

Groundwater Quality Management Measures for Salts and Nutrients in the Upper Santa Clara River Basin of Los Angeles County

DRAFT STAFF MEMORANDUM

I. Introduction

The State Water Resources Control Board (State Water Board) adopted the Recycled Water Policy (State Water Board Resolution No. 2009-0011) on February 3, 2009 and revised it on January 22, 2013 (State Water Board Resolution No. 2013-0003). The purpose of the Recycled Water Policy (hereinafter, Policy) is to protect groundwater resources and increase the beneficial use of recycled water from municipal wastewater sources in a manner consistent with state and federal water quality laws and regulations. The Policy provides direction to the Regional Water Quality Control Boards (Regional Water Boards), proponents of recycled water projects, and the public regarding the appropriate criteria to be used by the State Water Board and the Regional Water Boards in issuing permits for recycled water projects.

The Policy recognizes the potential for increased salt and nutrient loading to groundwater basins as a result of increased recycled water use, and therefore, requires the development of regional or sub-regional salt and nutrient management plans. In requiring such plans, the Policy acknowledges that recycled water may not be the sole cause of high concentrations of salts and nutrients in groundwater basins, and therefore regulation of recycled water alone will not address such conditions. The intent of this requirement is to make certain that salts and nutrients from all sources are managed on a basin-wide or watershed-wide basis in a manner that ensures the attainment of water quality objectives and protection of beneficial uses.

The Recycled Water Policy states:

- a)** Every basin/sub-basin shall have a consistent salt and nutrient management plan (hereinafter, SNMP);
- b)** SNMPs shall be tailored to address the water quality concerns in each basin;
- c)** Shall be developed or funded pursuant to the provisions of Water Code sections 10750 et seq. or other appropriate authority;
- d)** SNMPs shall be completed and proposed to the Regional Water Board within five years from the adoption date of the Policy;
- e)** SNMPs are not required in areas where a Regional Water Board has approved a functionally equivalent salt and nutrient plan¹; and
- f)** SNMPs may address constituents other than salt and nutrients that adversely affect groundwater quality.

¹ This is not applicable in the Los Angeles Region as there are currently no functionally equivalent salt and nutrient management plans that could be approved by the Regional Water Board.

Within one year of the receipt of a proposed SNMP, the Regional Water Board is expected to consider for adoption revisions to the program of implementation for protection of groundwater in its Basin Plan, consistent with Water Code section 13242, for those groundwater basins within their regions where water quality objectives for salts or nutrients are being, or are threatening to be, exceeded.² The revisions to the program of implementation for protection of groundwater that are incorporated into the Regional Water Boards' Basin Plans are to be based on the salt and nutrient management plans required by the Policy.

The Policy is clear that the SNMP process should be stakeholder-led and conducted in a collaborative manner among interested persons, with participation by the Regional Water Board.

The Policy's intended outcome is that participation in plan development will allow water purveyors and basin management agencies to take advantage of a streamlined permit process for recycled water projects that is intended to expedite the implementation of recycled water projects, since groundwater conditions relative to planned projects will have already been evaluated in a basin-wide context.

The required elements of a SNMP, as specified by the Policy include:

- a) Source identification/source loading and assimilative capacity estimates;
- b) Implementation measures;
- c) Consideration of water recycling/stormwater recharge/use;
- d) Anti-degradation analyses;
- e) Development of a basin-wide monitoring plan; and
- f) Annual monitoring of constituents of emerging concern (CECs).

This Staff Memorandum introduces the Draft Salt and Nutrient Management Plan (SNMP) for the Upper Santa Clara River Basin, which is located in Los Angeles County, California. The Upper Santa Clara River Basin SNMP is developed to manage salt and nutrient loads to these basins, while increasing recycled water use in the area. The SNMP was developed through a collaborative, stakeholder-led process.

² The Recycled Water Policy refers to "revised implementation plans" for adoption into regional basin plans pursuant to Water Code section 13242. Water Code section 13242 uses the term "program of implementation." Water Code section 13242 states, "[t]he program of implementation for achieving water quality objectives shall include, but not be limited to:

- (a) A description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate action by any entity, public or private.
- (b) A time schedule for the actions to be taken.
- (c) A description of surveillance to be undertaken to determine compliance with objectives."

II. Background

The Upper Santa Clara River Basin is located in northwest Los Angeles County and is part of the larger Santa Clara River Valley Groundwater Basin. The Basin comprises two primary aquifers that are used for groundwater production, and provide about 50-60% of the water supply for the Santa Clarita Valley residents: a shallow Alluvial Aquifer that underlies the Santa Clara River and its several tributaries, and an older, underlying geologic unit called the Saugus Formation. For management purposes, the basins are subdivided into six subunits/management zones which exhibit consistent hydrological, water quality or overlying land use characteristics. Five of these subunits (Management Zones 1 through 5: Santa Clara-Mint Canyon Subunit, South Fork Subunit, Placerita Canyon Subunit, Santa Clara-Bouquet and San Francisquito Canyon Subunit, and Castaic Subunit) comprise the shallow Alluvial Aquifer, and provide a majority of the groundwater production. The sixth subunit (Management Zone 6) consists of the Saugus Formation, which provides the rest of the production.

Surface water flowing into the subbasin percolates into the highly permeable alluvial sediments which underlie the Santa Clara River ~~in the Mint Canyon Subunit~~. Groundwater generally moves westward toward the outlet of the Alluvium, which is also the outlet of the Upper Santa Clara River Hydrologic Area. Thus, groundwater movement in the Alluvium beneath the tributaries is toward their confluence with the Santa Clara River and then westward. As the Alluvium thins and narrows towards the outlet of the basin, groundwater is forced to rise, keeping the depth to water at or approaching land surface.

Groundwater in the alluvial units percolates farther downward into the Saugus Formation which underlies the Alluvium. The geologic structure controls the movement of groundwater in the Saugus Formation; downward in the eastern portion of the subbasin and upwards in the western portion. Groundwater in the Saugus Formation in the western portion of the basin rises into the alluvial portion of the Castaic Subunit, becoming surface water again and flowing westerly out of the East Subbasin. Therefore, percolation of either natural surface water and/or treated wastewater is minimal in the western portion of the subbasin due to rising water.

Pumping in the groundwater basins is governed by an analysis of local hydrologic conditions for the Alluvium Aquifer, and by the availability of other water supplies, particularly from the State Water Project (SWP). The water supply and water resource management practices applied by the Purveyors aim at maximizing the use of the Alluvial Aquifer and imported water during years of normal or above-normal availability of these supplies, while limiting the use of the Saugus Formation. During years when supplemental imported water supplies are significantly reduced due to drought conditions, Saugus Formation pumping will be temporarily increased.

The Upper Santa Clara River Basin (USCRB) is actively managed through a local Memorandum of Understanding process between the Castaic Lake Water Agency (CLWA), the retail water purveyors, and the United Water Conservation District (which operates downstream of the USBs in Lower Santa Clara River Basins). These retail water purveyors are the Santa Clarita Water Division of CLWA (SCWD), Newhall County Water District (NCWD), Valencia Water Company (VWC) and Los Angeles County Waterworks District 36 (LACWWD 36). The MOU is a collaborative and integrated approach to water resource management, integrating database management, monitoring and reporting and groundwater modelling and analysis.

The main surface drainage features in the area include the Santa Clara River, which provides most of the annual groundwater recharge to the groundwater system, Bouquet Creek, and Castaic Creek. Other sources of water and salts and nutrients to the basin include stormwater,

imported water, recycled water, leakage from septic systems, groundwater from upgradient basins, and groundwater exchange between the Alluvium and the Saugus Formation.

A data period of 2001 to 2011 was selected for analysis of water quality conditions. Insufficient data was available to establish a trend for two of the subunits: Placerita Canyon and South Fork. In addition, because site-specific water quality objectives (WQOs) have not been established for the Saugus Formation, the most conservative of the alluvial subunits WQOs was used for calculation of assimilative capacity for TDS, chloride and nitrate.

Water quality data shows assimilative capacity is available for TDS, chloride, nitrate and sulfate in most of the sub-basins, except for TDS in [Santa Clara-Bouquet and San Francisquito Canyon](#) [Santa Clara-Mint Canyon](#), and TDS and sulfate in a localized area of Santa Clara-Mint Canyon, thought to be associated with groundwater flow in the native geologic materials. This area was therefore considered separately throughout the modeling analysis and designated as zone 1b.

A number of management measures have been implemented in the planning area to manage salts and nutrients. These measures include prohibitions and incentive programs to remove water softeners; upgrades to water reclamation plants to include nutrient removal; industrial wastewater source control programs; stormwater/runoff management measures; land use regulations requiring new developments to minimize exterior water use; and conservation measures to reduce water use as mandated by the State

III. SNMP Development

The SNMP for the Upper Santa Clara River Basin was developed with broad-based stakeholder involvement. Participants included a Task Force consisting of Castaic Lake Water Agency (CLWA), City of Santa Clarita, Los Angeles County Flood Control District (LACFCD), Newhall County Water District (NCWD), Rivers and Mountains Conservancy (RMC), Santa Clarita Water Division of CLWA (SCWD), Santa Clarita Valley Sanitation District of Los Angeles County (SCVSD), Santa Clarita Valley, and Sanitation District of Los Angeles County (SCVSD). Additional stakeholders represented Municipal and County Government Agencies, Water Suppliers/Wastewater Management/Special Districts, Business Organizations, Recreational and Open Space Entities, State and Federal Regulatory and Resource Agencies, and Non-Profit Organizations.

Outreach efforts were conducted by the Upper Santa Clara River Basin stakeholder group throughout the SNMP development process. Regular updates on the progress and status of the SNMP were provided at Stakeholder meetings conducted by Castaic Lake Water Agency, and draft documents were posted on the Los Angeles County Department of Public Works (LACDPW) website. Regional Water Board staff has actively participated in stakeholder meetings.

The purpose of the Upper Santa Clara River Basin SNMP was to determine the current water quality conditions in the basin and to ensure that all water management practices, including the use of recycled water, were consistent with water quality objectives. The SNMP is intended to provide the framework for water management practices to ensure protection of beneficial uses, and allow for the sustainable use of groundwater resources.

The SNMP contains all the required elements prescribed by the Recycled Water Policy, including considerations of water recycling and stormwater recharge. The plan also presents

current and proposed measures for the management of basin water quality including those to maximize recycled water use in the area. These stakeholder-developed implementation measures for groundwater quality control are being incorporated into the Los Angeles Region's Basin Plan.

IV. California Environmental Quality Act (CEQA) Analysis

In accordance with the salt and nutrient management plan requirements of the Recycled Water Policy, Upper Santa Clara River Basin stakeholders also conducted an analysis of the foreseeable impacts of the salt and nutrient management measures and recycled water projects for consideration by the Regional Water Board, which were documented in an accompanying Substitute Environmental Document (SED). The SED considers three program alternatives, including a “no future projects” alternative – a situation where no additional implementation measures or major recycled water projects would be implemented beyond those that currently exist. Alternative 2: “land-use buildout conditions and implementation of all planned projects”, evaluated the water quality assuming land-use buildout conditions and the implementation of all proposed projects evaluated in the SNMP modeling exercise. Alternative 3: “land-use buildout conditions and all existing and conceptual implementation measures”, evaluated the water quality assuming land-use buildout condition and the implementation of all planned and conceptual implementation measures proposed in the SNMP. Because of the speculative nature of these conceptual implementation measures as to their location, water quality impacts, and schedule, those were only qualitatively evaluated in the SNMP. Therefore, Alternative 3 was not considered further. In general, the completion of all proposed projects considered in Alternative 2 would have beneficial effects on groundwater quality by maintaining concentrations below water quality objectives, and by decreasing the amount of assimilative capacity used, compared to the no-project scenario, and was therefore selected as the preferred alternative.

The CEQA assessment concluded that the environmental effects of the foreseeable methods to implement Alternative 2, including both nonstructural and structural management measures, would not cause significant impacts that cannot be mitigated through commonly used construction, design and operational practices. The SED identifies mitigation methods for impacts with potentially significant effects and finds that these methods can mitigate potentially significant impacts to levels that are less than significant.

V. Anti-degradation Considerations

State Water Resources Control Board Resolution 68-16 (“Statement of Policy With Respect to Maintenance of High Quality Water in California”) requires the Regional Board in regulating discharges of waste to, among other requirements, to maintain the highest water quality possible consistent with the maximum benefit to the people of the state. The salt and nutrient management strategies outlined in the salt and nutrient management plan are designed to maintain water quality that is protective of beneficial uses, address elevated salt concentrations in wastewater, conserve water and reduce runoff, and manage additional loads from future recycled water projects in a manner that is protective of beneficial uses. Based on the initial

analysis of potential projects, with the exception of sulfate in Zone 1b of Santa Clara-Mint Canyon and TDS in Santa Clara-Bouquet and San Francisquito Canyon (Zone 4), the concentrations of all salts would remain under the water quality objectives. The completion of all proposed projects would have varying, but generally beneficial, effects by decreasing the amount of assimilative capacity used, compared to what would occur if none of the projects were implemented. The ~~planned treatment facility~~[Water Use Efficiency Program](#) will also provide the added benefit of reducing residential and commercial urban water use and runoff, and increase the amount of recycled water used for irrigation, thereby reducing dependency on imported water. Given these considerations, the amendment is consistent with State Water Board Resolution No. 68-16.

VI. Relevant Documents

The Basin Plan amendment incorporating groundwater management strategies for salts and nutrients in the Upper Santa Clara River Basin is based wholly on the stakeholder-led effort, which culminated in the document titled "Salt and Nutrient Management Plan - Santa Clara River Valley East Subbasin." This document contains all the necessary elements of a SNMP. This SNMP, its appendices and the accompanying SED are appended to this Staff Memorandum and are an integral part of the Administrative Record for this Basin Plan amendment.