



- Board of Directors
Engineering and Operations Committee

12/11/2012 Board Meeting

7-4

Subject

Appropriate \$1.35 million; and authorize (1) final design to replace wastewater systems at four Colorado River Aqueduct pumping plants; and (2) professional services agreement with MWH Americas in an amount not to exceed \$900,000 (Approp. 15385)

Executive Summary

This action authorizes final design to replace wastewater collection systems and community septic tanks at four of Metropolitan's five Colorado River Aqueduct (CRA) pumping plants. The 70-year-old facilities have deteriorated over time and need to be upgraded. This action also authorizes a professional services agreement with MWH Americas to perform the design in an amount not to exceed \$900,000.

Timing and Urgency

The existing wastewater systems at Metropolitan's CRA pumping plants have deteriorated through continual use and need to be replaced. These systems are experiencing recurring problems as plumbing and septic tank backups, clogged leachfields, broken and slow-draining collection pipes, and odors. Metropolitan staff has replaced sections of the collection pipes and cleaned out septic tank backups repeatedly in recent years. When wastewater systems fail to operate effectively, groundwater and surface water pollution may occur. Staff recommends proceeding with final design at this time to replace the wastewater systems at the Hinds, Eagle Mountain, Iron Mountain, and Gene Pumping Plants. The wastewater system at Intake Pumping Plant will be addressed in a future board action.

This project has been reviewed with Metropolitan's Capital Investment Plan (CIP) prioritization criteria, and is categorized as an Infrastructure Reliability project. Funds for this action are available within Metropolitan's capital expenditure plan for fiscal year 2012/13.

Details

Background

Metropolitan's five pumping plants along the CRA are located in remote areas of Riverside and San Bernardino Counties, where municipal wastewater collection and treatment facilities are not available. Each plant is instead served by a community on-site wastewater system. These on-site systems collect, treat, and dispose of domestic wastewater generated from bathrooms and kitchen facilities at the pumping plants, maintenance buildings, training/meeting rooms, guest lodges, and staff residences. The wastewater systems consist of three primary components: community septic tanks and leach fields; collector lines which convey wastewater to the septic tanks from throughout the pumping plant villages; and sewer laterals which convey wastewater from individual buildings to the collector lines. At the septic tanks, solid waste settles to the bottom of multiple chambers, where it undergoes biological treatment and is removed by pump truck at regular intervals. The liquid effluent is then dispersed through perforated pipes into subsurface soils at the leachfields. All of the on-site wastewater systems are permitted by the respective county Department of Environmental Health. The systems are also subject to review by the Colorado River Basin Regional Water Quality Control Board to ensure that adequate setbacks from natural water courses are provided.

The existing wastewater systems at the CRA pumping plants vary in capacity depending on the number of buildings and their use. At Intake Pumping Plant, which requires the least number of staff to operate and maintain the facility, a single septic tank is used to process up to 850 gallons per day of wastewater. At Gene Pumping Plant, which has the largest staff and maintains housing for up to 120 residents, four septic tanks are relied upon to process 18,000 gallons per day of wastewater. With the exception of Gene Pumping Plant, all of the on-site wastewater systems feature gravity collection systems. At Gene, a lift station pumps liquid effluent from the septic tanks to a leachfield located at a higher elevation so that adequate setback is provided from drainage courses leading to the Colorado River. There is a total of approximately 8.5 miles of collector lines and sewer laterals at the five pumping plants.

The existing systems have been in operation for over 70 years and have deteriorated significantly. In general, the service life of septic tanks ranges from 40 to 60 years. There have been repeated instances of slow-draining sinks and toilets, broken and clogged pipes, septic tank backups, clogged leachfields, and pump failures. During detailed investigations, staff identified that the concrete walls of the septic tanks have deteriorated and spalled beyond repair, and that the roofs are severely corroded. The leachfields have reached saturation, with limited capacity to effectively disperse the treated wastewater. A video inspection of the collector lines revealed cracks, broken pipe segments, root intrusion, and numerous collapses where the inspection camera could not pass through. The inspections also identified that several miles of the collector lines are comprised of a low-grade pipe material which is not typically used in wastewater applications due to its short service life.

In January 2012, Metropolitan's Board authorized preliminary design to replace the wastewater systems at all five pumping plants. As part of the preliminary design scope, staff evaluated the long-term and short-term needs for wastewater infrastructure at the pumping plants. This effort analyzed the existing systems, identified applicable codes and discharge requirements, and projected future flowrates and treatment needs, consistent with Metropolitan's long-term operation and staffing plans for the CRA facilities. The planned improvements will comply with regulatory requirements of the Colorado River Basin Regional Water Quality Control Board and the Riverside County and San Bernardino County Departments of Environmental Health.

CRA Pumping Plant Wastewater System Replacement – Final Design Phase (\$1,350,000)

The planned collection systems will include new main-line pipes and building laterals which have code-compliant diameters, slopes, and depths. New manholes and cleanouts will also be provided. At Gene Pumping Plant, the collector lines and septic tanks will be relocated, thereby reducing the length of pipeline by over one-half mile and eliminating the need for effluent pumping.

The septic tanks and leachfields at Hinds, Eagle Mountain, Iron Mountain, and Gene Pumping Plants will be replaced with code-compliant septic tank installations. For Intake Pumping Plant, staff will return to the Board at a later date to authorize final design of an alternate wastewater storage and/or treatment system. Due to this plant's close proximity to the Colorado River, a number of options will be investigated to comply with the more stringent discharge requirements of this location.

The new wastewater collection systems will be optimized to address the plumbing and flow requirements of low-flush toilets, water-efficient appliances, and low-flow plumbing fixtures. Under a separate effort, staff will identify opportunities to incorporate grey water systems into the plumbing of key buildings.

Planned final design phase activities for the wastewater systems include preparation of drawings and specifications; permitting with Riverside and San Bernardino Counties and the Regional Water Quality Control Board; advertisement and receipt of bids; development of construction cost estimates; and all other activities in advance of award of construction contracts.

Three construction contracts are planned at the five pumping plants to effectively manage construction activities at diverse geographical locations and to address local agency permitting. Hinds and Eagle Mountain Pumping Plants will be issued first because these wastewater systems are in the most deteriorated condition. Iron Mountain and Gene Pumping Plants will be packaged as a second contract. As noted previously, Intake Pumping Plant will be addressed separately in the future.

This action appropriates \$1.35 million and authorizes final design phase activities to replace wastewater systems at Hinds, Eagle Mountain, Iron Mountain and Gene Pumping Plants. Final design is recommended to be performed primarily by MWH Americas under a new professional services agreement, as discussed below. The requested funds include: \$965,000 for preparation of drawings and specifications; \$46,000 for site investigations, including potholing to identify utility interferences and locations of sewer lateral tie-ins; \$50,000 for value engineering; \$130,000 for permitting, receipt of multiple bids, and project management; and \$159,000 for remaining budget.

The final design cost as a percentage of the total estimated construction cost to replace the wastewater systems at these four plants is approximately 9.7 percent. Engineering Services' goal for design of projects with construction cost greater than \$3 million is 9 to 12 percent. The construction cost for the four plants is anticipated to range from \$8 million to \$10 million.

Engineering Design Services – MWH Americas

Final design for replacement of the wastewater systems at four CRA pumping plants is recommended to be performed by MWH Americas under a new professional services agreement. MWH Americas was selected through a competitive process via Request for Qualifications No. 927. The estimated cost to provide these services is \$900,000.

This action authorizes an agreement with MWH Americas, in an amount not to exceed \$900,000, for engineering design services. For this agreement, Metropolitan has established a Small Business Enterprise participation level of 18 percent.

Summary

This action appropriates \$1.35 million, authorizes final design to replace wastewater systems at four CRA pumping plants, and authorizes a professional services agreement with MWH Americas. This project has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds have been included in the fiscal year 2012/13 capital expenditure plan.

This project is included within capital Appropriation No. 15385, the CRA Discharge Containment Program, which was initiated in fiscal year 2001/02. Other projects authorized under Appropriation No. 15385 include upgrades to the equipment wash areas for all five CRA pumping plants, transformer oil and chemical containment work at Intake Pumping Plant, and preliminary design of oil containment systems. With the present action, the total funding for Appropriation No. 15385 will increase from \$2,954,000 to \$4,304,000.

See [Attachment 1](#) for the Financial Statement and [Attachment 2](#) for the Location Map.

Project Milestones

June 2013 – Completion of final design for replacement of wastewater systems at Hinds and Eagle Mountain Pumping Plants

October 2013 – Completion of final design for replacement of wastewater systems at Iron Mountain and Gene Pumping Plants

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed project involves the funding; final design; and minor alterations, reconstruction or replacement of existing public facilities along with the construction of minor appurtenant structures with no expansion of use and no possibility of significantly impacting the physical environment. In addition, the proposed project involves minor modifications in the condition of land, water, and/or vegetation which does not involve removal of healthy,

mature, scenic trees. Accordingly, the proposed action qualifies under Class 1, Class 2, Class 3, and Class 4 Categorical Exemptions (Sections 15301, 15302, 15303, and 15304 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under four Categorical Exemptions (Class 1, Section 15301; Class 2, Section 15302; Class 3, Section 15303; and Class 4, Section 15304 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the CEQA determination and

- a. Appropriate \$1.35 million;
- b. Authorize final design for replacement of wastewater systems at four Colorado River Aqueduct pumping plants; and
- c. Authorize professional services agreement with MWH Americas in an amount not to exceed \$900,000.

Fiscal Impact: \$1.35 million in capital funds under Approp. 15385

Business Analysis: This option will allow the existing deteriorated wastewater systems to be replaced with new reliable and efficient systems which comply with current environmental regulations.

Option #2

Adopt the CEQA determination and

- a. Appropriate \$680,000;
- b. Authorize final design to replace wastewater systems at Hinds and Eagle Mountain Pumping Plants; and
- c. Authorize professional services agreement with MWH Americas in an amount not to exceed \$380,000.

Fiscal Impact: None

Business Analysis: This option will address the most severely deteriorated wastewater systems at this time. Staff will monitor conditions at the other pumping plants and make localized repairs as necessary. This option may lead to increased costs and increased risk of discharge violations.

Option #3

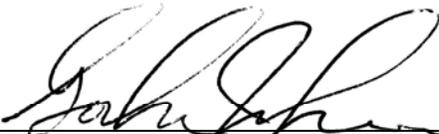
Do not authorize final design to replace wastewater systems at four CRA pumping plants.

Fiscal Impact: None

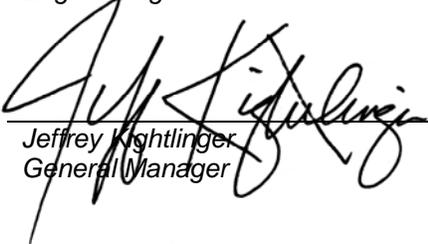
Business Analysis: Deferral of the project would increase the risk of discharge violations, would increase maintenance costs, and would increase the risk of costly urgent repairs as the wastewater systems continue to degrade.

Staff Recommendation

Option #1



Gordon Johnson 11/16/2012
Manager/Chief Engineer, Date
Engineering Services



Jeffrey Knightlinger 11/26/2012
General Manager Date

Attachment 1 – Financial Statement

Attachment 2 – Location Map

Ref# es12620696

Financial Statement for CRA Discharge Containment Program

A breakdown of Board Action No. 8 for Appropriation No. 15385 for the CRA Wastewater System Replacement project¹ is as follows:

	Previous Total Appropriated Amount (Jan. 2012)	Current Board Action No. 8 (Dec. 2012)	New Total Appropriated Amount
Labor			
Studies & Investigations	\$ 708,000	\$ -	\$ 708,000
Final Design	222,000	65,000	287,000
Owner Costs (Program mgmt., permitting, receipt of bids)	468,200	120,000	588,200
Construction Inspection & Support	17,000	-	17,000
Metropolitan Force Construction	224,000	46,000	270,000
Materials & Supplies	65,000	-	65,000
Incidental Expenses	59,500	10,000	69,500
Professional Services	341,000	-	341,000
MWH Americas		900,000	900,000
Value Engineering Consultant		50,000	50,000
Equipment Use	10,000	-	10,000
Contracts	541,000	-	541,000
Remaining Budget	298,300	159,000	457,300
Total	\$ 2,954,000	\$ 1,350,000	\$ 4,304,000

Funding Request

Program Name:	CRA Discharge Containment Program		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15385	Board Action No.:	8
Requested Amount:	\$ 1,350,000	Capital Program No.:	15385
Total Appropriated Amount:	\$ 4,304,000	Capital Program Page No.:	42
Total Program Estimate:	\$ 6,971,000	Program Goal:	W-Water Quality

¹ The total amount expended to date on the CRA Wastewater System Replacement project is approximately \$782,508.

Location Map

