THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

COMMITTEE ITEM

- ***Special Committee on Desalination and Recycling***

August 25, 2009 Committee Meeting

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Subject

Potential Joint Water Purification Study with the Los Angeles County Sanitation Districts

Description

This letter outlines an opportunity for Metropolitan to partner with the Los Angeles County Sanitation Districts (LACSD) to study the potential for a regional indirect potable reuse program to purify treated wastewater which is currently discharged to the Pacific Ocean. The proposed indirect potable reuse program involves the purification of treated wastewater using advanced technologies to achieve near-distilled quality that surpasses drinking water standards. The purified water would then be blended into an untreated potable water supply, such as a groundwater aquifer or surface water reservoir, and would be stored for sufficient time to permit additional treatment from natural processes and mixing. The water would later be withdrawn and further treated for potable use.

Implementation of a regional indirect potable reuse program would be consistent with Metropolitan's goals for water supply sustainability through development of alternative local resources. This potential program could provide Metropolitan with a new regional supply of reliable, drought-resistant water to supplement imported water supplies. Likewise, the program would be consistent with LACSD's goals to increase the reuse of purified wastewater throughout Los Angeles County. To meet its goal, the LACSD is also currently in discussions with individual water agencies regarding specific recycled water projects. This potential regional reuse program would be developed to complement those specific projects.

Timing and Urgency

Back-to-back dry years and low reservoir levels have placed California in a statewide drought. Adding to the state's water challenges is a 2007 federal court order to protect threatened Delta Smelt fish, which imposed restrictions on pumping in the Delta, and subsequent new biological opinions for Delta smelt and Salmon. These events have led Metropolitan to pursue new and innovative solutions to increase its dependable water supply. A program to purify wastewater that is currently discharged to the Pacific Ocean would be consistent with Metropolitan's overall efforts to seek long-term solutions to enhance supply reliability.

Background

Metropolitan's 1996 Integrated Resources Plan (IRP) developed a Preferred Resource Mix which identified reclamation as an integral source of a balanced water portfolio. The 2004 IRP Update further reinforced the importance of using reclaimed water as an alternate water supply to balance imported demands and to increase the contribution of highly treated wastewater to the overall portfolio. Thus far, Metropolitan has engaged in water reuse through small-scale member agency projects funded in part by Metropolitan through the Local Resources Program. Implementation of a large-scale regional indirect potable reuse program utilizing LACSD wastewater could provide Metropolitan with a significant supply of reliable, drought-resistant water to supplement imported raw water supplies.

LACSD is a partnership of 24 independent and special districts that provide wastewater and solid waste management for approximately 5.3 million people in Los Angeles County. LACSD published its first report on potential water reclamation in 1949 and its first formal plan for water recycling, "A Plan for Water Reuse" in 1963. Since that time, the Plan has been endorsed by LACSD's boards of directors and has been updated multiple

times. In accordance with the Plan, LACSD's goal is to maximize the use of purified wastewater from its facilities for the benefit of the region.

LACSD currently treats an average of 460 million gallons per day (mgd) of wastewater at ten water reclamation plants and at the Joint Water Pollution Control Plant (JWPCP) located in Carson. It should be noted that LACSD wastewater system flows are presently depressed approximately 15 percent below peak historical levels due to water restrictions and the economic downturn. Approximately 170 mgd out of the total 460 mgd are currently treated to surface-discharge standards at the ten water reclamation plants which are located in the Antelope Valley region, the Santa Clarita Valley region, and in metropolitan Los Angeles. The treated wastewater from these reclamation plants which is not required for habitat maintenance is either being reused currently, or is under contract for future reuse, with the exception of 25 mgd that are available for reuse at the Los Coyotes Water Reclamation Plant in Cerritos.

The JWPCP is LACSD's largest wastewater treatment plant. The JWPCP provides primary and secondary treatment to the remaining 290 mgd of wastewater before it is discharged through outfall tunnels to the Pacific Ocean. By 2050, the JWPCP is projected to treat approximately 400 mgd. Water recycling at the JWPCP is currently limited to in-plant uses and LACSD estimates that, dependent on regulatory compliance issues associated with the brine discharge, approximately 200 mgd of treated wastewater from this plant may be available for purification and reuse at this time. LACSD believes that participation from multiple agencies throughout its service area is necessary to reuse the large volume of available wastewater at the JWPCP. Accordingly, LACSD recognizes that a regional program would be the most efficient approach to maximize reuse from the JWPCP.

Indirect Potable Reuse in California

As rising demands are being placed upon more limited local and regional water supplies, there has been increased support for indirect potable reuse within Southern California. One of the earliest examples of wastewater reuse is at the Montebello Forebay Spreading Facilities. The Water Replenishment District (WRD) and Los Angeles County have used treated wastewater to recharge the local aquifers since 1962. The WRD and Los Angeles County have spread an average of 43,000 acre-feet per year (AFY) of treated wastewater over the last ten years.

More recently, the Orange County Water District began operation of an indirect potable reuse program in 2008. Its Groundwater Replenishment (GWR) System will ultimately provide 72,000 AFY of purified water for local groundwater recharge and seawater barrier intrusion protection. The GWR System uses advanced purification technologies including microfiltration, reverse osmosis, and disinfection via ultraviolet light and hydrogen peroxide, to purify the water to near-distilled quality before injection into the local aquifer. In addition, the San Diego County Water Authority (SDCWA) is currently embarking upon an indirect potable reuse program to purify water using advanced technologies similar to the GWR system. The purified water would supplement the supply to an existing surface water reservoir, to be followed by additional purification at a water treatment plant.

Regional Indirect Potable Reuse Concept

Over the past several months, LACSD and Metropolitan have engaged in discussions regarding the potential for a regional indirect potable reuse program to replenish groundwater basins throughout Los Angeles County. Such a program would provide Metropolitan with a significant local supply of reliable, drought-resistant water to supplement imported raw water supplies. This program would also greatly contribute to LACSD's goal to maximize reuse of treated wastewater throughout the region.

The proposed regional indirect potable reuse program would be modeled after the Orange County Water District's GWR System and would focus primarily on the JWPCP. Treated wastewater from the JWPCP would be diverted to new advanced water treatment facilities to purify the water to near-distilled quality. The purified water would then be put into groundwater aquifers in Los Angeles County, where it would be stored for sufficient time to allow additional natural treatment processes and mixing to occur. The water would later be withdrawn and further purified for potable use.

Implementation of such a program would require new advanced purification facilities, regional distribution to groundwater basins, and injection and extraction wells to store and recover the purified water. In addition, a project of this nature would involve extensive interagency agreements, and extensive regulatory and public outreach. Groundwater recharge could be phased first to recharge groundwater basins in the vicinity of the JWPCP, and later expanded to basins throughout Los Angeles County to increase the level of reuse.

Staff believes there is significant potential for reuse of purified water from the LACSD wastewater facilities to recharge groundwater basins in Los Angeles County. However, an engineering assessment of the potential demand for purified water would be required to quantify the potential benefits from such a program.

Next Steps

Staff plans to return to the Board to seek authorization for a Memorandum of Understanding with LACSD to initiate a joint water purification study. The first phase of the study would be to assess the demand for purified water to recharge groundwater basins within Los Angeles County, and to evaluate the technical feasibility of storing and extracting the purified water in these basins. If the use of purified water to recharge groundwater basins is considered feasible, staff will return to the Board with recommendations to proceed with a second phase of this study to determine the facility and cost requirements for the program, and to explore funding opportunities.

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