



- Board of Directors
Engineering and Operations Committee

10/11/2011 Board Meeting

8-3

Subject

Award \$2,159,000 contract to Doty Bros. Equipment Company for construction of the Filter Outlet Chlorination and Chemical Trench projects at the Joseph Jensen Water Treatment Plant (Approps. 15346 and 15442)

Description

This action awards a contract to construct filter outlet chloramination facilities and a chemical trench to safely transport chlorine and ammonia piping at the Joseph Jensen Water Treatment Plant. No funds are required in this action, as sufficient funds were previously appropriated.

Timing and Urgency

In 2005, the Jensen plant's filter outlet chlorination system was modified when the use of ozone commenced as the plant's primary disinfectant. The filter outlet chlorination system was designed to provide a maximum chlorine dose of 4 mg/L. Operational studies have since shown that increasing the post-filtration chlorine dose from 4 mg/L to 6 mg/L is required to generate adequate chloramine residuals. Upgrade of the filter outlet chlorination system is needed because the existing equipment and piping are inadequate to deliver higher chlorine dosages. The chemical trench extension is needed to convey chlorine and ammonia piping for chloramination disinfection. In order to maintain compliance with water quality regulations and enhance plant reliability, staff recommends that these two projects move forward at this time.

These projects have been reviewed with Metropolitan's updated Capital Investment Plan (CIP) prioritization criteria. The filter outlet chlorination capacity upgrade is categorized as an Infrastructure Upgrade project, and the chemical trench is categorized as an Infrastructure Reliability project.

Background

The Jensen plant was placed into service in 1972 with an initial capacity of 350 mgd. The plant was expanded in the early 1990s to its current capacity of 750 mgd. The Jensen plant exclusively treats water from the West Branch of the State Water Project and delivers it to Metropolitan's Central Pool portion of the distribution system and to exclusive areas on the west side of the distribution system.

The use of ozone as the primary disinfectant at the Jensen plant commenced in 2005. After the ozone system became operational, the plant's filters were allowed to become biologically active, which enables more effective removal of disinfection by-product (DBP) precursors and other organic material which may impact water quality. Following biological filtration, a chloramine disinfectant residual of 2.5 mg/L is required to limit bacteriological growth in the distribution system. As a result of biologically active filter operation, additional chlorine is needed at the filter outlet to maintain proper disinfection prior to the application of ammonia to produce chloramines. Following the conversion of the Mills and Jensen plants to ozonation, staff conducted long-term assessments of the ozonation process and its impacts on overall plant performance. Due to periodic high total organic carbon (TOC) levels which have appeared in the State Water Project system, staff identified that the maximum chlorine dose at the filter outlet should increase from 4 mg/L to 6 mg/L to ensure that water quality integrity is maintained in the downstream distribution system.

Jensen Filter Outlet Chlorination and Chemical Pipe Trench Extension Projects – Construction (No Funds Required)

Due to the physical layout of the existing chlorine system at the Jensen plant, high pressure losses are experienced in the long pipe network, which limit the chlorine dose that may be applied at the outlet of the filters. The existing system also includes long chlorine solution pipelines. To enhance chlorine system safety, Metropolitan's approach is to minimize the length of chlorine solution lines and instead rely on chlorine gas piping which operates under a vacuum. To achieve this objective, chlorine ejectors are typically located near the chlorine addition point. Chemical trenches are used to safely contain the pipes that convey chemicals and other utilities from the chemical tank farms to their application points. A new chemical trench is needed to route the new chlorine gas line and ammonia line directly from the Module No. 3 piping gallery to their filter outlet injection locations.

These two projects will upgrade the plant's chlorine piping and chlorine injection system by providing the following: new process piping for chlorine gas under vacuum, service water, and chlorinated water solution; five chlorine ejectors located near their application points; and a masonry block building to house the ejectors and the associated control, security, telecommunications, and safety equipment. A new chemical trench will transport both chlorine and ammonia piping to the filter outlet injection points, eliminating excessive pressure losses. The 9-foot-wide chemical trench will vary from approximately 4 feet to 7 feet in depth, and will be approximately 650 feet long, connecting the Module No. 3 piping gallery to the new chlorine ejector building. Ammonia piping will be extended to its existing feed system at the filter outlet conduits.

Plan for Implementation

In July 2006, Metropolitan's Board authorized final design and construction to upgrade the plant's filter outlet chlorination system to increase the chlorine dose to a maximum of 6 mg/L. In December 2006, Metropolitan's Board authorized final design and construction of the chemical pipe trench extension. When both projects were authorized, staff's plan was for the construction to be performed by Metropolitan forces. In order to complete both projects in the most cost-effective manner and minimize disruption to plant operations, staff modified the plan so that Metropolitan forces would install the chlorine piping within the existing pipe tunnels, along with the equipment within the chlorine containment building. The remainder of the work for these two projects was combined into a single construction contract. Final design and Metropolitan's portion of the construction have now been completed. The present action awards a construction contract to upgrade the filter outlet chlorination system and to extend the chemical pipe trench. No funds are requested in this action, as sufficient funds were previously appropriated.

Construction Contract Award

Specifications No. 1683 to upgrade the Jensen filter outlet chlorination system and construct a concrete chemical pipe trench, as described above, was advertised for bids on June 29, 2011. As shown in [Attachment 1](#), nine bids were received and opened on August 17, 2011. The low bid from Doty Bros. Equipment Company, in the amount of \$2,159,000, complies with the requirements of the specifications. The eight higher bids ranged from approximately \$2.5 million to \$3.1 million. The engineer's estimate was \$3.5 million. Staff has investigated the difference between the engineer's estimate and the group of low bids, and believes that the difference reflects the current highly competitive bidding environment and that the low bidder was able to negotiate better prices than expected with equipment and material suppliers. For this contract, Metropolitan has established a Small Business Enterprise (SBE) participation level of at least 24 percent of the bid amount. Doty Bros. has committed to meet this level of participation.

This action awards a \$2,159,000 contract to Doty Bros. Equipment Company to construct the Jensen Filter Outlet Chlorination and Chemical Pipe Trench Extension projects. See [Attachment 1](#) for the Abstract of Bids and [Attachment 2](#) for the Location Map.

These projects are consistent with Metropolitan's goals for sustainability by enhancing the reliability of the existing treatment system in order to maintain reliable water deliveries in the future.

Lee & Ro, Inc. – New Agreement for Construction Support Services and Record Drawings (No action required)

Lee & Ro, Inc. prepared the final design for the Jensen Filter Outlet Chlorination and Chemical Pipe Trench Extension projects. As the engineer of record, Lee & Ro is recommended to provide technical engineering support during construction. Lee & Ro was selected through a competitive process via Request for Qualifications No. 927, and this work will be performed under a new agreement planned to be awarded by the General Manager under his Administrative Code authority. The support will include review of submittals received from the contractor, responding to requests for information, advising inspection staff on technical issues as they may arise, and preparation of record drawings. The estimated cost of these services is \$208,000.

Project Milestone

December 2012 – Completion of construction of the Jensen Filter Outlet Chlorination and Chemical Pipe Trench Extension projects

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

California Environmental Quality Act (CEQA)

Jensen Filter Outlet Chlorination Project - Construction

CEQA determination for Option #1:

To comply with CEQA and the State CEQA Guidelines, Metropolitan as the Lead Agency prepared and processed the Mitigated Negative Declaration (MND) for the Joseph P. Jensen Filtration Plant ORP. Board adoption of the MND and the mitigation monitoring and reporting program (MMRP), along with approval of the Jensen ORP, occurred on August 19, 1994. The present board action is solely based on award of contracts for construction and construction support services for the project and not on any substantial changes to the approved project. Hence, the previously adopted environmental documentation in conjunction with the current action fully complies with CEQA and the State CEQA Guidelines. Accordingly, no further environmental documentation is necessary for the board to act on with respect to the proposed action.

The CEQA determination is: Determine that the proposed action has been previously addressed in the adopted 1994 MND and its MMRP, and that no further environmental analysis or documentation is required.

CEQA determination for Option #2:

None required

Jensen Chemical Pipe Trench Extension Project – Construction

CEQA determination for Option #1:

The project was previously determined to be categorically exempt under the provisions of CEQA and State CEQA Guidelines. The board found this project to be exempt under Class 1, Section 15301, and Class 3, Section 15303 of the State CEQA Guidelines on December 12, 2006. A Notice of Exemption (NOE) was filed on the project at that time and the statute of limitations has ended. With the current board action for award of contracts for construction and construction support services for the project, there are no substantial changes proposed to the projects since the original NOE was filed. Hence, the previous environmental documentation in conjunction with the project fully complies with CEQA and the State CEQA Guidelines. Accordingly, no further CEQA documentation is necessary for the board to act with regards to the proposed action.

The CEQA determination is: Determine that the proposed action has been previously addressed in the 2006 NOE (Class 1, Section 15301; and Class 3, Section 15303 of the State CEQA Guidelines) and that no further environmental analysis or documentation is required.

CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the CEQA determinations and award \$2,159,000 contract to Doty Bros. Equipment Company to construct the Jensen Filter Outlet Chlorination and Chemical Pipe Trench Extension projects.

Fiscal Impact: None. Funds have previously been appropriated.

Business Analysis: This option will enhance reliability of the Jensen plant and maintain compliance with water quality regulations.

Option #2

Do not award the construction contract and re-advertise in an attempt to receive more favorable bids.

Fiscal Impact: None

Business Analysis: This option may or may not result in a lower bid, and would delay needed improvements to the filter outlet chlorination system.

Staff Recommendation

Option #1


 _____ 9/29/2011
 Gordon Johnson Date
 Manager/Chief Engineer,
 Engineering Services


 _____ 9/29/2011
 Jeffrey Kightlinger Date
 General Manager

[Attachment 1 – Abstract of Bids](#)

[Attachment 2 – Location Map](#)

Ref# es12613053

The Metropolitan Water District of Southern California

Abstract of Bids Received on August 17, 2011 at 2:00 P.M.

Specifications No. 1683

Jensen Filter Outlet Chlorination

The project consists of constructing a masonry block building, 650 feet of 7-foot wide concrete trench that varies from approximately 4 feet to 7 feet in depth, and a 9-foot by 9-foot by 21-foot deep transition shaft; installing five chlorine ejectors; and installing process piping systems to carry service water, chlorine gas under vacuum, chlorinated water solution, and liquid ammonia.

Engineer's Estimate: \$3,500,000

Bidder and Location	Total	SBE \$	SBE %	Met SBE*
Doty Bros. Equipment Company, Norwalk, CA	\$ 2,159,000	\$813,858	37%	Yes
MMC, Inc., La Palma, CA	\$ 2,487,551	-	-	-
Environmental Construction, Inc., Woodland Hills, CA	\$ 2,549,418	-	-	-
Minako America Corporation dba Minco Construction, Gardena, CA	\$ 2,777,000	-	-	-
Norman A. Olsson Construction, Inc., Fontana, CA	\$ 2,818,000	-	-	-
PPC Construction, Inc., Los Angeles, CA	\$ 2,859,685	-	-	-
Brutoco Engineering & Construction, Inc., Fontana, CA	\$ 2,980,000	-	-	-
Gantry Constructors, Inc., Clarkdale, AZ	\$ 3,059,000	-	-	-
Zusser Company, Inc., Los Angeles, CA	\$ 3,068,402	-	-	-

*SBE (Small Business Enterprise) participation set at 24 percent

Joseph Jensen Water Treatment Plant

