

# **Groundwater Quality Management Measures for Salts and Nutrients in the**

## **Lower Santa Clara River Basin of Ventura County**

### **STAFF MEMORANDUM**

#### **I. Introduction**

The State Water Resources Control Board (State Water Board) adopted the Policy for Water Quality Control for Recycled Water (Recycled Water Policy or 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 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 use.

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 plan; and
- f)** SNMPs may address constituents other than salt and nutrients that adversely affect groundwater quality.

Within one year of the receipt of a proposed SNMP, the Regional Water Board is expected to consider for adoption revised implementation plans, 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.<sup>1</sup> The implementation plans 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 parties, 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:

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<sup>1</sup> 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."

- 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 Lower Santa Clara River Basin, which is located in Ventura County, California. The Lower 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.

## **II. Background**

The Lower Santa Clara River (LSCR) is the lower reach of the Santa Clara River that flows through Ventura County. The LSCR Basin SNMP covers the Piru, Fillmore, Santa Paula, Mound and Oxnard Forebay groundwater sub-basins within the Lower Santa Clara River Groundwater Basin. These basins are overlain by the cities of Fillmore, Santa Paula and San Buenaventura (Ventura), and small, unincorporated communities in Ventura County. Most of the area is reliant on groundwater for up to 65% of their overall water supply.

The groundwater and surface water in the SNMP area are interconnected. Surface water and groundwater both flow from the Upper Santa Clara River into the Lower Santa Clara River planning area and the groundwater basins are interconnected with flow generally moving from the upper portions of the watershed to the lower portion of the watershed. Surface water recharge strongly influences groundwater quality, particularly in the Piru sub-basin.

Surface water and groundwater have been used and managed conjunctively for water supply and managed aquifer recharge operations. Santa Clara River and Piru Creek are the primary sources of surface water to the LSCR area. Groundwater pumping for agricultural irrigation, municipal, domestic, and industrial uses also occurs in each of the groundwater sub-basins. In addition, the United Water Conservation District has imported State Water Project water into the LSCR Basin planning area. Major sources of salts and nutrients to the LSCR Basin include subsurface inflow, surface water inflow, irrigation, and groundwater recharge. Percolation of wastewater effluent contributes less than 2% of salt and nutrient loads in the Piru and Fillmore sub-basins, and less than 5% of the TDS and nitrate loads and approximately 9% of the chloride load in the Santa Paula sub-basin.

A data period of 1996 to 2012 was selected for analysis of water quality conditions. While there are localized areas with higher salt and nutrient levels (particularly in the vicinity of wastewater

treatment effluent percolation ponds), average water quality in most of the sub-basins is below Basin Plan objectives. Therefore, assimilative capacity is available for TDS, chloride and nitrate in all sub-basins within the planning area except for the Mound sub-basin where the existing concentration of TDS exceeds the water quality objectives. The analysis also showed that, generally, basin water quality is not very variable and is not significantly influenced by hydrologic conditions.

Implementation of the existing management measures has resulted in reductions in the discharges of salts and nutrients to the groundwater basins. Average effluent concentrations from the wastewater treatment plants for chloride, TDS and total nitrogen have decreased as a result of the existing salt and nutrient management measures. For Piru, Fillmore, and Santa Paula wastewater treatment plants, the installation of new treatment facilities have reduced the discharge of total nitrogen into the watershed by over 75%. For salts, the bans on water softeners appear to have reduced total dissolved solids and chloride concentrations from Fillmore and Santa Paula treatment plants. The effectiveness of these and other measures is described in detail in the Salt and Nutrient Management Plan for the Lower Santa Clara River Basins. Further reductions in effluent chloride concentrations are expected from the removal of existing water softeners in the SNMP planning area through a rebate program for existing water softeners.

While all of the participating wastewater agencies have plans to recycle water, the plans are currently general and specific locations and volumes have not yet been identified. Given that no clear projects are available, the SNMP includes required background information and an assessment of the groundwater basins, providing a description of water recycling and stormwater recharge goals and objectives, quantification of sources, identification of loading estimates, estimates of assimilative capacity, and description of fate and transport of salts and nutrients. Based on this technical information, potential future scenarios and a selection of management measures were developed and presented in the SNMP.

### **III. SNMP Development**

The SNMP area includes the cities of Fillmore, Santa Paula, and San Buenaventura (Ventura) and small, unincorporated communities in Ventura County, as well as seven wastewater treatment plants (WWTPs). Five of the WWTPs have actively participated in the SNMP development and provided input into potential future plans for recycled water projects.

Using a tiered stakeholder process, which included a Technical Advisory Group (TAG), the Santa Clara River Watershed Committee (SCRWC), and the Los Angeles Water Board, the LSCR Basin SNMP was developed with broad-based local community involvement.

The following organizations participated on the TAG:

- ❖ Ventura County Watershed Protection District;
- ❖ Cities of Ventura, Santa Paula, and Fillmore;
- ❖ United Water Conservation District (UWCD);

- ❖ Ventura County Water Works District 16; and
- ❖ Farm Bureau of Ventura County.

The overarching goal of the LSCR Basin SNMP is to protect, conserve, and augment water supplies and to improve water supply reliability. This goal is supported by objectives of:

- ❖ Protecting Agricultural Supply and Municipal and Domestic Supply Beneficial Uses of groundwater;
- ❖ Supporting increased recycled water use in the basin;
- ❖ Facilitating long-term planning and balancing use of assimilative capacity and management measures across the basin;
- ❖ Encouraging groundwater recharge in the Santa Clara River (SCR) valley; and
- ❖ Collecting, treating, and infiltrating stormwater runoff in new development and redevelopment projects.

The SNMP has been developed to support these general goals and objectives. Additionally, the stakeholders have identified recycled water and stormwater use and recharge goals in the SNMP.

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, LSCR Basin stakeholders also conducted a CEQA analysis of the foreseeable impacts of the salt and nutrient management measures and recycled water projects, 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, Limited Recycled Water Project, and Alternative 3, Proposed Project Alternative, differ based on the number and size (i.e. recycled water volumes) of planned recycled water projects. The amount of salt and nutrient loading generated by these projects would determine whether the existing assimilative capacity in a sub-basin is sufficient to allow projects to be added without requiring additional management measures, or whether additional management measures would be required. The recycled water purveyors in the watershed are in various stages of developing recycled water projects, but none have advanced to the point of identifying specific project locations and/or specifications. Information from planning documents and discussions with stakeholders was used to identify the planned recycled water projects. Alternative 2 or 3 would be a benefit to the environment and the No Program Alternative (i.e. “no future projects” alternative, above) would

result in degradation of the LSCR groundwater basin by not managing nutrient loading and assimilative capacity in the LSCR groundwater basin. The environmental effects of the preferred alternative are considered less than significant with mitigation incorporated.

## **V. Anti-degradation Considerations**

The salt and nutrient management strategies outlined in the salt and nutrient management plan are designed to maintain current water quality conditions in the groundwater basins and to manage additional loads from future recycled water projects in a manner that is protective of beneficial uses. Based on the initial analysis of potential recycled water projects, no net salt and nutrient increases are anticipated in the Fillmore and Piru sub-basins. For the Santa Paula, Oxnard Forebay and Mound sub-basins, changes to salt and nutrient loads will be dependent on the nature, magnitude, and location of the projects – all of which are yet to be defined. In the instances where there is a potential for use of assimilative capacity beyond 10% for a single project and 20% for multiple projects within a sub-basin, additional management measures will be implemented to limit these increases, and/or an anti-degradation analysis will be conducted. Given these considerations, the amendment is consistent with State Water Board's Anti-degradation Policy (Resolution No. 68-16).

## **VI. Relevant Documents**

The Basin Plan amendment incorporating groundwater management strategies for salts and nutrients in the Lower Santa Clara River Basin is based wholly on the stakeholder-led effort, which culminated in the document titled "Lower Santa Clara River Salt and Nutrient Management Plan." 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.