

SEWER AUTHORITY MID-COASTSIDE
Staff Report

Subject / Title

Receive Summary of and Discuss Alternatives For Recycled Water Project – Phase 2 - Storage.

Staff Recommendation:

Receive Summary of and Discuss Alternatives For Recycled Water Project – Phase 2 - Storage.

Fiscal Impact:

None.

Discussion/Report:

At the June 22, 2009, Committee meeting, this item was deferred. Staff has re-agendized this item, should the committee wish to discuss it.

At the May 26, 2009, meeting, Committee and Board discussed alternatives for the Recycled Water Project Phase 2. At that time, the committee requested a staff report on recycled water storage as it relates to this project.


Attached please find report from SRT Consultants, presented to the Board on June 22, 2009, giving a brief but comprehensive overview of recycled water storage. Tanya Yurovsky of SRT Consultants will be available at the meetings to review this report and answer questions that may arise.

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TECHNICAL MEMORANDUM

DATE: June 16, 2009

TO: John F. Foley III, Manager, Sewer Authority Mid-Coastside

FROM: Tanya Yurovsky, P.E., SRT Consultants 

SUBJECT: Recycled Water Storage Options

The Sewer Authority Mid-Coastside (SAM) contracted SRT Consultants to outline potential storage options for the Recycled Water Treatment Facility (Facility) based on previous studies and reports. The discussion below provides a history of recycled water storage discussions, current storage options, and an overview of discussions with Ocean Colony Partners (OCP).

Background

Carollo Engineers was contracted by the Coastside County Water District (CCWD) to prepare a Water Reclamation Economic Feasibility Study (Study) in 2002 and 2003. In the Study, the Facility was to produce 1.0 million gallons per day (MGD) of recycled water for irrigation with minor modifications to the existing treatment train. In 2005, SAM completed a Water Reuse Feasibility Study Supplement (Supplement). The 2005 Supplement analyzed two options for the Facility sizing:

1. 1.65 MGD production, year round reuse and winter ocean discharge; and
2. 3.0 MGD production, seasonal irrigation and year round creek stream flow augmentation.

The 2008 Pilarcitos Integrated Watershed Management Plan reiterated the sizing and storage options as explained in the 2005 Supplement. Each of the previous Studies provided an overview of possible storage options for recycled water. As stated by the previous studies, recycled water users would be required to provide on-site storage of water. This was never confirmed with the potential users. The storage options previously considered are summarized below.

2002 and 2003 Studies

The 2002 and 2003 Studies proposed a facility to produce 1.0 MGD of recycled water, which would be treated to Title 22 tertiary unrestricted use standards. Although sufficient recycled water would be provided by the 1.0 MGD facility to meet irrigation needs of the potential users, sufficient direct supply may not have been accounted for during peak demand. Recycled water storage would be required to compensate for the fluctuations in diurnal influent flow at the Wastewater Treatment Plant (WWTP) and variations in demand from users. The unused 250,000 gallon Aeration Basin No. 4 could provide flow equalization storage at the WWTP. It

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was assumed in the Study that the OCP storage ponds could be utilized to meet peak irrigation demands. OCP irrigation water is stored in the three ponds, each with approximately six to eight acre-feet of storage (1.95 to 2.6 million gallons). This potential for recycled water storage was not confirmed with OCP at the time.

2005 Supplement

Option 1: 1.65 MGD Facility

The facility for Option 1 was proposed to treat all of the dry weather flow year round, 1.65 MGD, to Title 22 tertiary unrestricted use standards. During summer months the recycled water would be used for irrigation and in the winter the users would store the water for their use as needed. Only summer diurnal storage would be provided at SAM's WWTP. Storage would be needed after secondary treatment to equalize high and low flows to a constant feed rate of 1.65 mgd to the tertiary treatment facilities. The existing Secondary Clarifier No. 1 was planned to be used as an equalization basin during the dry weather months. The clarifier has a volume of 600,000 gallons. It was envisioned that the clarified effluent line exiting Secondary Clarifier No. 1 would be converted to both accept flow and act as equalization storage in summer months and discharge flow and act as a clarifier in winter months. Aeration Basin No. 4 would have been converted to store recycled water produced but not immediately utilized to meet peak demands. In the winter months when flow is greater than 1.65 mgd, the secondary effluent would be discharged to the ocean as permitted, with 1.65 mgd receiving tertiary treatment for distribution to end users.

Option 2: 3.0 MGD Facility

The Facility for Option 2 was to be designed to treat all of the dry-weather and wet-weather flow (3.0 MGD) to Title 22 tertiary standards. The recycled water would be used for irrigation or Pilarcitos Creek augmentation. The tertiary facilities would be sized for 3.0 mgd to treat the average wet season flow. Two large storage tanks would be installed to hold flow in excess of 3.0 mgd until it could be treated. These tanks would hold about 7.0 million gallons (MG) to accommodate a 10-year storm event. As in Option 1, in the dry season, one of the secondary clarifiers would be used as an equalization basin to optimize the tertiary processes by providing a steady flow. In the wet season, both secondary clarifiers would be used for treatment. Flow would be directed to the tertiary facilities from two locations:

1. A diversion structure/pump station built where pipes from the secondary clarifiers currently join to feed the chlorine contact basin. The diversion structure and pump station

would allow the chlorination step to be omitted in the dry season, when the tertiary facilities can handle the maximum flow and storage would not be needed.

2. The 3.5-million-gallon holding tanks. Since the storage tanks may hold water for longer than several days, the flow to be stored would need to be chlorinated.

As in Option 1, revisions to seasonally convert Secondary Clarifier No. 1 would be required for Option 2. In addition, recycled water produced but not immediately utilized would be stored in the existing Aeration Basin No. 4. As determined in the Supplement, given the high cost this option was not considered further.

Current Considerations

Facility options were evaluated: (1) 0.6 MGD or (2) 0.85 MGD. Each Facility would be sized in order to meet the demand of the Ocean Colony Golf Courses, also referred to as Ocean Colony Partners (OCP).

The demand data were general estimates as provided by OCP. OCP currently uses an average of 600,000 gallons per day (gpd); irrigating 8 hours per day. The maximum day demand, as stated by OCP, is 850,000 gpd over the 8 hour irrigation period. To provide adequate storage reliability the maximum day demand will be used for the following analysis.

Recycled water storage options would include the following:

- SAM's Aeration Basin No. 4 (250,000 gallons)
- New Storage Tanks located at SAM (sizing varies for each scenario)
- 3 storage ponds at OCP (1.95 to 2.6 million gallons each)

In previous studies, it was assumed that ponds located on the OCP property could be utilized for recycled water storage. During SRT's 2008 discussions with OCP, there was no confirmation that the ponds may be utilized for such use. Therefore, for each of the following scenarios an alternative to recycled water storage at the OCP ponds would be new storage tanks located on SAM property. Each storage option, OCP ponds or new SAM tanks would be used in combination with the Aeration Basin No. 4.

Scenario 1: 0.65 MGD Facility with OCP storage ponds

If OCP approves the use of the storage ponds as recycled water storage, recycled water will be pumped and stored in the ponds on a year round basis. It is possible that the ponds may drain well below current levels during summer months but will be recharged with recycled water during winter months. A visual depiction of the weekly demand versus production can be found in Figure 1. In talks with OCP in 2008, they expressed concern that the use of storage ponds for

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recycled water could cause negative aesthetic value due to low pond levels during the summer month demand.

Scenario 2: 0.65 MGD Facility with 1 MG storage tank

In the case that OCP does not allow the use of the storage ponds, a storage tank would need to be located at SAM WWTP. Based on the maximum day demand of OCP plus 20% reliability the tank would need to be 1 million gallon (MG). However, the amount produced by the SAM in this scenario is 250,000 gallons less than the peak day demand of 0.85 MGD. SAM cannot provide sufficient direct supply during peak demand for irrigation at OCP, unless SAM was to provide storage tanks with volumes in excess of 6 MG. Similar to Option 2 in the Carollo Supplement, the high cost would not prove feasible. The solution of this deficit is to design a larger facility of 0.85 MGD or to lower the design demand to the average 0.6 MGD. However, by lowering the design demand the reliability of storage during a peak demand period would be extremely limited.

Scenario 3: 0.85 MGD Facility with 0.75 MG storage tank

If the Facility production is sized for 0.85 MGD, equal to the maximum daily demand, then reliability will increase and required storage could be reduced by 25%. The storage options for this scenario, given that OCP ponds are not used, would be utilization of the 250,000 gallon Aeration Basin No. 4 in combination with a 500,000 gallon recycled water storage tank located at SAM.