a Heal the Bay representative, who indicated that the process proposed here will meet their needs. We are currently working to add them to the existing Spill Notification List, and request that this provision be removed from the permit.

If you have any questions about this letter or require additional information, please contact the undersigned at (562) 908-4288, extension 2830.

Very truly yours,

Naoko Munakata
Supervising Engineer
Reuse and Compliance Section

NM:PN:nm

cc: Cris Morris, Jeong-Hee Lim, and Veronica Cuevas-Alpuche – LA Regional Board
Matt Carpenter, Tom Mitchell – Newhall Land and Farming Company (Five Point Land, LLC)

Attachments

Attachment 1 - Errata
Comments on Tentative NPDES Permit for NRWRP, (NPDES No. CA0064556, CI No. 9322)

Item	Page No.	Section	Existing Draft Language	Comment
1	7	Table 4	lbs/day[2] Bis(2-ethylhexyl) phthalate; Iron; Total Trihalomethanes; 2,3,7,8-TCDD	Superscript should be changed to "1", e.g. lbs/day[1]
2	8	IV.C	"The Discharger plans to use up to 478 acre-feet per month (February through November) and up to 340 acre-feet per month (December and January) of tertiary-treated effluent for landscape irrigation and other uses."	Designs are still in the preliminary stage; therefore text should be edited to read: "The Discharger plans to maximize the use of tertiary-treated effluent for landscape irrigation and other uses."
3	8	IV.C	"…water from Valencia Water Company will be used to supplement the recycled water supply…"	"Valencia Water Company" should be replaced with "the Santa Clarita Valley Water Agency"
4	18	VI.C.5.a	Biosolids Disposal Requirements	As in the existing permit, please label this section "(NOT APPLICABLE)." Attachment H (Biosolids) is not included in the permit because it is not applicable.
5	E-7	Table E-2	Lindane	The minimum sampling frequency should be adjusted to quarterly to reflect the removal of the lindane effluent limit.
6	E-19	Table E-5	Algal biomass (chlorophyll a) units are mg/L	Change units to mg/cm[2]
7	E-20	Table E-5, Footnote 27	……congeners in the effluent *and in the receiving water stations RSW-003 through RSW-005*. [Emphasis added]	Receiving water locations RSW-003 through RSW-005 do not exist for this facility. Please remove italicized text.
8	E-21	VIII.A.6.	Weekly sampling may be rescheduled at receiving water stations if weather and/or flow conditions would endanger personnel collecting receiving water samples	No weekly receiving water samples. Suggest removing VIII.A.6 and revising VIII.A.5 to the following: "Receiving water samples shall not be taken during or within 48-hours following the flow of rainwater runoff into the Santa Clara River or during adverse flow conditions, unless it is safe to do so."
9	E-23	Table E-7	Analytical Method column	The listed items in the Analytical Method column are compound classes, not analytical methods. Recommend renaming the column "Compound Class."
10	F-5	I.A.2	"SCVSD replaced LADWP as staff to Newhall Ranch SD."	Consider adding the date of this change (*i.e.*, "In March 2014")

11	F-5	I.A.3.d	"Any necessary pipelines to convey the brine waste stream from Interim Demineralization Facility to the deep-well injection system and the injection system itself, which will be permitted under a separate USEPA-issued Class I Non-hazardous Underground Injection Control (UIC) permit."	Text should be replaced to reflect consideration of multiple alternative disposal options: "Any infrastructure necessary to dispose of the brine waste stream."
12	F-5	I.A.3	"The concentrate waste stream is expected to be disposed of by either trucking it offsite, or in offsite injection wells …"	Consider defining waste stream: "The concentrate waste stream (brine) is expected to be disposed…"
13	F-6	II.A.1	"Wastewater will be discharged intermittently from Discharge Point 001 (see Table 2 on the cover page) to the Santa Clara River, a water of the United States, when the demand for recycled water is low."	Change "Wastewater will…" to "Wastewater may…"
14	F-7&8	II.A.2	(Entire Section)	Remove section. This level of detail was not included in the 2013 permit and is not appropriate at this time, as the design has not been finalized.
15	F-8	II.B.1	"Newhall Ranch SD plans on applying for separate Waste Discharge Requirements to be able to recycle 478 acre-feet per month of tertiary treated effluent."	Revise text to read: "Newhall Ranch SD plans on applying for separate Water Reclamation Requirements to recycle tertiary treated effluent."
16	F-33	IV.C.2.b	Iron	Text should read "cause or contribute" (instead of "cause to contribute")
17	F-48	Table F-9	BOD units are ug/L	Change units to mg/L
18	F-54 to F-56	Table F-10	Table heading "2018 Permit"	Current permit should be listed as 2019 Permit.
19	F-55	Table F-10	Multiple sampling frequencies are incorrect.	Entries should read: Parameter — 2013 freq. — 2019 freq. Antimony — monthly — quarterly Arsenic — monthly — quarterly Lead — monthly — quarterly Zinc — monthly — quarterly Acrylonitrile — monthly — quarterly p-dichlorobenzene — monthly — quarterly lindane (gamma-BHC) — monthly — quarterly 4,4-DDE — monthly — quarterly

Attachment 2
Technical Report in Support of a Regional Board Finding for Residential Salinity Control

Newhall Ranch Sanitation District

Technical Report in Support of a Regional Board Finding for Residential Salinity Control

February 15, 2019

Doc# 4794549

Table of Contents

List of Tables

1. Introduction

1.1. Purpose

This report has been prepared to provide background information and substantial evidence that supports a finding that the control of residential salinity input will contribute to the achievement of water quality objectives (WQOs) in the Santa Clara River. The Newhall Ranch community is currently under development and, like other communities located in the Santa Clara River watershed, faces significant potential challenges regarding attainment of chloride water quality requirements. The ability of the Newhall Ranch Sanitation District of Los Angeles County (NRSD) to control residential salinity inputs at the outset of development of this community is critical to ensure that NRSD can protect water quality in the Santa Clara River and meet future permit requirements.

Section 13148 of the California Water Code (Water Code) allows local agencies to control salinity inputs from residential self-regenerating water softeners (SRWS) after a Regional Water Board makes a finding at a public hearing. This finding may be made in waste discharge requirements for a local discharger, who may then manage salinity through actions such as prohibiting future installation of residential SRWS. The Water Code requires the Regional Board to base its finding on evidence in the administrative record, such as a source determination study or other appropriate studies. This report summarizes several studies conducted to identify and quantify the sources of chloride and provides the evidence needed for the Regional Water Quality Control Board, Los Angeles Region (Regional Board) to make a finding that control of residential SRWS in NRSD's service area will contribute to the achievement of WQOs for chloride in the Santa Clara River.

1.2. Description of the Area and Local Agencies

The Sanitation Districts of Los Angeles County (Sanitation Districts) consist of 24 independent special districts serving the wastewater and solid waste management needs of approximately 5.6 million people in Los Angeles County, California. The service area covers approximately 850 square miles and encompasses 78 cities and unincorporated territory within the county.

NRSD is one of the 24 independent special districts and was formed to provide wastewater management service to the Newhall Ranch Specific Plan area. The NRSD service area is located north and south of State Route 126 along the Santa Clara River, east of the county line between the County of Los Angeles and the County of Ventura, and approximately ½ mile west of Interstate 5. The NRSD will eventually serve a population of approximately 60,000 persons after the construction of up to 22,038 residential dwelling units, 5 million square feet of commercial space, and a water reclamation plant (WRP).

The Newhall Ranch WRP will be a tertiary wastewater treatment facility with the capacity to treat up to 6.8 million gallons per day (MGD) of wastewater from a mixture of residential and commercial sources. Treatment at the Newhall Ranch WRP will consist of screening, activated sludge biological treatment with membrane bioreactors, nitrification and denitrification, reverse osmosis, and ultraviolet (UV) disinfection. Treated water will be recycled within the community; any flow that is not recycled due to insufficient demand will be discharged into the Santa Clara River, with a portion of this flow treated for chloride removal by reverse osmosis or another similar demineralization technology.

The Santa Clarita Valley Sanitation District of Los Angeles County (SCVSD) is another of the 24 independent special districts that neighbors the NRSD. The SCVSD owns and operates the Saugus and Valencia WRPs, which have a combined permitted capacity of 28.1 MGD. The SCVSD serves approximately 247,000 persons in 86,000 residential units, with more than 2,800 active commercial parcels and 76 industrial dischargers. Because SCVSD is adjacent to the territory that will be served by

NRSD, there are anticipated to be many similarities between the two service areas in terms of community characteristics and receiving water quality. In addition, each district may treat some cross-boundary flows through an interconnected sewage system (see Section 2.3 for details). Consequently, the following sections summarize information about water quality in SCVSD's service area. SCVSD's salinity inputs to the sewer system and its efforts to control them are relevant to the need for control of residential salinity inputs from SRWS in NRSD's service area.

2. Background History

This section explains the basis for the chloride WQOs in the Upper Santa Clara River (USCR); describes the resulting waste load allocations (WLAs) for the Saugus, Valencia, and Newhall Ranch WRPs; and summarizes efforts by SCVSD to control residential SRWS. By controlling residential SRWS, SCVSD successfully reduced the size of advanced treatment facilities required to meet chloride WQOs and consequently saved public funds and mitigated rate increases; NRSD plans to use a similar strategy to meet chloride WQOs.

2.1. Chloride WQOs and Effluent Limits in the USCR

The Santa Clara River is a water of the United States and the largest river system in Southern California that remains in a relatively natural state. The river originates on the northern slope of the San Gabriel Mountains in north Los Angeles County, traverses westward into Ventura County and then discharges into the Pacific Ocean. The river is referred to as the Upper Santa Clara River (USCR) in Los Angeles County and the Lower Santa Clara River (LSCR) in Ventura County.

Since 1998, Reaches 5 and 6 of the USCR have appeared on California's "Impaired Waters"/303(d) List because elevated chloride concentrations exceeded the WQOs. The Regional Board has adopted several resolutions[1] to incorporate and amend a total maximum daily load (TMDL) for chloride in the USCR into the *Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan). Resolution No. R4-2004-004 required the completion of special studies to characterize the sources, fate and transport, and specific impacts of chloride in the USCR, including to downstream reaches and underlying groundwater basins.

Several special studies were conducted to assess the impact of elevated chloride concentrations and evaluate appropriate thresholds. In 2005, the *Literature Review and Evaluation* special study found that the threshold concentration for avocados ranged from 100 to 117 mg/L. A 2008 supplemental study, *Compliance Averaging Period for Chloride Threshold Guidelines in Avocado*, found that a 3-month averaging period of the threshold chloride concentration would be protective of avocados. An additional study, *Evaluation of Appropriate Chloride Threshold for Endangered Species Protection*, assessed the impact of existing chloride levels in the Santa Clara River on endangered species and concluded that the endangered species in the USCR can tolerate higher levels of chloride than the salt-sensitive agricultural crops. Based on these studies, the presence of avocado farming in the LSCR area, and the flow of water from the USCR to the LSCR, agriculture supply (AGR) in the LSCR was found to be the beneficial use that was most sensitive to chloride levels and applicable to sources discharging to the USCR. The Regional Board determined that the existing 100 mg/L chloride objective was justified and reasonable and acknowledged that the WQO in Reach 6 could be higher because the salt-sensitive agriculture use was absent in the USCR.

In 2014, the Regional Board adopted Resolution No. R4-2014-010 to revise the existing WQO for chloride in Reaches 4B, 5, and 6 to include a 3-month rolling average period; to incorporate conditional

[1] Resolution Nos. 2002-018, 2003-008, R4-2004-004, R4-2006-016, R4-2008-012, and R4-2014-010

SSOs for chloride in Reaches 5 and 6; and to extend the TMDL implementation schedule by four years. Table 1 summarizes the WQOs and WLAs for the USCR and LSCR under this most recent revision of the chloride TMDL. Once built, the Newhall Ranch WRP will be under the jurisdiction of this TMDL and will receive a WLA of 100 mg/L as a 3-month rolling average, which is slightly less stringent than the current NPDES requirement of 100 mg/L as a monthly average.[2]

Table 1: Surface WQOs and Future WLAs for Reaches 4B, 5, and 6 of the Santa Clara River

Santa Clara River Reach	Chloride Surface WQO (mg/L)	Revised WLA [c] (mg/L)	Sanitation District WRP	Rolling Averaging Period
6	150[b]	150[c]	Saugus	3-month
5 (Up[a])	150[b]	N/A	N/A	3-month
5 (Down[a])	100[b]	<100[c]	Valencia	3-month
		100	Newhall Ranch[d]	3-month
4B	100		N/A	3-month

[a] "Up" and "Down" refer to upstream and downstream of Valencia WRP Discharge Point 001.
[b] The site-specific WQOs in Reaches 5 and 6 apply and replace the existing 100 mg/L WQO only when the Advanced Water Treatment Facilities and UV disinfection projects are in operation.
[c] The Valencia WRP was assigned a 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.
[d] Other NPDES discharges receive WLAs of 100 mg/L as a 3-month rolling average.

2.2. Local Control of Residential SRWS in SCVSD

In 1961 and 1966, local control of self-regenerating water softeners (SRWS) began in the Santa Clarita Valley when County Sanitation District Nos. 26 and 32 of Los Angeles County[3] (Districts 26 and 32), respectively, adopted resolutions prohibiting the discharge of salt brine from SRWS into the Districts' sewer system.[4] These resolutions were adopted to protect the quality of treated water discharged from the Saugus and Valencia WRPs and ultimately the water quality of the Santa Clara River. The prohibition applied to all users of the sewer system (commercial, industrial, and residential) and remained in effect until 1997.

In the mid-1990s, the California Appellate Courts made several significant rulings limiting local agencies control of residential SRWS.[5] Two cases in particular challenged the legality of ordinances adopted by the County of Santa Barbara and the City of Escondido that either banned or restricted the residential use of SRWS. In both cases, the Appellate Courts ruled that restrictive ordinances prohibiting residential use of SRWS were invalid because Sections 116775 and 116790 of the California Health and Safety Code regulated softener performance and overrode local agencies' ability to adopt more stringent regulation. Furthermore, the Courts determined that the statute declared that residential use of SRWS was a right, that ordinances restricting residential SRWS interfered with that right, and that further restrictions on SRWS would need to be addressed by the State Legislature.

[2] NPDES permit for the Newhall Ranch WRP. Order No. R4-2013-1080.
[3] County Sanitation District Nos. 26 and 32 of Los Angeles County were reorganized into the Santa Clarita Valley Sanitation District of Los Angeles County (SCVSD) on July 1, 2005.
[4] County Sanitation District Nos. 26 and 32 of Los Angeles County. *Resolution: Prevention of District Sewerage System Discharge of Salt Brines*. August 8, 1961 and April 12, 1966, respectively.
[5] Water Quality Association *et al*. versus County of Santa Barbara *et al*.; Water Quality Association *et al*. versus City of Santa Maria *et al*.; Water Quality Association et al. versus City of Escondido *et al*.

As a result of these rulings, the prohibition on SRWS adopted by Districts 26 and 32 was limited to the commercial and industrial sectors. Soon after (circa 1996-97), residents in the Santa Clarita Valley began installing SRWS and consequently the chloride loadings in the Saugus and Valencia WRPs increased until 2003, when amendments to the statute granted local agencies the authority to restrict the installation of new residential SRWS units.

In 1999, Senate Bill (SB) 1006 was enacted and amended Section 116786 of the California Health and Safety Code. SB 1006 granted local agencies authority to limit the availability, or prohibit the installation, of residential SRWS that discharge brine into sewer systems through an ordinance, if findings were substantiated by an independent study. The provisions regarding local ordinances in SB 1006 took effect on January 1, 2003, and shortly thereafter, in February 2003, Districts 26 and 32 adopted the *Ordinance Prohibiting the Installation of Certain Water Softening Appliances*. These ordinances prohibited the installation of new residential SRWS units and became effective on March 27, 2003.

The adopted ordinances were effective at preventing new SRWS installations; however, the SRWS units installed prior to their adoption were outside the control of the Districts 26 and 32. Consequently, these Districts initiated a voluntary program to incentivize residents to remove existing SRWS. On November 30, 2005, and May 1, 2007, the Automatic Water Softener Rebate Program – Phases I and II, respectively – were initiated and as a result nearly 3,000 SRWS were removed from November 2005 through December 2008. The reduction in SRWS helped lower chloride loadings; however, a significant number of residential SRWS continued to operate.

In 2006, special legislation for the Santa Clarita Valley – SB 475 – was enacted and added Section 116787 to the California Health and Safety Code. The bill specifically granted SCVSD the authority to adopt an ordinance requiring the removal of all residential SRWS if specific findings were made and if the ordinance was approved in a referendum by majority vote. On June 11, 2008, the SCVSD Board of Directors adopted the *Santa Clara River Chloride Reduction Ordinance of 2008* and authorized it to be placed on the November 4, 2008, ballot. Voters overwhelmingly approved it with almost two-thirds voting in favor. The ordinance took effect on January 1, 2009, and required the removal and disposal of all SRWS in the SCVSD's service area by June 30, 2009.

As a result of the rebate programs and implementation of the 2008 ordinance, approximately 8,330 SRWS have been removed from the SCVSD's service area and, as a result, an estimated 11,200 lb/day of chloride[6] is not discharged to the sewer system.

2.3. NRSD-SCVSD Interconnection

Some homes in NRSD's service area will be built and occupied before construction of the Newhall Ranch WRP is complete. These properties will require wastewater treatment, which will be temporarily provided by SCVSD. Furthermore, as a result of the topography and shared border of the NRSD and SCVSD, portions of each District's service area can be served in a more economical and environmentally friendly way by the other District through an interconnected sewage system.

In January 2002, Districts Nos. 26 and 32, now consolidated into SCVSD, and the Newhall Land and Farming Company (NLF), entered into the *Interconnection Agreement* to coordinate wastewater management services for the Newhall Ranch Specific Plan Development. A requirement of the Interconnection Agreement was for NRSD and SCVSD to enter into an agreement regarding the ownership and operation of facilities. In December 2017, SCVSD and NRSD entered into the *Joint Sewer*

[6] SCVSD. *2017 Chloride Source Identification/Reduction, Pollution Prevention, and Public Outreach Plan*. August 2017.

Services Agreement (JSSA). The *Interconnection Agreement* and JSSA allow for temporary wastewater treatment for up to 6,000 capacity units[7] from the Newhall Ranch development by the Valencia WRP, as well as some long term cross-boundary flows. Under the agreements, cross-boundary flow must meet, at a minimum, the water quality requirements of the receiving District's wastewater ordinance. Thus, the development within NRSD served by the Valencia WRP is under the jurisdiction of SCVSD's wastewater ordinances including the *Santa Clara River Chloride Reduction Ordinance of 2008*, which prohibits the installation of residential SRWS.

3. SCVSD Chloride Source Determination Studies

As a requirement to adopt the prospective SRWS prohibition ordinance in March 2003, SCVSD substantiated its findings through a comprehensive monitoring and analysis program. Results of the program were documented in the *Santa Clarita Valley Joint Sewerage System Chloride Source Report, October 2002* (Source Report), which identified the potable water supply and residential wastewater as the primary sources of chloride in the SCVSD service area. Other sources of chloride from commercial, industrial, WRP disinfection processes, and liquid waste disposal sectors, were also evaluated but determined to be minor in comparison to the load from the water supply and residential sectors. The NRSD service area will have chloride contributions from only the potable water supply, residential and commercial sectors, and wastewater treatment plant processes. The following sections summarize the studies conducted on these contributors; the Source Report provides detailed information on the methodologies used to estimate the chloride contributions from each source.

3.1. Potable Water Supply

The principal source of chloride in the SCVSD service area – particularly under drier-than-normal conditions – is the potable water supply, which is a blend of imported State Water Project (SWP) water and local groundwater. The chloride concentration in the potable water supply varies over time, and is largely dependent on precipitation. In drier-than-normal conditions, brackish water intrusion into the Bay-Delta region elevates chloride concentrations in the SWP water, which is then imported into Southern California. Chloride also becomes more concentrated in the local groundwater during periods of drought. As a result of these processes, the potable water supply is highly variable and the most significant source of chloride: from 2002 to 2016, the blended potable water supply for the SCVSD service area contributed between approximately 9,100 lb/day (52 mg/L) and 13,400 lb/day (89 mg/L).[8] However, SCVSD has no legal authority to control this source of chloride.

3.2. Residential Sector

The second most significant source of chloride, and the largest controllable source, is from the residential sector. The Source Report studies conducted on the residential sector focused on four main elements: (1) surveys to determine water softening practices in the SCVSD service area; (2) sampling studies to quantify the loading of chloride from the surveyed homes; (3) a study to quantify the chloride added from a single SRWS operated by a typical family; and (4) a study to quantify the chloride added from non-SRWS sources.

Based on these studies, SCVSD estimated that in 2001 the residential sector contributed 11,000 lb/day of chloride, or 46% of the total chloride load of 23,700 lb/day. Of the residential flows, SRWS contributed

[7] As defined in the JSSA, a capacity unit is "the average daily burden in terms of capacity that a typical single family home places on the Sewerage System based on flow, chemical oxygen demand, and suspended solids."

[8] SCVSD. *2017 Chloride Source Identification/Reduction, Pollution Prevention, and Public Outreach Plan*. August 2017. (Doc #4236381)

7,700 lb/day (32% of the total chloride load),[9] and non-SRWS sources contributed 3,300 lb/day (14% of the total chloride load).

3.2.1.Survey & Sample Studies

A door-to-door survey was conducted to determine the water softening practices of SCVSD residents. This survey focused on single family housing (SFH) because an investigation revealed that the use of SRWS in non-single family housing (NSFH) was rare: inspections in 2001 at two NSFH housing construction sites found no pre-installed water softeners or plumbing bibs to allow for easy installation of SRWS. Furthermore, water softeners are not expected to be as prevalent in NSFH units as in SFH units due to space constraints and difficulties in accessing plumbing in common areas to allow installation of SRWS.

The study of the SFH portion of the residential sector was comprised of six separate neighborhoods. The selected neighborhoods represented a range of construction times to determine if the lack of a SRWS prohibition shortly after 1997 had an impact on water softening practices. Four of the neighborhoods represented homes (358 in total) that were built during a SRWS prohibition (before 1997) while two neighborhoods represented homes (358 in total) that were built after 1997 when the SRWS prohibition was lifted from the residential sector.

The survey revealed that the homes built shortly after 1997 had a significantly higher SRWS market penetration of 59% (210 of 358 homes) and fewer homes (4%, 13 of 358 homes) with exchange tank systems that do not discharge to the sewer. In contrast, 11% of the homes built before 1997 (39 of 358 homes) had SRWS and 23% (81 of 358) of homes had exchange tank systems.

A sampling study was conducted concurrently with the surveys to quantify the chloride loadings. The sampling studies showed that the homes built after 1997 discharged very high levels of chloride to the sewer. These homes discharged 367 to 435 mg/L or 1.37 to 1.42 lb/day of chloride[10] while homes built before 1997 discharged only 32 to 72 mg/L or 0.12 to 0.22 lb/day of chloride. These results indicated a direct link between residential SRWS and significantly higher chloride loadings.

A supplemental study identified and quantified non-SRWS residential sources of chloride. This study monitored residential chloride additions discharged from the surveyed homes built before 1997 during the daytime (*i.e.*, 6 A.M. to midnight). Because SRWS normally regenerate at night (*i.e.*, midnight to 6 A.M.) and market penetration of SRWS was low for these homes, the measured chloride concentrations were believed to be representative of residential wastewater without SRWS brine discharges. Results indicated that the average chloride concentration in residential wastewater was 31 mg/L greater than the water supply.

3.2.2.Residential SRWS Chloride Quantification Study

The SCVSD also conducted a study to quantify the amount of chloride generated and discharged by a typical single family home operating a SRWS in the SCVSD service area. A General Electric SmartWater™ Softening System (Model No. GXSF39B) was purchased and operated under expected

[9] The Source Report estimated 5,700 SRWS discharging approximately 7,700 lb/day of chloride in the SCVSD. These numbers are lower than those cited in Section 2.2 (approximately 8,330 SRWS discharging 11, 200 lb/day of chloride), due to installation of additional SRWS between the time of the Source Report and promulgation in March 2003 of the ordinance prohibiting the installation of new SRWS.

[10] These values represent chloride added to the water supply, *i.e.*, above and beyond chloride contributions from the potable water supply.

SFH use conditions. Chloride concentrations in the SRWS brine waste ranged from approximately 7,000 to 13,000 mg/L, similar to the SRWS brine waste concentrations observed in the residential sampling conducted in the SCVSD service area. Based on the measured water quality samples, one SRWS unit in a typical SFH was estimated to discharge approximately 1.1 lb/day of chloride with brine waste.

3.2.3.Residential non-SRWS Chloride Quantification Study

Four major categories were examined to quantify the residential non-SRWS chloride contributions: human waste, laundry products, other cleaning products, and swimming pool filter backwash. Of these categories, human waste and laundry products accounted for the majority of chloride loadings at 1,722 and 1,271 lb/day, respectively. In total, the residential non-SRWS chloride loading was estimated at 3,300 lb/day or 31 mg/L, which matches the measured non-SRWS loading from the sample study of surveyed homes built before 1997.

3.3. Commercial Sector

SCVSD investigated 294 commercial businesses to identify the types that used softened water as part of their normal operations and sampled a subsection of those businesses to estimate chloride loading from the commercial sector. The investigation targeted beauty salons, car washes, dog grooming shops, dry cleaners, florists, grocers-retail, health clubs, hotels/motels, laundromats, movie theaters, and restaurants. It revealed that the businesses that used softened water had the greatest potential to significantly contribute to chloride concentrations. Typically, businesses used soft water for dishwashing to prevent water spotting (restaurants and hotels), clothes washing to reduce usage of laundry detergent and softening agents (hotels and laundromats), and boiler operation to minimize scaling (laundromats). Furthermore, most of the businesses requiring soft water had exchange tank softening systems and were in compliance with the commercial SRWS prohibition. Because the majority of businesses needing soft water were using exchange tank systems, their estimated chloride contribution was low and was comprised of chloride from the potable water supply and from sanitary and domestic wastes. The study concluded that the commercial sector added approximately 940 lb/day or 42 mg/L chloride to the potable water supply, a minor amount (4%) of the total chloride load, and that the potential to further reduce chloride in the commercial sector was small.

3.4. Wastewater Treatment Process

There are two primary in-plant sources of chloride: disinfection and chemical additions to enhance treatment. Chlorine disinfection at the Saugus and Valencia WRPs uses sodium hypochlorite (NaOCl). In addition, chemical addition of ferric chloride ($FeCl_3$) was used to enhance sedimentation in primary treatment, to enhance biosolids dewatering, and to maintain odor control. Finally, anaerobic digestion at the Valencia WRP requires soft water to prevent scale formation in boilers used for steam heating.

Prior to the study, SCVSD reduced in-plant chloride addition by approximately 74% or 17 mg/L, by replacing $FeCl_3$ with ferric sulfate ($FeSO_4$) and replacing the SRWS used to produce soft water for the boilers at the Valencia WRP with an exchange tank softening system that employs offsite treatment of brine waste. The remaining in-plant contributions of chloride were from chlorine disinfection, which continues to be used at the Saugus and Valencia WRPs; however, UV disinfection facilities are under construction at both WRPs. Once complete, the in-plant chloride contributions will be reduced by up to 7 mg/L, with continued use of a small amount of sodium hypochlorite to control microbial growth on the inert filters.

4. Anticipated NRSD Chloride Sources

Development within NRSD currently calls for 15,620 residential dwelling units, public facilities, recreation facilities, and more than 2,000,000 million square feet of commercial space. Together, these sectors are expected to generate up to 4.5 MGD of wastewater: 2.9 MGD of residential and 1.6 MGD of commercial wastewater.[11] As discussed in Section 2.3, a portion of the wastewater from these sources (approximately 0.3 MGD) may flow to the Valencia WRP and would be under the jurisdiction of the SCVSD's SRWS prohibitions. The remaining 4.2 MGD, which may flow to the Newhall Ranch WRP, consists of approximately 1.6 MGD of commercial discharge and approximately 2.6 MGD of residential discharge from 3,921 SFH units and detached multi-family condominiums (detached housing) and 10,412 attached housing units.

The analysis presented herein uses slightly lower flows, due to presumed future conservation through Assembly Bill (AB) 1668 and SB 606, which were approved by the Governor on May 31, 2018. These bills will establish standards for the efficient use of water and per capita daily indoor residential water use and will require a 10 % reduction in commercial sector water use from the baseline uses by 2020. The resulting water conservation is expected to reduce potable water use from 2.6 to 2.1 MGD in the residential sector, and from 1.6 to 1.4 MGD in the commercial sector, for a total decrease in potable water usage from 4.2 MGD to 3.5 MGD.

The potable water supply, residential sector, and commercial sector are expected to contribute to the chloride loadings to the Newhall Ranch WRP, with minor contributions from wastewater treatment processes at the WRP. Due to the similarities to SCVSD's service area characteristics, the contributions of each source can be estimated, as described in the sections below.

4.1. Potable Water Supply

Local groundwater (historically used on-site for agricultural operations) is expected to supply most of the potable water for the Newhall Ranch development.[12] Consequently, the expected chloride levels in the potable water supply can be assumed to match the chloride levels in the alluvial aquifer, which the Valencia Water Company (VWC) has monitored since 1952. Between 2002 and 2017, the 3-month rolling average alluvial aquifer chloride level ranged from 57 to 110 mg/L, with an average value of 86 mg/L. Using Equation 1 below, with a potable water flow of 3.5 MGD and the average chloride concentration of 86 mg/L, potable water is projected to contribute 2,500 lb/day to the chloride loadings to the Newhall Ranch WRP.

$$L = C \times Q \times 8.34 \frac{lb/million\ gal}{mg/L} \qquad \text{Equation 1}$$

Where L = chloride loading (lb/day)
C = chloride concentration (mg/L)
Q = water flow rate (MGD)

[11] *Newhall Ranch Sanitation District Engineer's Report*. November 2018.

[12] Newhall Land and Farming Company. *Newhall Ranch Resource Management and Development Plan and Spineflower Conservation Plan Final Joint Environmental Impact Statement and Environmental Impact Report*. June 2010.

4.2. Residential Sector

As discussed in Section 3.2, SRWS in the residential sector contributed almost a third of the chloride in the SCVSD sewer system, with market penetration rates as high as 59%. Due to the high hardness levels in the alluvial aquifer[13] that will serve as the potable water supply, adoption rates of SRWS could be even higher in NRSD developments, if SRWS are not prohibited. Conservatively assuming an adoption rate of 59% and that only detached housing (3,921 units) will install SRWS, approximately 2,300 SRWS are expected to be installed. With a discharge of 1.1 lb/day (Section 3.2.2), these SWRS would release approximately 2,500 lb/day of chloride into the sewer system.

The residential sector will also discharge chloride from non-SRWS sources. Non-SRWS residential sources are expected to be similar between SCVSD and NRSD, but chloride concentrations in residential wastewater are expected to increase relative to the values in the Source Report, due to the new water conservation requirements.[14] The decrease in residential flow from 2.6 MGD to 2.1 MGD is expected to increase the chloride concentration from 31 mg/L (Section 3.2.3) to approximately 40 mg/L. Using Equation 1 with 2.1 MGD and 40 mg/L, the residential non-SRWS sector is expected to discharge approximately 700 lb/day of chloride.

4.3. Commercial Sector

As determined in the Source Report, the commercial sector contributed a minor amount of chloride. Most businesses do not generate significant levels of chloride, and with an ordinance prohibiting the use of SRWS in the commercial sector, businesses needing softened water (coffee shops, hotels, laundromats, restaurants) typically use exchange tank water softeners or alternative softening appliances that do not discharge brine into the sewer. As part of the Sanitation District's integrated chloride control strategy, the NRSD is expected to consider adoption of an ordinance prohibiting commercial SRWS and thus can expect to receive wastewater with chloride concentrations similar to those in SCVSD's service area (42 mg/L). However, the reduction in flow from 1.6 to 1.4 MGD will concentrate the chloride to approximately 47 mg/L. Using Equation 1 with a flow of 1.4 MGD and chloride concentration of 47 mg/L, the commercial sector is expected to discharge approximately 550 lb/day of chloride.

4.4. Wastewater Treatment Process

Although the Newhall Ranch WRP may use some sodium hypochlorite to properly maintain equipment and control biological growth, the wastewater treatment processes are not expected to contribute significantly to chloride levels. The plant will use UV disinfection, will avoid the use of other chemicals or processes that add to the chloride load, and will remove chloride from a portion of the flow through advanced treatment.

4.5. Summary of NRSD Chloride Sources

Table 2 summarizes the expected chloride contributions from various NRSD sources; contributions from wastewater treatment processes were deemed insignificant and are not included.

[13] From 2002 to 2017, the average annual hardness from the VWC alluvial aquifer wells ranged from approximately 260 to nearly 470 mg/L as $CaCO_3$.

[14] Daniel B. Stephens & Associates, Inc. *Study to Evaluate Long-Term Trends and Variations in the Average Total Dissolved Solids Concentration in Wastewater and Recycled Water*. March 30, 2018.

Table 2: Projected Chloride Loadings in NRSD with Residential SRWS

Contributor		Chloride Load (lbs/day)	Relative Contribution (%)
Potable Water Supply		2,500	40
Residential (SRWS)		2,500	40
Residential (non-SRWS)		700	11
Commercial		550	9
Total	(lb/day)	6,250	100
	(mg/L)	214*	-

*Calculated using Equation 1 with a flow of 3.5 MGD and a load of 6,250 lb/day.

5. Benefits of a Residential SRWS Prohibition

5.1. Requirements of Section 13263.3 of the California Water Code

In Section 13263.3 of the California Water Code, the California Legislature found and declared that pollution prevention should be the first step to reduce pollution and manage wastes for the achievement of environmental stewardship and that pollution prevention is necessary to achieve the federal goal of zero discharge of pollutants into navigable waters. Furthermore, it defined pollution prevention as any action that causes a net reduction in the use or generation of a pollutant that is discharged into water.

Chloride is a pollutant of concern for the LSCR, with a WLA of 100 mg/L for the Newhall Ranch WRP. Pollution prevention through a prohibition of SRWS would directly reduce the levels of chloride in wastewater that may be discharged by the WRP to the Santa Clara River. In addition, construction and operation of an advanced treatment facility indirectly creates pollution when electricity is generated at power plants to meet the high energy demand, and through the production and disposal of the brine waste. Without a prohibition on residential SRWS, chloride levels would increase, thereby increasing the required size of the advanced water treatment facility and the associated electrical demands, trucking, and volume of brine by approximately 140%. Thus, preventing the installation of residential SRWS is an initial step to reduce pollution and improve waste management.

5.2. Achievement of WQOs

As shown in Table 2, the potable water supply and the residential sector have the greatest impact on chloride levels. Because NRSD has no legal authority over the potable water supply, the residential sector is the most significant controllable source of chloride. Without residential SRWS control, chloride concentrations will increase from 128 mg/L to 214 mg/L (Table 3). This increase more than quadruples the required removal (from 28 to 114 mg/L) to meet the WLA of 100 mg/L for the Newhall Ranch WRP. Thus, an ordinance prohibiting residential SRWS greatly facilitates achievement of the chloride WQO.

Table 3: Projected Chloride Loadings in NRSD, with and without Residential SRWS Control

Contributor		With SRWS Control (lbs/day)	Without SRWS Control (lbs/day)
Potable Water Supply		2,500	2,500
Residential (SRWS)		0	2,500
Residential (non-SRWS)		700	700
Commercial		550	550
Total	(lb/day)	3,750	6,250
	(mg/L)	128*	214*

*Calculated using Equation 1 with a flow of 3.5 MGD and a load of 3,750 or 6,250 lb/day.

5.3. Cost-Effectiveness

The increase in chloride concentrations also significantly increases the required size of the advanced treatment facilities and the associated capital costs, energy demands and maintenance, thereby increasing expenditures of public funds and raising rates. As summarized in Table 4, these additional costs total approximately $51 million over the next 20 years.

Table 4: Comparison of Costs (in $) for an Advanced Treatment Facility with and without a Residential SRWS Prohibition

	Residential SRWS Prohibition Influent Chloride at 128 mg/L	No Residential SRWS Prohibition Influent Chloride at 214 mg/L
Total Capital Cost[15]	35,700,000	60,700,000
Annual O & M Cost[16]	1,200,000	3,000,000
Present Worth Costs[17]	54,000,000	105,000,000

5.4. Alternative Water Softening

A prohibition on the installation of residential SRWS will not prevent residents from using alternative methods to soften water. If an SRWS prohibition is adopted, NRSD customers will maintain the ability to soften or condition water by using water conditioning appliances that do not discharge brine into the sewer system, such as exchange tank softening systems.

6. Summary

The development within NRSD faces significant water quality challenges regarding chloride concentrations. The ability of the NRSD to control residential salinity inputs will impact future wastewater management options and strategies, including the need for additional advanced wastewater treatment.

As shown in the chloride source studies for the adjacent SCVSD, residential use of SRWS has the potential to add significant levels of chloride to the sewer system. If allowed, this excess chloride load will require the construction of larger advanced treatment facilities at the expense of NRSD ratepayers and increase the reliance on advanced treatment to meet the WQO for chloride. Operation of larger advanced treatment facilities will also generate more brine waste, additional emissions from

[15] Based on the cost estimates for the AWTF at the Valencia WRP; scaled based on the *Rule of Six-tenths* method, which provides approximate costs within ±20% for preliminary estimates for similar projects of different sizes.
[16] Based on cost estimates for the AWTF at the Valencia WRP; scaled based on the direct proportion method.
[17] Assuming an interest rate of 3 % over a 20 year time period.

transportation of the waste for disposal, and increased energy demands. Thus, granting the NRSD authority to prohibit the use of residential SRWS is a critical step to prevent pollution in the first place, and this action would adhere to the California State Legislature's declaration that pollution prevention should be the first step for reducing pollution and managing waste.

Per Section 13148 of the California Water Code, the NRSD may take action to control salinity input from residential SRWS but only after a Regional Water Board has made findings that local control will contribute to the achievement of WQOs. Granting this authority will not prevent residents from using alternative methods to soften water.

The source determination studies presented here provide strong evidence that granting the NRSD authority to control residential SRWS will contribute to the achievement of the WQO for chloride in the Santa Clara River.

References

California Regional Water Quality Control Board, Los Angeles Region. Resolution No. R4-2004-004. *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*. May 6, 2004.

California Regional Water Quality Control Board, Los Angeles Region. Resolution No. R4-2008-012. *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*. December 11, 2008.

California Regional Water Quality Control Board, Los Angeles Region. Resolution No. R4-2014-010. *Amendment 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 Site Specific Objectives for Chloride in Reaches 5 and 6; and Revise the Total Maximum Daily Load for Chloride in the Upper Santa Clara River*. October 9, 2014.

California State Assembly Bill No. 1668. May 31, 2018.

California State Senate Bill No. 606. May, 31, 2018.

California Water Code, Section 13148.

California Water Code, Section 13263.3.

County Sanitation District Nos. 26 and 32 of Los Angeles County. *Santa Clarita Valley Joint Sewerage System Chloride Source Report, October 2002*.

County Sanitation Districts Nos. 26 and 32 of the Los Angeles County and Newhall Land and Farming Company. *Interconnection Agreement*. January 9, 2002.

County Sanitation District No. 26 of Los Angeles County. *Ordinance Prohibiting the Installation of Certain Water Softening Appliances*. March 27, 2003.

County Sanitation District No. 26 of Los Angeles County. *Resolution: Prevention of District Sewerage System Discharge of Salt Brines*. August 8, 1961.

County Sanitation District No. 32 of Los Angeles County. *Ordinance Prohibiting the Installation of Certain Water Softening Appliances*. March 27, 2003.

County Sanitation District No. 32 of Los Angeles County. *Resolution: Prevention of District Sewerage System Discharge of Salt Brines*. April 12, 1966.

Daniel B. Stephens & Associates, Inc. *Study to Evaluate Long-Term Trends and Variations in the Average Total Dissolved Solids Concentration in Wastewater and Recycled Water*. March 30, 2018.

Newhall Land and Farming Company. *Section 4.3 – Water Resources, Newhall Ranch Resource Management and Development Plan and Spineflower Conservation Plan Final Joint Environmental Impact Statement and Environmental Impact Report*. June 2010.

Newhall Ranch Sanitation District Engineer's Report. November 2018.

NRSD-SCVSD. *Joint Sewerage Services Agreement*. December 12, 2017.

SCVSD. *2017 Chloride Source Identification/Reduction, Pollution Prevention, and Public Outreach Plan*. August 2017.

SCVSD. *Santa Clara River Chloride Reduction Ordinance of 2008*. June 11, 2008.