Appendix 8-A. Calleguas Municipal Water District Imported Water Costs and Real Escalation Rate Assumptions

Several projects in the Watershed Coalitions of Ventura County (WCVC) IRWM Region proposal enhance local water supplies and, thus, reduce the region's reliance on water imported from the Bay-Delta via the State Water Project (SWP). The avoided cost of imported SWP water is thus an important monetized benefit for projects that enhance local supplies.

This appendix to Attachment 8 – Benefits and Cost Analysis, discusses imported water costs for the Calleguas Municipal Water District (Calleguas), and assumptions about the real rate of increase of imported water costs into the future. Calleguas is the imported water wholesaler to much of the WCVC IRWM Region. These factors were used to determine avoided imported water costs for each Attachment 8 where avoided costs of SWP water imports are claimed.

Calleguas Imported Water Rates

Calleguas takes treated Tier 1 imported SWP water from the Metropolitan Water District of Southern California (Metropolitan), and provides it on a wholesale basis to 19 local purveyors, who in turn deliver water to area residents, businesses, and agricultural customers. Calleguas receives SWP water exclusively under normal operating conditions. Calleguas' water supply is treated at Metropolitan's Jensen Treatment Facility in Granada Hills. Calleguas' sole connection to Metropolitan is located at Calleguas' East Portal Facility. From this point, water is conveyed 1.39 miles through the Perliter Tunnel into Simi Valley, where it is distributed through Calleguas' transmission system, injected into the Las Posas aquifer, or stored in Lake Bard. Calleguas also owns and operates a water treatment facility utilizing state of the art filtration and disinfection methods to comply with all federal and state water quality standards (RBF Consulting, 2011; Calleguas, 2012)

In 2012, the Tier 1 cost passed on by Calleguas was Metropolitan's treated tier 1 rate of $794 per AF. In 2012, Calleguas also charged an O&M surcharge of $54 per AF, plus a capital construction surcharge of $208 per AF. Thus, Calleguas' total charges in 2012 for delivering Tier 1 water were $1,056 per AF (Calleguas, 2013).

In order to value the avoided cost of SWP imports, it is important to include only charges associated directly with imported water. The O&M surcharge is directly related to delivering imported water. Calleguas' capital improvement surcharge is based on Calleguas' overall capital improvement budget and not separated by component. There are four main components to Calleguas' capital improvement program: Las Posas Wellfield, Salinity Management Pipeline (SMP), improvements to existing facilities, and another category for rehabilitiation, replacement and relocation (Calleguas, 2012). All categories were determined to be directly related to providing imported water except the SMP, which removes brines from the Calleguas Creek Watershed in order to facilitate desalting of groundwater and recycled water use. The SMP is not directly related to imported water use, although it helps enable use of local water supplies that help ensure the overall reliability of imported water delivered by Calleguas.

For purposes of this grant application, the ratio of costs for each component of Calleguas' 10-year capital improvement program (2012 – 2022) over the next ten years was used in order to determine the ratio of imported water-only related costs to the overall capital improvement budget. Approximately 66% of Calleguas' planned capital improvements are directly related to the delivery and/or treatment of imported water. Thus, the relevant portion of the capital construction surcharge is $137 (66% multiplied by $208). For the purposes of this analysis, avoided imported water supply costs at 2012 rates therefore amount to $985 per AF (including Metropolitan's base rate of $794 per AF, Calleguas' $54 per AF O&M surcharge, and the $137 per AF portion of the capital construction surcharge).

SWP Price Increase Assumptions

An important aspect in monetizing the value of avoided imports entails predicting the future cost of imported SWP water. The economic analyses in these grant applications are developed in real terms (based on 2012 dollars), meaning that the future stream of benefits and costs typically are not adjusted for general inflation. This is because most outcomes are expected to see price changes that generally align with broader measures of inflation, such as the Consumer Price Index (CPI), which is measured and reported by the federal Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt).

The price of imported SWP water is an important exception, because various factors have led to rate increases that have considerably outpaced general inflation over the past two decades (as detailed below). This trend of real price increases for imported water (i.e., above the projected CPI) is likely to continue in the future as well, because the same factors that have driven these prices upward will remain relevant for several years to come. These factors principally include limitations on overall supply, due to a variety of factors primarily linked to the declining health of the Bay-Delta system from which these waters are extracted.

The supply-constraining factors for the Bay-Delta include Court rulings and environmental regulations related to the severe adverse impacts that declining water levels and the associated alterations in water quality (e.g., salinity) have imposed on this important ecosystem. Fish populations have declined dramatically in recent decades (including threatened and endangered species such as salmon and the delta smelt, for which the Bay Delta provides critical habitat). The levee system is aging, and vulnerability of the Delta to flooding, sea level rise, or a major earthquake has contributed to concerns about possible levee collapse which could have devastating and far-reaching consequences. In addition, water quality problems continue, with impacts not only on fisheries and natural systems, but also on water treatment needs to meet drinking water standards for protecting human health and aesthetics (AECOM, 2012).

These factors – and the associated investments that Metropolitan and other water agencies have needed to make in infrastructure and potable water treatment – have resulted in dramatic increases in the cost of water that Metropolitan wholesales throughout southern California. Large investments in new infrastructure made over the past ten to twenty years include the Diamond

Valley Lake and Inland Feeder. In the coming years, additional large-scale costs are likely to be incurred for the Delta Conveyance, which may cost approximately $20 billion in its current formulation, with Metropolitan likely to bear a large portion (e.g., one-third to one-half) of the cost.

Table 8A-1 reveals the extent to which Metropolitan water rates have increased over the past 10 to 20 years, relative to general inflation as reflected by the federal CPI. Table 8A-1 shows the change in Metropolitan "Tier 1 treated" supply rates. It is evident that over both the recent short-term (5-year period) and longer-term periods (10-year), imported water costs have increased at rates well above inflation. Tier 1 rates in the 2008 through 2012 period increased by over 56%, which is 8.5 times greater than the CPI over the same period. This indicates that the real rate of price increase (above general inflation) for Metropolitan water has been 10.2% annually over the past five years (as shown in the right-most column in Table 8A-1).

Over a longer timeframe, similar escalations are evident as well. Over the last decade, the 10-year average annual cost increase for Metropolitan water has been from 5.2% per year above inflation, for Tier 1.

Table 8A-1 Metropolitan Tier 1 Treated Rates Compared to CPI

		Cumulative Change			Average Annual Change		
Time Interval	# Years	Tier 1	CPI	ratio	Tier 1	CPI	Real Tier 1
2008 - 2012	5 years	56.3%	6.6%	8.5	11.8%	1.6%	10.2%
2003 - 2012	10 years	94.6%	24.8%	3.8	7.7%	2.5%	5.2%

Based on these data, it is appropriate for the economic analyses to reflect how imported water costs in southern California are likely to continue to increase at rates considerable above general inflation. To reflect real prices of imported water in the future, we have adopted the following conservative assumptions:

1. For water imported between 2013 and 2020 (inclusive), we derive a real cost by escalating the prior year's cost by 3.5%. Thus, for example, the 2013 imported water cost (in $2012) is estimated as the 2012 cost multiplied by 1.035. This escalation of 3.5% above CPI is fairly conservative (i.e., low end), given the documented trends over the past 5 to 10 years (for which real increases have ranged from 5.2% to 10.2% per year).
2. For water imported in 2021 and years thereafter, we escalate at a rate of 1.5% per year to obtain real prices. This is also a conservative assumption, given that observed 10 year real escalation rate has been 5.2%.

Another benchmark for considering these real price adjustments is provided by the long-term forecast for CPI for the upcoming 10-year period, 2013 through 2022. The Federal Reserve Bank

of Philadelphia indicates an anticipated annual average CPI of 2.3% over the next ten years (Federal Reserve Bank of Philadelphia, 2013).

Combining the CPI forecast with the real escalation rates we propose above for SWP imports, this suggests an average nominal increase in imported water costs of only 5.8% per year through 2020 (2.3% + 3.5%), and 3.8% from 2021 onwards (2.3% + 1.5%). Both of these nominal price increases are well below the average nominal price increases observed for Metropolitan over the relevant comparable time periods.

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From: Bryan Bondy
To: Meredith Clement; Jim Henderson; McGovern Lucie;
cc: Catrina Paez; Sachi Itagaki; Kristine McCaffrey;
Subject: North Pleasant Valley Desalter - Economic Analysis - Recycled water to AG
Date: Friday, February 01, 2013 9:47:04 AM

All,

I reviewed the aerial photos per our discussion. I have 2010 images. Per Lucie, there are five areas that will receive recycled water identified in this grant application. Two of the five areas are agricultural. One area is already 100% strawberries (Area 9). The other area is roughly 25% strawberries, with the remainder mostly row crops and a minor amount of citrus (Area 6). Strawberries are a risky crop to grow, so it may be that the other 60% of the land is used to grow other crops that help balance the farmer's risk (and possibly cash flow) or is farmed by different folks who are risk adverse. Bottom line – strawberries can be grown here w/o recycled water, so we shouldn't claim that recycled water enables farmers to grow higher value crops.

The are two other benefits I can think of that you may wish to consider.

(1) The recycled water deliveries will offset some amount of groundwater pumping in an overdrafted area with seawater intrusion. If the offset was 100%, the project would be addressing roughly 17% of the overdraft in the region (GMA says there is 20,000 AF/yr of overdraft and this project delivers 3,300 AF/yr of recycled water). This argument is tricky because you don't really know how much groundwater pumping is being reduced as a result of the recycled water deliveries because there are multiple sources of Ag water in the area. If you want to put a cost on the overdraft, United Water Conservation District and Oxnard were exploring the idea of constructing a seawater intrusion barrier a few years back. They may have developed rough costs at that time.

(2) Low TDS recycled water may allow the farmers to use less water, resulting in a cost savings. Unfortunately there is no published rule of thumb that I know of for this. If you want to explore this further, I would contact Dr. Stuart Styles at Cal Poly Slo: Telephone: 805.756.2429 Email: sstyles@calpoly.edu Dr. Styles recently completed a detailed agricultural water demand/efficiency study for the Fox Canyon GMA.

Hope this helps…

Best Regards,

Bryan

Salinity Management Pipeline Costs

Segment	Length (feet)	Inside Diameter (inches)	Year Bid	Year Completed	$ per (LF x in.dia.)	Cost (as of Sep-12)	State Grant Funding	Federal Grant Funding	Cost (Minus Grant Funding)
Outfall	5,000	30	2008	2010	n/a	*$22,600,000* actual	$ 3,345,000	*$ 515,022*	$18,739,978
Phase 1									
A	21,000	48	2002	2004	$13	$13,343,000 actual	$ -	*$ 2,163,092*	$11,179,908
B	9,000	48	2007	2009	$38	$16,492,000 actual	$ 5,000,000	*$ 927,040*	$10,564,960
C	4,000	48	2007	2008	$37	$7,151,000 actual	$ 2,230,000	*$ 412,018*	$4,508,982
D	1,145	20	2007	2009	n/a	$5,541,000 actual	$ -	$ 392,447	$5,541,000
	1,365	24							
	1,300	48							
E	10,500	48	2009	2012	$64	$32,337,000 estimate	$ 5,500,000	$ 1,184,551	$25,652,449
	1,000	12							
PHWA	NA					$2,117,000 estimate	$ -	$ -	$2,117,000
Subtotal						*$76,981,000*			*$59,564,300*
Phase 2									
A	12,500	30	2012	2013	$28	$10,590,000 estimate	$ 3,750,000	$ 1,287,555	$5,552,445
B	13,200	30	2013	2014	$38	$15,000,000 estimate		$ 1,359,658	$13,640,342
C	9,400	30	2012	2013	$24	$6,700,000 estimate		$ 968,241	$5,731,759
D	12,900	24	2013	2015	$46	$14,226,000 estimate		$ 1,328,757	$12,897,243
E	9,000	24	2014	2016	$34	$7,332,941 estimate		$ 927,040	$6,405,901
F	9,000	24	2014	2016	$34	$7,332,941 estimate		$ 927,040	$6,405,901
Subtotal						*$61,181,882*			$50,633,592
Phase 3									
A	22,400	24	2016	2018	$36	$26,585,302 estimate		$ 2,307,298	$24,278,004
B	22,400	24	2018	2020	$38	$20,541,520 estimate		$ 2,307,298	$18,234,222
C	7,400	18	2019	2021	$39	$5,242,214 estimate		$ 762,233	$4,479,982
Subtotal						*$52,369,037*			$46,992,207
Total	172,510					$213,131,918	$ 19,825,000	$ 17,769,288	$175,930,077

Assumptions

Present Day-Cost per nom. in. per L.F.	$32
Current Year	2012
Assumed Inflation	3%

Capital Costs

			FCGMA Allocation			Partnership	
Capacity Purchase			No Treatment	RO Treatment			
Wells - 1500 gpm		4	Camarillo GW1	Camarillo GW2	Camarillo New	Thousand Oaks	Camrosa
Groundwater Pumping (AFY)		9,000	2,250	2,700	2,700	1,800	1,800
Production Capacity (AFY)	**1**	**7,500**	**2,250**	**2,250**	**2,250**	**1,500**	**1,500**
Administration/Environmental/ Special Studies	$ 106.67	$ 800,000		$ 240,000	$ 240,000	$ 160,000	$ 160,000
Monitoring Wells	$ 62.67	$ 470,000		$ 141,000	$ 141,000	$ 94,000	$ 94,000
Land	$ 53.33	$ 400,000		$ 120,000	$ 120,000	$ 80,000	$ 80,000
new wells	$ 666.67	$ 5,000,000			$ 2,000,000	$ 1,500,000	$ 1,500,000
Well Pipelines	$ 133.33	$ 1,000,000		$ 300,000	$ 300,000	$ 200,000	$ 200,000
Wellhead Treatment	$ 133.33	$ 1,000,000		$ 300,000	$ 300,000	$ 200,000	$ 200,000
RO (5.5 mgd - 80%)	$ 2,933.33	$ 22,000,000		$ 6,600,000	$ 6,600,000	$ 4,400,000	$ 4,400,000
Finished Water	$ 266.67	$ 2,000,000		$ 600,000	$ 600,000	$ 400,000	$ 400,000
Brine Line	$ 133.33	$ 1,000,000		$ 300,000	$ 300,000	$ 200,000	$ 200,000
Product Pipelines	$ 266.67	$ 2,000,000		$ 600,000	$ 600,000	$ 400,000	$ 400,000
Subtotal	**$ 4,756**	**$ 35,670,000**		**$ 9,201,000**	**$ 11,201,000**	**$ 7,634,000**	**$ 7,634,000**
Design (10%)	$ 476	$ 3,567,000		$ 920,100	$ 1,120,100	$ 763,400	$ 763,400
PM/CM (10%)	$ 476	$ 3,567,000		$ 920,100	$ 1,120,100	$ 763,400	$ 763,400
Contingency (20%)	$ 951	$ 7,196,000		$ 1,858,800	$ 2,258,800	$ 1,539,200	$ 1,539,200
	$ 6,666	**$ 50,000,000**		**$ 12,900,000**	**$ 15,700,000**	**$ 10,700,000**	**$ 10,700,000**
Annual Cost - 20 yrs./5%		$ 528					
Annual Cost - 25 yrs./5%		$ 468					
Annual Cost - 30 yrs/5%		$ 430					

Maintenance Costs

Electricity	$ 131	$ 982,800	$ 150,000	$ 294,840	$ 294,840	$ 196,560	$ 196,560
Chemicals	$ 118	$ 886,200	$ 41,000	$ 265,860	$ 265,860	$ 177,240	$ 177,240
Membrane Replacement	$ 21	$ 157,500		$ 47,250	$ 47,250	$ 31,500	$ 31,500
Cartridge Filters	$ 1	$ 9,450		$ 2,835	$ 2,835	$ 1,890	$ 1,890
Repairs & Replacement	$ 42	$ 311,850	$ 30,000	$ 93,555	$ 93,555	$ 62,370	$ 62,370
Well Pumping Charges (FCGMA)	$ 8	$ 60,900	$ 18,270	$ 18,270	$ 18,270	$ 12,180	$ 12,180
Brine Disposal	$ 170	$ 321,300		$ 96,390	$ 96,390	$ 64,260	$ 64,260
Labor	$ 15	$ 110,250		$ 33,075	$ 33,075	$ 22,050	$ 22,050
	$ 379	**$ 2,840,250**	**$ 239,270**	**$ 852,075**	**$ 852,075**	**$ 568,050**	**$ 568,050**
Annual Cost		$ 379	$ 107	$ 379	$ 379	$ 379	$ 379

Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
RO Cost - 25 yrs/5%	$ 847	$ 889	$ 916	$ 943	$ 971	$ 1,001	$ 1,031	$ 1,062	$ 1,093	$ 1,126	$ 1,160
Imported Water Cost	$ 1,154	$ 1,221	$ 1,295	$ 1,370	$ 1,450	$ 1,537	$ 1,627	$ 1,713	$ 1,800	$ 1,884	$ 1,973

Attachment A to Resolution No. R4-2007-016

Proposed Amendment to the Water Quality Control Plan – Los Angeles Region

to Incorporate the

Total Maximum Daily Load for Boron, Chloride, Sulfate, and TDS (Salts) in the Calleguas Creek Watershed

Adopted by the California Regional Water Quality Control Board, Los Angeles Region on October 4, 2007

Amendments

Table of Contents
Add:

Chapter 7. Total Maximum Daily Loads (TMDLs)

7- 22 Calleguas Creek Watershed Salts TMDL

List of Figures, Tables, and Inserts
Add:

Chapter 7. Total Maximum Daily Loads (TMDLs)
Tables

7-22 Calleguas Creek Watershed Salts TMDL
7-22.1. Calleguas Creek Watershed Salts TMDL: Elements
7-22.2. Calleguas Creek Watershed Salts TMDL: Implementation Schedule

Chapter 7. Total Maximum Daily Loads (TMDLs)
Calleguas Creek Watershed Salts TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on October 4, 2007.

This TMDL was approved by:

The State Water Resources Control Board on May 20, 2008.
The Office of Administrative Law on November 6, 2008.
The U.S. Environmental Protection Agency on December 2, 2008.

This TMDL is effective on December 2, 2008.

The elements of the TMDL are presented in Table 7-22.1 and the Implementation Plan in Table 7-22.2

Table 7-22.1. Calleguas Creek Watershed Salts TMDL: Elements

<table>
<tr><th>TMDL Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Problem Statement</td><td>Eleven of fourteen reaches in the Calleguas Creek Watershed (CCW) are identified on the 2002 Clean Water Act Section 303(d) list of water-quality limited segments as impaired due to elevated levels of boron, chloride, sulfate, or total dissolved solids (TDS) (these constitutions are commonly referred to as salts). Salts primarily impact two beneficial uses: agricultural supply and groundwater recharge. Below is 2002 303(d) list of water quality limited segments of the Calleguas Creek watershed:
<table>
<tr><th>Reach Name</th><th>Pollutant/Stressor</th></tr>
<tr><td>▪ Calleguas Creek Reach 3</td><td>Chloride, TDS</td></tr>
<tr><td>▪ Calleguas Creek Reach 6</td><td>Chloride, Sulfate, TDS</td></tr>
<tr><td>▪ Calleguas Creek Reach 7</td><td>Boron, Chloride, Sulfate, TDS</td></tr>
<tr><td>▪ Calleguas Creek Reach 8</td><td>Boron, Chloride, Sulfate, TDS</td></tr>
<tr><td>▪ Calleguas creek Reach 9A</td><td>Sulfate, TDS</td></tr>
<tr><td>▪ Calleguas Creek Reach 9B</td><td>Chloride, Sulfate, TDS</td></tr>
<tr><td>▪ Calleguas Creek Reach 10</td><td>Chloride, Sulfate, TDS</td></tr>
<tr><td>▪ Calleguas Creek Reach 11</td><td>Sulfate, TDS</td></tr>
<tr><td>▪ Calleguas Creek Reach 12</td><td>Sulfate, TDS</td></tr>
<tr><td>▪ Calleguas Creek Reach 13</td><td>Chloride, Sulfate, TDS</td></tr>
</table>
The list of impaired segments of the Calleguas Creek watershed in the 2002 303(d) list was maintained in the 2006 303(d) list.

The segment of Reach 4 below Laguna Road is tidally influenced and therefore not impaired for chloride, boron, sulfate, and TDS. Consequently, the waste load and load allocations developed for Reach 4 in this TMDL do not apply below Laguna Road.

The goal of this TMDL is to protect and restore the water quality in the Calleguas Creek watershed by controlling the loading and accumulation of salts.</td></tr>
<tr><td>Numeric Targets</td><td>Numeric targets are based on the site-specific numeric water quality objectives (WQOs) provided in the Basin Plan.

1. <u>Surface Water Quality Objectives</u>

Site-specific surface water quality objectives for the Calleguas Creek watershed are applicable upstream of Potrero Road. Site specific objectives have not been determined for Calleguas Creek below Potrero Road because the reach is tidally influenced. Below are WQOs for Calleguas Creek upstream of Potrero Road.</td></tr>
</table>

TMDL Element	Key Findings and Regulatory Provisions

Constituent	Water Quality Objective Upstream Potrero Road (mg/L)
Boron	1
Chloride	150
Sulfate	250
TDS	850

2. Groundwater Quality Objectives

Groundwater Basin[1]			Boron (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)
DWR Basin No.	Groundwater Basin as Listed in the 1994 Basin Plan	Implementation Areas for Salts TMDL				
4-6	Pleasant Valley	Conejo and Calleguas/Pleasant Valley	1.0	150	300	700
4-7	Arroyo Santa Rosa	Arroyo Santa Rosa and Conejo/Arroyo Santa Rosa	1.0	150	300	900
4-8	Las Posas Valley – East of Grimes Canyon and Hitch Blvd	Arroyo Simi/South Las Posas	3.0	400	1200	2500
4-8	Las Posas Valley – South of LA Ave between Somis Rd & Hitch Blvd	Arroyo Las Posas/South Las Posas	1.0	250	700	1500
4-8	Las Posas Valley – North Las Posas Area	Arroyo Las Posas/North Las Posas	1.0	150	250	500
4-9	Simi Valley	Arroyo Simi/Simi Valley	1.0	150	600	1200
4-10	Conejo Valley	Arroyo Conejo/Conejo Valley	1.0	150	250	800
4-15	Tierra Rejada	Arroyo Santa Rosa/Tierra Rejada	0.5	100	250	700
4-19	Thousand Oaks	Arroyo Conejo/Thousand Oaks	1.0	150	700	1400

[1] The groundwater quality objectives specified in this table are equivalent to the groundwater quality objectives in the 1994 Basin Plan. Groundwater basins are numbered in the first column according to Bulletin 118-80 (Department of Water Resources, 1980). Designated groundwater basins in the 1994 Basin Plan are specified in the second column and groundwater basin descriptions of Calleguas Creek used in this TMDL are listed in the third column of the table.

Source Analysis

Sources of salts in the watershed include water supply (water imported from the State Water Project or Freeman Diversion and deep aquifer groundwater pumping), water softeners that discharge to publicly owned treatment works (POTWs), POTW treatment chemicals, atmospheric deposition, pesticides and fertilizers, and indoor water use (chemicals, cleansers, food, etc.). These salts are then transported through POTW discharges and runoff to surface water, shallow groundwater, and/or stranded on the watershed in the soils. Salts transported in the surface water to the ocean are currently the only salts

TMDL Element	Key Findings and Regulatory Provisions
	that are exported from the watershed. While the concentration of salts in the introduced water is usually below the Basin Plan Objectives, the quantity of water brought into the watershed is sufficient to rank introduced water as the greatest source of salts to the watershed. Salts that are transported during dry weather to the surface water are quantified via the following mechanisms: groundwater pumping, groundwater exfiltration, POTWs, dry weather urban and agricultural runoff. Wet weather loadings from each of these sources have the potential to be significant, but tend to be lower in concentration and do not occur during the critical conditions for salts. Wet weather loads are significant from the perspective of transporting stranded salts off the watershed.
Linkage Analysis	The linkage analysis for salts focuses on the surface water concentrations of salts. However, surface water concentrations are only one component of the watershed salts issue. Because it is difficult to model other aspects of the salt problem (i.e. surface water and groundwater interactions, stranded salts), two simplified approaches have been used to demonstrate that salts will be removed from the watershed, which should have a correspondingly positive impact on surface water and groundwater salts concentrations. First, a surface water model was developed to provide a linkage between sources and surface water quality and to demonstrate the impact of projects on receiving water quality in the watershed. Second, a salt balance was developed to quantify the removal of salts from the watershed with the goal of achieving a mass balance in which the mass of boron, sulfate, TDS and chloride imported into Calleguas Creek subwatersheds is no more than the mass of boron, sulfate, TDS and chloride exported from the Calleguas Creek subwatershed. Achieving a salt balance in the watershed will prevent additional build-up of salts in any medium in the watershed and protect ground water supplies from increasing in salt concentrations. The Calleguas Creek Modeling System is a mass balance based model that was developed for the surface water to provide a linkage between sources and surface water quality. To estimate the salts balance in the watershed, a simple chloride mass balance was developed by the Camrosa Water District (Hajas, 2003a) and modified to address the other salts.

TMDL Element	Key Findings and Regulatory Provisions
Waste Load Allocations	**<u>A. POTWs</u>** The TMDL includes waste load allocations (WLAs) for five POTWs in the Calleguas Creek watershed: Simi Valley Water Quality Control Plant (WQCP), Hill Canyon Wastewater Treatment Plan (WWTP), Moorpark WWTP, Camarillo Water Reclamation Plant (WRP), and Camrosa Water Reclamation Facility (WRF). At the end of the implementation period, only Simi Valley WQCP and the Hill Canyon WWTP are expected to discharge to surface waters. Moorpark WWTP and Camrosa WRF currently discharge directly to ponds under dry weather conditions. As part of the TMDL implementation, the Renewable Water Resources Management Program (RWRMP) will introduce treated wastewater from the Camarillo WRP into the Camrosa recycled water storage and distribution system. Surplus treated wastewater from Camarillo WRP and Camrosa WRF will be discharged at a point downstream of Potrero Road Bridge to Calleguas Creek. Dry weather WLAs are included for the case when Camarillo WRP, Camrosa WRF, and Moorpark WWTP need to discharge to the stream (for example, if there is insufficient recycled water demand during the wet season). Including WLAs for these POTWs ensures that water quality objectives are not exceeded as a result of their discharge. POTW mass-based WLAs are calculated as the POTW effluent flow rate multiplied by the water quality objective and include a mass-based adjustment factor (AF) that is subtracted from the product of the flow-rate and the water quality objective. The adjustment factor is used to link POTW allocations to the required reductions in background loads. The adjustment factors are implemented through mechanisms that export salts out of the subwatershed, such as groundwater pumping, to meet the salt balance requirements. To ensure that the loading capacity is achieved in surface water and the reductions in background loads are achieved, minimum salt exports shown below are required for POTWs and are included in WLAs as a component of the adjustment factors. If the background load reductions are not achieved, POTWs shall be responsible for providing additional load reductions to achieve water quality standards. The AF is set equal to the difference between the minimum salts export requirement to attain a salt balance in the subject reaches and the actual salts export. If the calculated annual dry weather salt exports from the subwatershed to which the POTW discharges are less than the minimum required exports for the previous year and the annual average receiving water concentration at the base of the subwatershed to which the POTW discharges exceeds water quality objectives for the previous year, the POTW allocations will be reduced using the adjustment factor.

TMDL Element	Key Findings and Regulatory Provisions
	The adjustment factors are also used to address unusual conditions in which the inputs to the POTWs from the water supply may challenge the POTWs ability to meet the assigned WLAs. The adjustment factor allows for the additional POTW loading only when the water quality objectives are met in the receiving waters. POTW allocations can be adjusted upwards when imported water supply chloride concentrations exceed 80 mg/L and discharges from the POTW exceed the WLA. In order to apply the AF to the assigned WLAs, the POTW is required to submit documentation of the water supply chloride concentrations, receiving water chloride concentration, the effluent mass, and evidence of increased salt exports to offset the increased discharges from the POTW to the RWQCB for approval. WLAs shown in table below apply to POTWS during dry weather when the flows in the receiving water are below the 86th percentile flow. During wet weather, the loading capacity of the stream is significantly increased by stormwater flows with very low salt concentrations. Any discharges from the POTWs during wet weather would be assimilated by these large storm flows and would not cause exceedances of water quality objectives. Boron is only listed in the Simi and Pleasant Valley (Revolon) subwatersheds and exceedances of boron do not occur in other portions of the watershed. Therefore, boron allocations are only included for the Simi Valley WQCP. Interim limits are included to allow time for dischargers to put in place implementation measures necessary to achieve final waste load allocations. The monthly average interim limits are set equal to the 95th percentile of available discharge data. **1. Minimum Salt Export Requirements for Adjustment Factor [a]** POTW: Minimum Chloride Export (lb/day); Minimum TDS Export (lb/day); Minimum Sulfate Export (lb/day); Minimum Boron Export (lb/day) Simi Valley WQCP: 460; 3220; 9120; 3.3 Moorpark WWTP: 460; 3220; 9120; 3.3 Hill Canyon WWTP: 1060; 7920; 4610; 0 Camrosa WRF: 1060; 7920; 4610; 0 Camarillo WRP: 1060; 7920; 4610; 0 [a] Minimum export requirements include a 10% Margin of Safety.

TMDL Element	Key Findings and Regulatory Provisions

2. Interim Monthly Average WLAs for POTWs

POTW	Chloride (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Boron (mg/L)
Simi Valley WQCP	183	955	298	N/A
Hill Canyon WWTP	189	N/A	N/A	N/A
Moorpark WWTP	171	N/A	267	N/A
Camarillo WRP	216	1012	283	N/A
Camrosa WRF*	N/A	N/A	N/A	N/A

* Camrosa WRF has not discharged to surface water during the period under which interim limits were calculated. When effluent data are available, the Regional Board may adopt interim WLAs for Camrosa WRF.
N/A: The 95th percentile concentration is below the Basin Plan objective so interim limits are not necessary.

3. Final WLAs for POTWs[a,d]

POTW	Chloride (lb/day) [c]	TDS (lb/day) [c]	Sulfate (lb/day) [c]	Boron (lb/day) [c]
Simi Valley WQCP	150*Q-AF	850*Q-AF	250*Q-AF	1.0*Q-AF
Hill Canyon WWTP	150*Q-AF	850*Q-AF	250*Q-AF	N/A
Moorpark WWTP[b]	150*Q-AF	850*Q-AF	250*Q-AF	N/A
Camarillo WRP[b]	150*Q-AF	850*Q-AF	250*Q-AF	N/A
Camrosa WRF[b]	150*Q-AF	850*Q-AF	250*Q-AF	N/A

a. The allocations shown only apply during dry weather (as defined in this TMDL). During wet weather discharges from the POTWs do not cause exceedances of water quality objectives.
b. These POTWs are not expected to discharge after the end of the implementation period.
c. AF is the adjustment factor and equals the difference between the minimum salts export requirement and the actual salts export.
d. Q represents the POTW flow at the time the water quality measurement is collected and a conversion factor to lb/day based on the units of measurement for the flow.

N/A Boron is not listed in the reaches to which the POTW discharges. No WLA is required.

B. Urban Runoff

Permitted stormwater dischargers that are responsible parties to this TMDL include the Municipal Stormwater Dischargers (MS4s) of the Cities of Camarillo, Moorpark, Thousand Oaks, County of Ventura, Ventura County Watershed Protection District, and general industrial and construction permittees. Permitted stormwater dischargers are assigned a dry weather wasteload allocation equal to the average dry weather critical condition flow rate multiplied by the numeric target for each constituent. Waste load allocations apply in the receiving water at the base of each subwatershed. Because wet weather flows transport a large mass of salts at low concentrations, these dischargers meet water

TMDL Element	Key Findings and Regulatory Provisions

quality objectives during wet weather. Dry weather allocations apply when instream flow rates are below the 86th percentile flow and there has been no measurable precipitation in the previous 24 hours.

Interim limits are assigned for dry weather discharges from areas covered by NPDES stormwater permits to allow time to implement appropriate actions. The interim limits are assigned as concentration based receiving water limits set to the 95th percentile of the discharger data as a monthly average limit except for chloride. The 95th percentile for chloride was 267 mg/L which is higher than the recommended criteria set forth in the Basin Plan for protection of sensitive beneficial uses including aquatic life. Therefore, the interim limit for chloride for Permitted Stormwater Dischargers is set equal to 230 mg/L to ensure protection of sensitive beneficial uses in the Calleguas Creek watershed.

1. Interim Dry Weather WLAs for Permitted Stormwater Dischargers

Constituent	Interim Limit (mg/L)
Boron Total	1.3
Chloride Total	230
Sulfate Total	1289
TDS Total	1720

2. Final Dry Weather WLAs for Permitted Stormwater Dischargers

Subwatershed	Critical Condition Flow Rate (mgd)	Chloride Allocation (lb/day)	TDS Allocation (lb/day)	Sulfate Allocation (lb/day)	Boron Allocation (lb/day)
Simi	1.39	1,738	9,849	2,897	12
Las Posas	0.13	157	887	261	N/A
Conejo	1.26	1,576	8,931	2,627	N/A
Camarillo	0.06	72	406	119	N/A
Pleasant Valley (Calleguas)	0.12	150	850	250	N/A
Pleasant Valley (Revolon)	0.25	314	1,778	523	2

<table>
<tr><th>TMDL Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td></td><td>

C. Final WLAs for Other NPDES Dischargers

Concentration-based WLAs are assigned at the Basin Plan objectives for other NPDES dischargers.

<table>
<tr><th>Constituent</th><th>Allocation (mg/L)</th></tr>
<tr><td>Chloride</td><td>150</td></tr>
<tr><td>TDS</td><td>850</td></tr>
<tr><td>Sulfate</td><td>250</td></tr>
<tr><td>Boron[a]</td><td>1.0</td></tr>
</table>

Other NPDES dischargers include, but are not limited to, permitted groundwater cleanup projects that could have significant salt concentrations as a result of the stranded salts in the shallow groundwater basins being treated. To facilitate the cleanup of the basins prior to alternative discharge methods (such as the brine line) being available, interim limits for other NPDES dischargers will be developed on a case-by-case basis and calculated as a monthly average using the 95th percentile of available discharge data.

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<tr><td>**Load Allocations**</td><td>

Dry weather load allocations are assigned as a group allocation to irrigated agricultural discharges. The load allocation (LA) is equal to the average dry weather critical condition flow rate multiplied by the numeric target for each constituent. Load allocations apply in the receiving water at the base of each subwatershed. Because wet weather flows transport a large mass of salts at a typically low concentration, these dischargers should meet water quality objectives during wet weather. Dry weather allocations apply when instream flow rates are below the 86th percentile flow and there has been no measurable precipitation in the previous 24 hours.

Interim limits are assigned for dry weather discharges from irrigated agricultural areas to allow time to implement appropriate actions. The interim limits are assigned as concentration based receiving water limits set to the 95th percentile of the discharger data as a monthly average limit except for chloride. The 95th percentile for chloride was 499 mg/L which is higher than the recommended criteria set forth in the Basin Plan for protection of sensitive beneficial uses including aquatic life. Therefore, the interim limit for chloride for Irrigated Agricultural Dischargers is set equal to 230 mg/L to ensure protection of sensitive beneficial uses in the Calleguas Creek watershed.

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</table>

TMDL Element	Key Findings and Regulatory Provisions

I. Interims Load Allocations for Irrigated Agricultural Dischargers

Constituent	Interim Limit (mg/L)
Boron Total	1.8
Chloride Total	230
Sulfate Total	1962
TDS Total	3995

II. Final Load Allocations for Irrigated Agricultural Dischargers

Subwatershed	Chloride Allocation (lb/day)	TDS Allocation (lb/day)	Sulfate Allocation (lb/day)	Boron Allocation (lb/day)
Simi	641	3,631	1,068	4
Las Posas	2,109	11,952	3,515	N/A
Conejo	743	4,212	1,239	N/A
Camarillo	59	336	99	N/A
Pleasant Valley	305	1,730	509	N/A
Revolon	7,238	41,015	12,063	48

Margin of Safety

A margin of safety (MOS) for the TMDL is designed to address uncertainties in the analysis that could result in targets not being achieved in the waterbodies. The primary uncertainties associated with this TMDL include the impact of implementing a salt balance on receiving water quality. The effect of the salt balance is estimated by the mass-balance and subject to the following uncertainties: 1) the flow rates used to determine the loading capacity may change due to TMDL implementation, 2) the use of a daily load for determining allocations and an annual mass balance to attain water quality objectives, and 3) the sources of salts may not be completely known. Both implicit and explicit MOS are included for this TMDL. The implicit MOS stems from the use of conservative assumptions made during development of the TMDL. The mass of salts transported out of the watershed during wet weather is on average over 15% of the annual mass of salts introduced to the watershed for all constituents. The salt export during wet weather ranges from 7% to 41% for TDS, 9% to 48% for chloride, and 13% to 89% for sulfate of the export required to meet a salt balance in the watershed. This mass is not used to determine compliance with the salt balance and represents a significant implicit margin of safety. The model also contains a component that serves to model the impact of "stranded" salts in the watershed. The component assumes low irrigation efficiencies and the ability of all salts applied as irrigation water anywhere in the watershed to be discharged to receiving water in

TMDL Element	Key Findings and Regulatory Provisions
	critical years. This likely overestimates the impact of "stranded" salts and results in a higher concentration of salts due to irrigation in the receiving water. An explicit MOS of 10% is applied to the adjustment factors for the POTWs to account for the uncertainties in the TMDL analysis. By applying the margin of safety to the adjustment factor, more salts are required to be exported than are necessary to offset the background loads in the watershed. This additional salt export provides a margin of safety on the salt balance to address uncertainties that the salt balance will result in compliance with water quality objectives. The 10% explicit MOS is determined sufficient to address the uncertainties associated with the estimated impact of the salt balance on receiving water loadings.
Future Growth	Ventura County accounts for slightly more than 2% of the state's residents with a population of 753,197 (US Census Bureau, 2000). GIS analysis of the 2000 census data yields a population estimate of 334,000 for the CCW, which equals about 44% of the county population. According to the Southern California Association of Governments (SCAG), growth in Ventura County averaged about 51% per decade from 1900-2000; with growth exceeding 70% in the 1920s, 1950s, and 1960s. Significant population growth is expected to occur within and near present city limits until at least 2020. Increased growth requires additional water. Therefore, future growth could result in increased loads of salts being imported into the watershed. However, the TMDL implementation plan is designed to maintain a salts balance in the watershed. If additional salts are imported into the watershed, a larger volume of salts will also be exported out of the watershed to maintain the balance. Consequently, increased imports from future growth are not expected to result in higher concentrations in receiving waters.
Seasonal Variations and Critical Conditions	The critical condition for salts is during dry weather periods. During wet weather, stormwater flows dilute the salt discharges and receiving water concentrations are significantly lower than water quality objectives. Dry weather, defined as days with flows lower than the 86th percentile flow and no measurable precipitation, is a critical condition regardless of the dry weather flows in the stream. The driving conditions for exceedances of water quality objectives are the concentrations in the water supply (which is driven by surface water concentrations in Northern California) and the previous year's annual precipitation and corresponding flows. Elevated salts concentrations during dry weather occur when stranded salts are discharged into the surface water after higher than average rainfall years. The elevated concentrations occur during years when the previous annual flow is

TMDL Element	Key Findings and Regulatory Provisions
	greater than the 75th percentile of the annual flows for the watershed (critical year). The higher concentrations occur during the dry periods of critical years regardless of whether the annual flow for the critical year is an average flow year, higher than average year, or lower than average year. The key parameter determining a critical year is the total annual flow volume for the previous year. Based on model results, four critical years were defined based on modeled results that resulted in receiving water concentrations greater than the 99th percentile concentration during at least 10% of the dry period. The critical years identified from the model occur with conditions similar to what occurred in 1978, 1979, 1983 and 1998.
Special Studies and Monitoring Plan	**<u>Special Studies</u>** Several special studies are planned to improve understanding of key aspects related to achievement of WLAs and LAs for the Salts TMDL. ***1. Special Study #1 (Optional) – Develop Averaging Periods and Compliance Points*** The TMDL technical report has provided information that shows instantaneous salts objectives may not be required to protect groundwater recharge and agricultural beneficial uses. It is possible that the beneficial uses will be protected and a salt balance achieved without achieving instantaneous water quality objectives in all reaches of the watershed. This optional special study is included to allow an investigation of averaging periods for the salts objectives in the CCW. Additionally, this study will investigate the locations of beneficial uses and the possibility of identifying compliance points for the salts objectives at the point of beneficial use impacts. The use of compliance points would alleviate the need to develop site-specific objectives for the reaches of the watershed upstream of the POTW discharges (described in Special Study #3) while still ensuring the protection of beneficial uses. Sensitive beneficial uses are not present in the upper reaches and POTW discharges dilute the salts from the upper reaches and may allow compliance with the objectives at the point of groundwater recharge downstream. This is an optional special study to be conducted if desired by the stakeholders or determined necessary or appropriate by the Executive Officer. ***2. Special Study #2 (Optional) – Develop Natural Background Exclusion*** Discharges of groundwater from upstream of the Simi Valley WQCP (Reaches 7 and 8) and Hill Canyon WWTP (Reaches 12 and 13) and

TMDL Element	Key Findings and Regulatory Provisions
	downstream of the Camrosa WRF (Reach 3) contain high salts concentrations. Natural marine sediments may contribute to the high concentrations in those discharges. This special study would evaluate whether or not the groundwater discharges in these areas would qualify for a natural sources exclusion. The special study could follow a 'reference system/anti-degradation approach' and/or a 'natural sources exclusion approach' for any allocations included in this TMDL that are proven unattainable due to the magnitude of natural sources. The purpose of a 'reference system/anti-degradation approach' is to ensure water quality is at least as good as an appropriate reference site and no degradation of existing water quality occurs where existing water quality is better than that of a reference site. The intention of a 'natural sources exclusion approach' is to ensure that all anthropogenic sources of salts are controlled such that they do not cause exceedances of water quality objectives. These approaches are consistent with state and federal anti-degradation policies (State Board Resolution No. 68-16 and 40 C.F.R. 131.12). This is an optional special study to be conducted if desired by the stakeholders or determined necessary for establishing a natural sources exclusion by the Executive Officer. ***3. Special Study #3 (Optional) – Develop Site-Specific Objectives*** The TMDL implementation plan provides for actions to protect the agricultural and groundwater recharge beneficial uses in the CCW. As shown in the linkage analysis, some downstream reaches may not achieve the water quality objectives through implementation of this TMDL because of the transport of salts out of the watershed through those reaches. Consequently, an optional special study is included to allow the CCW stakeholders to pursue development of site-specific objectives for salts for reaches upstream of the Hill Canyon WWTP and Simi Valley WQCP (Reaches 7, 8, 12, and 13), Calleguas Creek Reach 3, Revolon Slough (Reach 4) and Beardsley Wash (Reach 5). These alternative numeric water quality objectives would be developed based on the beneficial uses to be protected in a reach and the attainability of the current water quality objectives. This is an optional special study to be conducted if desired by the stakeholders or determined necessary or appropriate by the Executive Officer. ***4. Special Study #4 (Optional) – Develop Site-Specific Objectives for Drought Conditions*** During drought conditions, the load of salts into the watershed increases as a result of increasing concentrations in imported water. Stakeholders in the CCW cannot control the increased mass entering the watershed from the water supply. However, the stakeholders do have the ability to

TMDL Element	Key Findings and Regulatory Provisions
	manage the salts within the watershed to protect beneficial uses and export the additional mass of salts out of the watershed. If necessary, site-specific objectives may be developed to address situations that result in higher imported water salt concentrations to allow management of the salts and protection of beneficial uses. This special study may be combined with Special Study #3 if desired. This is an optional special study to be conducted if desired by the stakeholders or determined necessary or appropriate by the Executive Officer of the Regional Board. ***5. Special Study #5 (Optional) – Develop Site-Specific Objectives for Sulfate*** Sulfate is a necessary nutrient for plant growth and sulfate containing products are often applied to agriculture as fertilizers and pesticides. Therefore, site-specific objectives may be investigated and developed for sulfate that more accurately protects agricultural supply beneficial uses. Additionally, this study could evaluate whether or not a sulfate balance is necessary to maintain in the watershed. This special study may be combined with Special Study #3 and/or #4 if desired. This is an optional special study to be conducted if desired by the stakeholders or determined necessary or appropriate by the Executive Officer of the Regional Board. **<u>Monitoring Plan</u>** To ensure that the goal of a salts balance in the watershed is being achieved and water quality objectives are being met, a comprehensive method of tracking inputs and outputs to the watershed will be developed. A monitoring plan will be submitted to the RWQCB for Executive Officer approval within six months of the effective date of the CCW Salts TMDL. Monitoring will begin one year after Executive Officer approval of the monitoring plan to allow time for the installation of automated monitoring equipment. ***1. Input Tracking*** Inputs to the watershed are tracked through four mechanisms:1) Information on the import of State Water Project water is readily available and provides information on the mass of salts brought into the watershed; 2) Groundwater pumping records provide information on the mass of salts imported into the watershed from deep aquifer pumping; 3) Import records of water supply form the Santa Clara River can be obtained to determine the mass of salts imported through this source; 4) Monitoring data on imported water quality can be compared to

TMDL Element	Key Findings and Regulatory Provisions
	monitoring of effluent quality to estimate the amount of salts added through human use of the water. ***2. Output Tracking and Determining Compliance with Water Quality Objectives*** Outputs from the watershed will be tracked through surface water monitoring at key locations in the watershed and monitoring of discharges to the brine line. Monitoring will include both flow and quality. Compliance with water quality objectives will be determined at key locations where beneficial uses occur in the watershed. The stations used for output tracking will also be used to determine compliance with water quality objectives. The monitoring program will determine if the TMDL compliance points are protective of the beneficial uses for the subwatershed. If the monitoring determines that the compliance points are not protective of beneficial uses, an alternative compliance point will be selected. The Executive Officer may revise the TMDL compliance point based on the result of the monitoring. Additionally, if other places in the watershed are identified where sensitive beneficial uses occur, water quality monitoring stations can be added to determine compliance with water quality objectives. For the RWRMP, three new or upgraded automated flow measuring and sample collection stations will be installed at three points on the stream system to continuously record flow and various water quality parameters during dry weather. Preliminary monitoring locations include Arroyo Conejo in Hill Canyon, Conejo Creek at Baron Brothers Nursery and Calleguas Creek at University Drive. For the NRRWMP, one new or upgraded automated flow measuring and sample collection station will be added downstream of Simi Valley at the point at which groundwater recharge begins. A preliminary monitoring location is at Hitch Blvd. where an existing flow gauging station exists. However, the amount of groundwater recharge upstream of this site will need to be evaluated to determine the exact monitoring location. For Revolon Slough, the existing monitoring station at Wood Road. will be used to monitor quality and flow on Revolon Slough to determine the outputs from the Revolon portion of the Pleasant Valley subwatershed. Additional land use monitoring will be conducted concurrently at representative agricultural and urban runoff discharge sites as well as at POTWs in each of the subwatersheds and analyzed for chloride, TDS, sulfate, and boron. The location of the land use stations will be determined before initiation of the Calleguas Creek Watershed TMDL Monitoring Program (CCWTMP). All efforts will be made to include at least two wet weather sampling events during the wet season (October through April) during a targeted storm event.

TMDL Element	Key Findings and Regulatory Provisions
	3. Reporting and Modification of the Calleguas Creek Watershed TMDL Monitoring Program A monitoring report will be prepared annually within six months after completion of the final event of the sampling year. An adaptive management approach to the CCWTMP will be adopted as it may be necessary to modify aspects of the CCWTMP. Results of sampling carried out through the CCWTMP and other programs within the CCW may be used to modify this plan, as appropriate. These modifications will be summarized in the annual report. Possible modifications could include, but are not limited to the, following: ▪ The inclusion of additional land use stations to accurately characterize loadings; ▪ The removal of land use stations if it is determined they are duplicative (*i.e.,* a land use site in one subwatershed accurately characterize the land use in other subwatersheds); ▪ The inclusion of additional in-stream sampling stations; and ▪ The elimination of analysis for constituents no longer identified in land use and/or instream samples. If a coordinated and comprehensive monitoring plan is developed and meets the goals of this monitoring plan that plan should be considered as a replacement for the CCWTMP. ***4. Other Monitoring*** Other surface water and groundwater monitoring will be implemented as necessary to assess the impacts of the implementation actions and adjust the activities as necessary to protect beneficial uses and achieve the salts balance. Examples of additional monitoring that may be conducted include: ▪ Monitoring under Phase 2 and 3 of the RWRMP to evaluate the effects of replenishment water releases and groundwater treatment and releases. ▪ Monitoring to assess the impacts of management of the Simi Basin groundwater dewatering wells under Phase 1 of the NRRWMP.
Implementation Plan	The identified implementation actions provided in this TMDL will result in a salt balance in the stream and are expected to result in compliance with the allocations. The implementation plan is comprised of actions that directly impact discharges to the receiving water and actions that will indirectly impact discharges to receiving water. Responsible agencies and jurisdictions shall consider minimum flow

TMDL Element	Key Findings and Regulatory Provisions
	requirements that may be imposed by federal or state regulatory agencies when implementing actions to comply with this TMDL. Should the proposed implementation actions not result in compliance with objectives and site-specific objective are not adopted, additional implementation actions may be required to achieve the water quality objectives. Any plans or programs for implementation of the TMDL for the Southern Reaches of the CCW upstream of the Conejo Creek Diversion and the Northern Reaches of the CCW, that would result in significant reduction in instream flow, including but not limited to, an application for Water Reclamation Requirements (WRRs) shall include an analysis of potential impacts to instream beneficial uses that could result from the reclamation of wastewater or extracted groundwater. For Phase 1 of the Southern Reaches of the CCW Renewable Water Resource Management Program (RWRMP), Water Rights Decision 1638 from SWRCB satisfies these requirements and establishes the minimum flow requirements for Conejo and Calleguas Creek downstream of the Conejo Creek Diversion Project. Any WRRs shall require that timely written notice be given to the Regional Board, and to any regulatory agency whose instream flow is at issue, if diversion or reclamation of waste water or extraction of groundwater results or threatens to result in (or contributes to) insufficient flows to maintain beneficial uses. The Executive Officer shall issue an order pursuant to Water Code section 13267, which requires responsible agencies and jurisdictions to file a technical report if reclamation of waste water or extraction of groundwater results or threatens to result in (or contributes to) insufficient flows to maintain beneficial uses. The order shall require that the technical report identify the causes of the impairments or threatened impairments, and identifies options to abate the conditions. The Regional Board shall reconsider this TMDL if adequate flows to protect instream beneficial uses are not maintained. The implementation actions described in the TMDL represent a range of activities that could be conducted to achieve a salts balance in the watershed. Future considerations may result in other actions being implemented rather than the options presented. However, any proposed actions will be reviewed using the salt balance model to ensure the action does not adversely impact other implementation actions in the watershed or the salt balance of a downstream subwatershed. Currently, the implementation plan is presented in phases with a tentative schedule for each phase. The implementation of projects may occur earlier than planned or begin during an earlier phase. Additionally, many of the implementation actions require the use of the Regional Salinity Management Conveyance (RSMC or brine line). As such, the implementation schedule for those actions will be linked the

TMDL Element	Key Findings and Regulatory Provisions
	construction schedule for the RSMC. The implementation plan for the Salts TMDL includes regional and subwatershed specific implementation actions. There are four key structural elements to the regional implementation: Regional Salinity Management Conveyance (RSMC), Water Conservation, Water Softeners, and Best Management Practices for Irrigated Agriculture. Subwatershed implementation includes Renewable Water Resource Management Program (RWRMP) for the Southern Reaches and Northern Reach Renewable Water Management Plan (NRRWMP). Detailed discussion for each implementation element including description of the action, status and schedule for implementing the action, and a summary of the expected contribution to achievement of the salts balance are provided in the Staff Report and Technical Report for this TMDL. Proposed implementation actions in the watershed, responsible agencies, and the estimated completion date based on the effective date of the TMDL are summarized below.

Summary of Proposed Implementation Actions

Action	Responsible Agency/ies	Schedule for Completion
Water Conservation	POTWs, Permitted Stormwater Dischargers, and Other NPDES Permittees	3 years
Water Softeners	POTWs and Permitted Stormwater Dischargers	10 years
Best Management Practice for Agricultural Dischargers	Agricultural Dischargers	2 years
RMSC Phase 1	Calleguas Municipal Water District	2 year
RMSC Phase 2	Calleguas Municipal Water District	5 year
RMSC Phase 3	Calleguas Municipal Water District	10 years
RWRMP Phase 1	CamrosaWater District, Camarillo Sanitation District	3 years
RWRMP Phase 2	Camrosa Water District, City of Thousand Oaks	6 years
RWRMP Phase 3	Camrosa Water District, City of Thousand Oaks	10 years
RWRMP Phase 4	To Be Determined	15 years
NRRWMP Phase 1	Calleguas Municipal Water District, City of Simi Valley, Ventura County Water Work-District No.1	3 years
NRRWMP Phase 2	Calleguas Municipal Water District, Ventura County Water Work-District No.1, City of Camarillo	7 years
NRRWMP Phase 3	City of Camarillo, City of Simi Valley	10 years
NRRWMP Phase 4	To Be Determined	15 years
Final Completion Date		15 years

TMDL Element	Key Findings and Regulatory Provisions
	The sections below provide discussion of the application of the final WLAs for POTWs, specific permitted stormwater discharges, other NPDES dischargers, and agricultural dischargers. **I. POTWs, permitted stormwater discharges, and other NPDES discharges** The final WLAs will be included for permitted stormwater discharges, POTWs, and other NPDES discharges in accordance with the compliance schedules provided in Table 7-22.2. The Regional Board may revise these WLAs based on additional information developed through special studies and/or monitoring conducted as part of this TMDL. ▪ **POTWs** WLAs established for the POTWs in this TMDL will be implemented through NPDES permit limits. Compliance will be determined through monitoring of final effluent discharge as defined in the NPDES permit. The proposed permit limits will be applied as end-of-pipe mass-based monthly average effluent limits. Daily maximum effluent limit is not required because chloride is not expected to have an immediate or acute effect on the beneficial uses. Compliance with the minimum salt export requirements for POTWs will be based on the salt export from the subwatershed to which they discharge. The mechanisms for meeting the minimum salt export requirements and for monitoring progress towards meeting those requirements will be included in the monitoring program work plan and approved by the Executive Officer. At the end of each year, the amount of salt exported will be compared to the minimum required salt export. POTW allocations will be reduced using the adjustment factor if both of the following conditions occur: • The annual dry weather salt exports from the subwatershed to which the POTW discharges are below the minimum required exports for the previous year; and • The water quality objectives were exceeded in the receiving water at the base of the subwatershed The POTW allocations will be reduced for the following year by

TMDL Element	Key Findings and Regulatory Provisions
	the difference between the minimum required salt export and the actual amount exported. The discharger shall be notified by the Regional Board that the assigned WLAs are reduced and the reduced effluent limits shall be applied for the next year. If the POTW allocations are reduced, the POTW will need to increase the amount of salt export or reduce the mass of salts discharged from the POTW before the end of the following year when the adjustment will be evaluated again. POTWs can only request to adjust the assigned WLAs upwards using the adjustment factor under limited conditions provided below: • Water quality objectives are met in the receiving waters; • Imported water supply chloride concentrations exceed 80 mg/L; and • Discharges from the POTW exceed the allocation. When imported water supply chloride concentrations exceed 80 mg/L, the POTW will monitor the effluent to determine if the wasteload allocation is exceeded. If the wasteload allocation is exceeded and the POTW desires an adjustment to the allocation, the POTW will submit documentation of the water supply chloride concentrations, the receiving water chloride concentration, the effluent mass, and the evidence of increased salt exports to offset the increased discharges from the POTW to the Regional Board for approval. The adjustment factor will apply for three months and the POTW must submit the evidence outlined above every three months to keep the adjustment factor active. As long as the required information is submitted, the adjustment factor will be in effect upon notification in writing from the RWQCB. ▪ **Urban Stormwater Discharger** A group mass-based dry weather WLA has been developed for all permitted stormwater discharges, including municipal separate storm sewer systems (MS4s), and general industrial and construction stormwater permits. USEPA regulation allows allocations for NPDES-regulated stormwater discharges from multiple point sources to be expressed as a single categorical WLA when the data and information are insufficient to assign each source or outfall individual WLAs (40 CFR 130). The grouped allocation will apply to all NPDES-regulated municipal stormwater discharges in the CCW. MS4 WLAs will be incorporated into the NPDES

TMDL Element	Key Findings and Regulatory Provisions
	permit as receiving water limits measured in-stream at the base of each subwatershed. ▪ **Other NPDES Dischargers** WLAs established for other NPDES permitted dischargers in this TMDL, including minor non-stormwater permittees (other than Camrosa WRP) and general non-stormwater permittees, will be implemented through NPDES permit limits. The proposed permit limits will be applied as end-of-pipe concentration-based effluent limits, and compliance determined through monitoring of final effluent discharge as defined in the NPDES permit. **II. Agriculture** Load allocations for salts will be implemented through Conditional Waiver of Discharges from Irrigated Lands (Conditional Waiver Program) adopted by the LARWQCB on November 3, 2005. Compliance with LAs will be measured in-stream at the base of the subwatersheds and will be achieved through the implementation of Best Management Practices (BMPs) consistent with the Conditional Waiver Program. The Conditional Waiver Program requires the development of an agricultural water quality management plan (AWQMP) to address pollutants that are exceeding receiving water quality objectives as a result of agricultural discharges. Therefore, implementation of the load allocations will be through the development of an agricultural management plan for salts. Implementation of the load allocations will also include the coordination of BMPs being implemented under other required programs to ensure salts discharges are considered in the implementation. Additionally, agricultural dischargers will participate in educational seminars on the implementation of BMPs as required under the Conditional Program. Studies are currently being conducted to assess the extent of BMP implementation and provide information on the effectiveness of BMPs for agriculture. This information will be integrated into the AWQMP that will guide the implementation of agricultural BMPs in the Calleguas Creek watershed. After implementation of these actions, compliance with the allocations and TMDL will be evaluated and the allocations reconsidered if necessary based on the special studies and monitoring plan section of the implementation plan. As shown in Table 7-22.2, implementation of LAs will be conducted over a period of time to allow for implementation of the BMPs, as well as coordination with special studies and

TMDL Element	Key Findings and Regulatory Provisions
	implementation actions resulting from other TMDL Implementation Plans (Nutrient, Historic Pesticides and PCBs, Sediment, Metals, Bacteria, etc.).

Table 7-22.2 Calleguas Creek Watershed Salts TMDL: Implementation Schedule

Item	Implementation Action	Responsible Party	Completion Date
1	Effective date of interim Salts TMDL waste load allocations (WLAs)	POTWs, Permitted Stormwater Dischargers[1] (PSD), and Other NPDES Permittees	Effective date of the amendment
2	Effective date of interim Salts TMDL load allocations (LAs)	Agricultural Dischargers	Effective date of the amendment
3	Responsible jurisdictions and agencies shall submit compliance monitoring plan to the Los Angeles Regional Board for Executive Officer approval.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	6 months after effective date of the TMDL
4	Responsible jurisdictions and agencies shall begin monitoring as outlined in the approved monitoring plan.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	1 year after monitoring plan approval by Executive Officer
5	Responsible jurisdictions and agencies shall submit workplans for the optional special studies.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	Within 10 years of effective date of the TMDL
6	Responsible jurisdictions and agencies shall submit results of the special studies.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	2 years after workplan approval by Executive Officer
7	Re-evaluation of the interim WLAs and interim LAs for boron, chloride, sulfate, and TDS based on new data. Responsible jurisdictions and agencies shall demonstrate that implementation actions have reduced the boron, sulfate, TDS, and chloride imbalance by 20%.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	3 years after effective date of the TMDL
8	Re-evaluation of the interim WLAs and interim LAs for boron, chloride, sulfate, and TDS based on new data. Responsible jurisdictions and agencies shall demonstrate that implementation actions have reduced the boron, sulfate, TDS and chloride imbalance by 40%.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	7 years after effective date of the TMDL
9	Re-evaluation of the interim WLAs and interim LAs for boron, chloride, sulfate, and TDS based on new data. Responsible jurisdictions and agencies shall demonstrate that implementation actions have reduced the boron, sulfate, TDS, and chloride imbalance by 70%.	POTWs, Permitted Stormwater Dischargers (PSD), Other NPDES Permittees, and Agricultural Dischargers	10 years after effective date of the TMDL
10	The Los Angeles Regional Board shall reconsider this TMDL to re-evaluate numeric targets, WLAs, LAs and the implementation schedule based on the results of the special studies and/or compliance monitoring.	The Regional Board	12 years after effective date of the TMDL
11	Responsible jurisdictions and agencies shall demonstrate that the watershed has achieved an annual boron, sulfate, TDS, and chloride balance.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	15 years after effective date of the TMDL
12	The POTWs and non-storm water NPDES permits shall achieve WLAs, which shall be expressed as NPDES mass-based effluent limitation specified in accordance with federal regulations and state policy on water quality control.	POTWs and Other NPDES Permittees	15 years after effective date of the TMDL

[1] Permitted stormwater dischargers that are responsible parties to this TMDL include the Municipal Stormwater Dischargers (MS4s) of the Cities of Camarillo, Moorpark, Thousand Oaks, County of Ventura, Ventura County Watershed Protection District, and general industrial and construction permittees.

Item	Implementation Action	Responsible Party	Completion Date
13	Irrigated agriculture shall achieve LAs, which will be implemented through the Conditional Waiver for Irrigated Lands as mass-based receiving water limits.	Agricultural Dischargers	15 years after effective date of the TMDL
14	The permitted stormwater dischargers shall achieve WLAs, which shall be expressed as NPDES mass-based limits specified in accordance with federal regulations and state policy on water quality control.	Permitted Stormwater Dischargers	15 years after effective date of the TMDL
15	Water quality objectives will be achieved at the base of the subwatersheds designated in the TMDL.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	15 years after effective date of the TMDL