9.5.2.4 CLWA Recycled Water Master Plan (2014-2035)

The CLWA Recycled Water Master Plan proposes to incorporate additional recycled water for use in the Valley for landscape irrigation. Currently, 325 acre-ft/yr of recycled water is used for landscape irrigation. In accordance with the intent of the Recycled Water Policy, CLWA is planning to incrementally increase use of recycled water to about 2,000 acre-ft/yr for Phase 2A, 2B, and 2C planning areas by the year 2035. Approximately 1,000 acre-ft/yr will be used in areas upstream of the Saugus WRP and 1,000 acre-ft/yr will be used in the Phase 2C planning area.

The salt balances under CLWA Recycled Water Master Plan conditions from 2012 through 2035 are shown on Figures 29a through 29g. The projected concentration changes for all management zones from 2012 through 2035 are shown on Figures 30.1.a through 30.1.g, Figures 30.2.a through 30.2.g, Figures 30.3.a through 30.3.g, and Figures 30.4.a through 30.4.g for TDS, chloride, nitrate and sulfate, respectively. The simulated concentrations for salt and nutrients at the end of the planning period (2035) for each management zone are also summarized in attached Tables 1a, 1b, 1c and 1d for TDS, chloride, nitrate and sulfate, respectively.

Based on the analysis of historical and projected mass loading with the addition of the CLWA Recycled Water Master Plan, all projected salt and nutrient concentrations assessed herein will remain below the WQOs in Management Zones 5 and 6. While some annual concentrations are projected to range above WQOs at times, the average projected salt and nutrient concentrations remain below WQOs in Management Zone 1a. In Management Zone 1a, TDS, chloride and nitrate will remain below the WQOs, but the 90th percentile for the projected sulfate concentration is 7 mg/L over the WQO of 150 mg/L. In Management Zone 1b, chloride and nitrate will remain below the WQOs and, while some annual concentrations are projected to range above the WQO at times, the average projected TDS concentration is below the WQO of 800 mg/L. The average projected sulfate concentration in Management Zone 1b is 75 mg/L above the WQO of 150 mg/L, while the 90th percentile is 92 mg/L over WQOs. While there is insufficient information to make a robust determination, a cursory assessment shows that in Management Zone 2, nitrate concentrations remain below the WQO, while the average TDS, chloride and sulfate concentrations are over WQOs by 278 mg/L, 9 mg/L and 97 mg/L, respectively. Likewise, insufficient information in Management Zone 3 makes concentration determinations speculative. A cursory assessment shows that in Management Zone 3, average projected chloride and nitrate concentrations will remain below the WQOs. The average projected TDS and sulfate concentrations in Management Zone 3 are above the WQOs of 700 and 200 mg/L, respectively, by 110 mg/L and 49 mg/L. In Management Zone 4, TDS, nitrate and sulfate will remain below the WQOs. The average projected TDS concentration in Management Zone 4 is 9 mg/L over the WQO of 700 mg/L.

In general, the projected average salt and nutrient concentrations under CLWA Recycled Water Master Plan conditions are at or slightly above those projected for Land Use Build-Out conditions, indicating

that implementation of the project may slightly increase salt and nutrient concentrations. This is especially true in Management Zones 3, 4 and 5.

The projected results also show that the CLWA Recycled Water Master Plan utilizes greater than 10% of the available assimilative capacity for chloride in Management Zones 4 and 6, for nitrate in Management Zone 6, and for sulfate in Management Zone 1a. However, when compared to Land Use Build-Out conditions, implementation of the CLWA Recycled Water Master Plan decreases the assimilative capacity for chloride in Management Zone 4 by 2 mg/L (50% of assimilative capacity under Land Use Build-Out conditions) and has no effect on the remaining projected assimilative capacities.

9.5.2.4.1 CHLORIDE CONCENTRATIONS IN DISCHARGE – CHLORIDE CONCENTRATION SENSITIVITY ANALYSIS

Predictive modeling for the CLWA Recycled Water Master Plan assumed that chloride concentration in the recycled water for irrigation will be 125 mg/L. The 125 mg/L concentration was calculated as follows: The average chloride concentration for State Water Project water since 2000 is 70 mg/L with a median is 73 mg/L. The added increment varies significantly before it reaches the WRPs. Review of the data, indicates that an additional 45 mg/L is reasonable for assuming chloride concentration in the treated effluent discharge through 2013. However, the 45 mg/L increment is lower than that experienced since 2010 (mean=55 mg/L, median=54 mg/L). Taking the two averages results in an anticipated chloride concentration of about 125 mg/L for the anticipated recycled water.

In consideration of future chloride concentrations variations and peaks in State Water Project water specifically, during dry weather and dry hydrologic conditions, a sensitivity analysis using recycled water at a chloride concentration of 156 mg/L for irrigation application was conducted. The 156 mg/L concentration represents the average chloride concentration in the Valencia Treatment Wastewater Treatment Plant during the base period 2001-2011. The average Valencia Plant effluent chloride concentration is higher than the Saugus Plant effluent chloride concentration (average of over the base period. However, it should be noted that chloride concentrations may rise during some periods above those anticipated herein.

Table 9-8 compares the changes in assimilative capacity between current model and sensitivity run as a result of CLWA Recycled Water Master Plan. The concentrations shown in columns [1] and [2] are the resulting average concentrations for the initial model and sensitivity run respectively for Management Zone 3 and Management Zone 4. The assimilative capacity for the initial run and sensitivity run are reported in columns [3] and [4] respectively. Column [5] reports the change in assimilative capacity between the initial run and the sensitivity run for Management Zone 3 and Management Zone 4. As shown, a higher chloride concentration will result in a decline of assimilative capacity from 17.2 mg/L to 15.9 mg/L in Management Zone 3, while in Management Zone 4 results in a decline from 5.2 mg/L to 4.7 mg/L. The supporting tables for the sensitivity analysis are provided in Appendix J. Tables J-2 through

J-4 provide a summary of the anticipated water quality change from the sensitivity analysis for the CLWA Recycled Water Master Plan for Management Zones 3, 4 and 6, respectively. Tables J-5 through J-7 provide a summary of the anticipated water quality change from the sensitivity analysis for the CLWA Recycled Water Master Plan along with "All Projects for Management Zones 3, 4 and 6, respectively. The anticipated water quality changes in the management zones as a result of the increased chloride concentration sensitivity analysis are shown in the spreadsheets. The sensitivity analysis indicates that the decline in assimilative capacity is insignificant at the higher chloride concentration used in the sensitivity analysis for both the single project and "All Projects" as shown in the table below.

Table 9-8. Summary of Sensitivity Analysis

Project	Management Zone	Average Chloride Concentration, mg/L		Assimilative Capacity, mg/L		Changes in Assimilative Capacity, mg/L
		[1]	[2]	[3]	[4]	[5]
		Current Model	Sensitivity Run	Current Model	Sensitivity Run	
CLWA Recycled Water Master Plan with Sensitivity Analysis	Management Zone 3	82.8	84.1	17.2	15.9	-1.3
	Management Zone 4	94.8	95.3	5.2	4.7	-0.5
All Projects with Sensitivity Analysis	Management Zone 3	80.7	82.0	19.3	18	-1.3
	Management Zone 4	88.3	88.8	11.7	11.2	-0.5