



Council Meeting: August 14, 2012

SUBJECT: Approval of Budget Modification No. 8 to Re-allocate Funding from the Recycled Water Interconnect Project to the WPCP Chlorine Conversion Project to fund Infrastructure Modifications for Simultaneous Production of Recycled Water at the Water Pollution Control Plant

BACKGROUND

On March 6, 2012, Council approved Budget Modification No. 28, to fund the initial phase of a project to construct a Regional Recycled Water Intertie. At the same meeting Council approved Budget Modification No. 25 to fund a capital project to convert the disinfection facilities at the Water Pollution Control Plant (WPCP) from gaseous chlorine to liquid chlorine. As staff have proceeded on scoping these two projects and conducting further engineering analysis, several issues have surfaced that necessitate a modification and merger of some elements of these two projects.

When the Recycled Water Interconnect project was first presented for approval, it was envisioned that the recycled water related issues with production, increasing customer base, and improving water quality would be addressed through a "Regional Solution", the basis of which was an intertie that would connect the Sunnyvale recycled water system with the South Bay Water Recycling (SBWR), which is owned and operated by the San Jose/Santa Clara Water Pollution Control Plant (City of San Jose). In the last few months, City of San Jose has decided to put its recycled water expansion efforts on hold while it completes its own recycled water master plan.

In light of this, Sunnyvale staff has been exploring an alternative plan alluded to in the March 6 report. As outlined in the previous communications to Council, three issues must be addressed: production, distribution, and quality. The following is the description of the issues as described in previous documents:

- "Production – At the Sunnyvale WPCP, recycled water cannot be produced simultaneously with Bay discharge. For Bay discharge, the effluent must be chlorinated to remove pathogens, and then dechlorinated to remove the chlorine that is harmful to Bay aquatic life. For the recycled water system, the turbidity (cloudiness) of the water has to be reduced, higher chlorine doses need to be applied, and some of the chlorine must remain in the water (to prevent regrowth of pathogens in

the distribution system). Therefore, the WPCP operators have to, on nearly a daily basis, switch back and forth from Bay discharge to recycled water production, a process that is wasteful and difficult to control. This has been the one and only reason for NPDES permit violations (when dechlorination chemicals were under-dosed and chlorine was discharged into the Bay).

- Distribution – The distribution system in a properly designed water utility consists of pipeline loops with numerous shut-off valves. This allows the system to remain operational while a segment of the system (where for example a pipe break occurred or maintenance work needs to be done) is isolated by closing the valves on either side. The Sunnyvale recycled water system has few loops and consists of numerous branches serving only irrigation customers. Branches contribute to inconsistent pressures and water quality issues.
- Quality – The recycled water produced at the Sunnyvale WPCP meets the regulatory requirements for non-potable recycled (purple pipe) water. However, the salt concentration in the recycled water is high. Typical potable water has a salt content (TDS or total dissolved solids) of 300 to 500 ppm (parts per million). The salt content of recycled water produced at the Sunnyvale WPCP ranges from 800 to 850 ppm. While this is acceptable for most irrigation, it is problematic for salt-intolerant plant species, and undesirable for most industrial uses since additional treatment is required. The sources of salt are being investigated and are likely to include infiltration of Bay water into the sanitary sewer collection system, industrial sources in the City, and residential water softener discharges.”

As noted in the previous reports, all of these system deficiencies can be solved, and staff is currently working with a consultant on a Recycled Water Master Plan to address these issues.

DISCUSSION

The “Sunnyvale Solution” that is being recommended by staff requires no interties with other recycled water systems (although interties would still be beneficial) and involves reconfiguring the WPCP to produce recycled water continuously in parallel to Bay discharge, constructing new recycled water pipes to form loops, and implementing measures to improve water quality. City staff is working with Santa Clara Valley Water District, Cal Water, and Apple Computer to explore the options for funding part of these additional improvements and further details of the Recycled Water Master Plan will be presented to Council later this year.

Meanwhile, with the chlorine conversion project at the WPCP, the opportunity exists to incorporate infrastructure modifications as part of this project to address the disinfection requirements for recycled water under “simultaneous production” mode. Further, the current compliance monitoring location at the WPCP does not allow for adequate response time and control of the disinfection needs of both the recycled water stream and the bay discharge stream, thus requiring a significantly higher use of chemicals for chlorination and de-chlorination to ensure compliance. Modifications to the dosing and monitoring infrastructure will be necessary as part of the chlorine conversion project.

Further, the outfall pipeline is old and nearing the end of its useful life and it is likely that the minor improvements necessary for the liquid chlorine dosing and monitoring would necessitate the replacement of this pipeline. Being the last step of the treatment process it is critical that this process has enough reliability and redundancy built in to ensure compliance with the NPDES permit, protect the receiving water for the bay discharge, and ensure safety of the recycled water stream. A modification of the outfall pipeline and installation of an additional monitoring location would ensure this higher reliability and redundancy and potentially reduce disinfection chemical usage.

In summary, the revised WPCP Chlorine Conversion Project would include the original tasks needed to convert to liquid chlorine and, in addition, modifications to the dosing, monitoring, and outfall piping, as well as the first phase of work needed to simultaneously produce recycled water. The additional work can be funded from the Recycled Water Interconnect project, with remaining funds to be reserved for distribution system improvements that would both benefit the Sunnyvale recycled water system and a future regional solution.

FISCAL IMPACT

The total estimated cost of these additional features will not exceed \$1,400,000. Project 829430 WPCP Chlorine Conversion currently has a total budget of \$1,600,000. Project 829450 – Recycled Water Interconnect currently has \$2,200,000 over three years for the expansion of the recycled water system. Staff is recommending approval of Budget Modification No. 8 to bring forward and move \$1,400,000 from the Recycled Water Interconnect project to the Chlorine Conversion project to fund additional disinfection system needs and the “Sunnyvale Option” of simultaneous recycled water production. The remaining \$800,000 in the Recycled Water Interconnect project will be reserved for improvements in the distribution system and continued efforts toward a regional solution.

As both projects are funded by proceeds from the 2010 Water and 2010 Wastewater Revenue Bonds, and there is no change to the bottom line cost, there will be no impact on either water or wastewater utility rates from this change.

**Budget Modification No. 8
 FY 2012/2013**

	Current	Increase/ (Decrease)	Revised
Water Supply and Distribution Fund			
<u>Expenditures</u>			
Project 829450 Recycled Water Interconnect (FY 2012/13 to FY 2014/15)	\$2,200,000	(\$1,400,000)	\$800,000
Wastewater Management Fund			
Project 829430 WPCP Chlorine Conversion	\$1,600,000	\$1,400,000	\$3,000,000

PUBLIC CONTACT

Public contact was made by posting the Council agenda on the City's official-notice bulletin board outside City Hall, at the Sunnyvale Senior Center, Community Center, and Department of Public Safety; and by making the agenda and report available at the Sunnyvale Public Library, the Office of the City Clerk, and on the City's Web site.

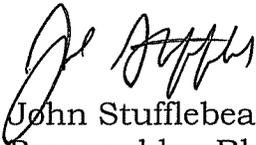
ALTERNATIVES

1. Approve Budget Modification No. 8 to pursue the gaseous chlorine conversion project with the "Sunnyvale solution" for recycled water, with additional infrastructure modifications that would allow for simultaneous production of recycled water.
2. Do not approve Budget Modification No. 8, reject the "Sunnyvale solution", and continue with the conversion of the gaseous chlorine project as previously approved.

RECOMMENDATION

Staff recommends Alternative No. 1: Approve Budget Modification No. 8 to pursue the gaseous chlorine conversion project with the "Sunnyvale solution" for recycled water, with additional infrastructure modifications that would allow for simultaneous production of recycled water. If this action is approved, staff will take the necessary steps to procure consulting services for the engineering analysis and design of the gaseous chlorine conversion and bring back the contract award for Council consideration at a future date.

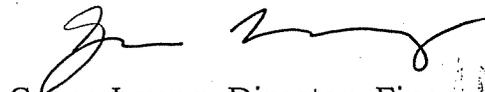
Reviewed by:



John Stufflebean, Director, Environmental Services

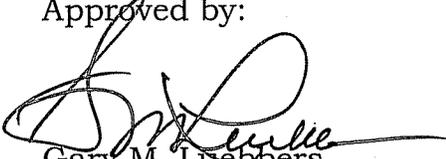
Prepared by: Bhavani Yerrapotu, WPCP Division Manager

Reviewed by:



Grace Leung, Director, Finance

Approved by:



Gary M. Luebbers

City Manager