

# Groundwater Quality Management Measures for Salts and Nutrients in the Malibu Valley Groundwater Basin of Los Angeles County

## 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) SNMPs 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<sup>1</sup>; and

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<sup>1</sup> 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 Board.

- 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 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.<sup>2</sup> 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 parties, with participation by the Regional Water Board. The Policy's intended outcome is that participation in SNMP 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 Malibu Valley Basin, which is located in Los Angeles County, California. The Malibu Valley Basin SNMP is developed to manage salt and nutrient loads to this basin, while increasing

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<sup>2</sup> 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."

recycled water use in the area. The SNMP was developed through a collaborative, stakeholder-led process.

## II. Background

The Malibu Valley Groundwater Basin is a small alluvial basin located in southwestern Los Angeles County, along the coastline. It is bounded by the Pacific Ocean on the south and by the Santa Monica Mountains on all remaining sides. The basin covers an area of approximately 613 acres (0.96 square miles) and is flanked on both sides by canyons - the Sweetwater Canyon to the east, and the Winter Canyon to the west. The valley is drained by Malibu Creek to the Pacific Ocean. The Malibu Coast Fault runs across the basin in an east-west direction but does not create a groundwater barrier.<sup>3</sup> Historical groundwater use was from the shallow alluvium, which has a hydraulic connection to Malibu Creek and the Pacific Ocean. However, at present, the groundwater basin is not used for potable water supplies.

Infiltration of stream flow is a common source of recharge to the alluvial aquifers. Recharge occurs as streams flow from steep upland areas, which are predominantly bedrock, onto more permeable, relatively flat, alluvial deposits. The rate of recharge is controlled by the difference in head between the stream and the underlying groundwater and the permeability of the streambed and underlying alluvial deposits.

Water supply water within the Malibu area is provided by the Los Angeles County Waterworks District 29, which was established in the early 1970s. Since then, all known private and commercial potable groundwater supply wells have been abandoned. Imported water recharges the basin directly through irrigation, and indirectly through septic system discharges in the area. Other sources of basin recharge include stream infiltration, mountain front recharge, and precipitation. Stream seepage, septic system discharges and irrigation are the major sources of salt and nutrient loads to the basin.

Available groundwater quality data was limited in terms of quantity and spatial representation. Monitoring data from GeoTracker for wells in the Malibu Valley Basin from 2003 through 2011 were used to characterize current groundwater quality with regard to nitrate and TDS concentrations. Since no recent data for chloride or sulfates were available, water quality assessment was based on historic data from GeoTracker from 1953 to 1969.

For the purpose of groundwater quality assessment and determination of available assimilative capacity and future water quality conditions, the Malibu Valley Basin was divided into two management zones. The Northern Management Zone includes approximately the northern half of the groundwater basin and contains primarily residential properties, while the Southern

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<sup>3</sup> California Department of Water Resources (DWR). 1975. *Sea-Water Intrusion in California: Inventory of Coastal Ground Water Basins*. Bulletin 63-5.

Management Zone covers the southern half of the basin and contains a combination of seaside residential properties, the Civic Center commercial area, and the proposed treated effluent injection wells of the proposed Civic Center Wastewater Treatment Facility.

Assimilative capacity is available for chloride and nitrate in both management zones within the planning area, and for sulfate in the Northern Management Zone. There is no assimilative capacity for TDS in either zone, and none for sulfate in the Southern Management Zone.

Existing salt and nutrient management measures in the Malibu Valley Basin include actions/programs that manage groundwater quality, protect and enhance groundwater recharge, and promote onsite stormwater capture and retention. While there is no existing recycled water project in the planning area, there are plans to construct and operate a centralized wastewater system, which will produce recycled water that will be used for irrigation and basin recharge.

### **III. SNMP Development**

The Salt and Nutrient Management Plan for the Malibu Valley Basin was developed by stakeholders with the City of Malibu as the lead agency. The City of Malibu engaged two stakeholder groups during the development of the Malibu Valley Basin SNMP. The first was a Technical Advisory Committee (TAC) that included representatives from the City of Malibu, Los Angeles County Department of Public Works, Heal the Bay, Santa Monica Bay Restoration Commission, Regional and State Water Board staff, and various consultants. The second was a public stakeholder group that included area residents and businesses, other environmental groups, and representatives of the Planning Commission and local school districts, in addition to the TAC members and other interested entities.

The overarching goal of the Malibu Valley Basin Salt and Nutrient Management Plan (SNMP) is to manage, protect and enhance basin groundwater in order to sustain the beneficial uses of this resource. In developing the SNMP, the City of Malibu and the Malibu Valley Basin stakeholders aimed to achieve the following objectives:

- Improve the technical understanding of the groundwater basin's hydrogeology, the implications of the overlying land uses on the underlying groundwater quality, and groundwater-surface water interactions.
- Develop a forum and collaborative process for defining issues and identifying and implementing actions to manage the groundwater resource (both quality and supply).
- Define implementation measures as necessary to ensure the long-term sustainability of the groundwater resource.
- Develop a groundwater monitoring program to coordinate ongoing and future data collection efforts and to facilitate analysis of water quality trends into the future.
- Provide a framework for adaptively managing the groundwater basin and implementing future management actions.

The SNMP has been developed to support these goals and objectives.

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 groundwater recharge and recycled water use in the area. These stakeholder-developed implementation measures for groundwater quality management are being incorporated into the Los Angeles Region's Basin Plan.

#### **IV. CEQA Analysis**

In accordance with the salt and nutrient management plan requirements of the Recycled Water Policy, Malibu Valley Basin stakeholders also conducted an analysis of the foreseeable impacts of the salt and nutrient management measures and recycled water projects, which are documented in an accompanying Substitute Environmental Document (SED). The SED considers two program alternatives. Alternative 1 is a "no future projects" alternative – where existing management actions or baseline conditions will be maintained. Under this alternative, no planned management actions, including the proposed recycled water project, would be implemented. The second alternative, Alternative 2, includes all the proposed management actions, introduces recycled water use for irrigation, and accounts for cessation of septic system use in the planning area through the construction and operation of the Civic Center Wastewater Treatment Facility (CCWTF) Project. Alternative 2 was selected as the preferred alternative and a program-level CEQA assessment, which included an Environmental Checklist, was conducted for this alternative.

The CEQA assessment concluded that Alternative 2 could result in potentially significant environmental impacts related to aesthetics, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, and transportation; however, mitigation measures were identified to minimize these potential impacts to a less than significant level with the exception of short-term construction-related impacts to noise and transportation. Significant and unavoidable impacts would occur to noise and transportation as a result of CCWTF construction, but these impacts would be short-term (as they are construction related) and would not result in any irreversible damage to the people or the environment. Mitigation measures will be implemented during construction to reduce the intensity of these short-term impacts. Additionally, Alternative 2 would not cause significant direct and indirect growth-inducing impacts in the Malibu Valley Basin. The program-level CEQA analysis further concludes that when Alternative 2 is implemented in combination with other projects proposed in the region, there would be less than significant cumulative impacts on the environment.

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

The salt and nutrient management strategies developed by the Malibu Valley Basin stakeholders are measures designed to maintain water quality that is protective of beneficial uses, preserve capacity for stormwater recharge, address elevated salt concentrations and

curtail impacts from seawater intrusion. Based on the initial analysis of the planned centralized wastewater treatment facility that will produce recycled water for non-potable use and groundwater recharge, TDS concentrations are expected to fall below water quality objectives in areas currently impacted by seawater. Also, while nitrate levels are expected to increase, this increase is estimated to be less than what would occur in the absence of the treatment facility, and will result in concentrations maintained below water quality objectives. The planned treatment facility will also provide the added benefit of addressing other water quality concerns (such as bacterial contamination), as well as reducing reliance on imported water by providing recycled water to offset the potable water currently used for irrigation. Given these considerations, the amendment is consistent with the 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 Malibu Valley Basin is based on the stakeholder-led effort, which culminated in the document titled "Salt and Nutrient Management Plan - Malibu Valley Groundwater Basin." This document contains all the necessary elements of a SNMP. The 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.