



- Board of Directors
Engineering and Operations Committee

1/10/2012 Board Meeting

7-1

Subject

Appropriate \$570,000; and authorize preliminary design to replace wastewater systems at the Colorado River Aqueduct pumping plants (Approp. 15385)

Description

This action authorizes preliminary design to replace the wastewater collection systems and community septic tanks at all five Colorado River Aqueduct (CRA) pumping plants. The 70-year-old facilities have deteriorated over time and have reached the end of their expected service life.

Timing and Urgency

The existing wastewater systems at Metropolitan's five CRA pumping plants have deteriorated through continual use and are no longer reliable. These systems are exhibiting signs of failure such as plumbing and septic tank backups, clogged leachfields, broken and slow-draining collection pipes, and odors. When wastewater systems fail to operate effectively, groundwater and surface water pollution may occur. Staff recommends proceeding with preliminary design for replacement of the wastewater systems at this time.

This project has been reviewed with Metropolitan's updated Capital Investment Plan (CIP) prioritization criteria and is budgeted within Metropolitan's CIP for fiscal year 2011/12. The work is categorized as an Infrastructure Upgrade project.

Background

Each of Metropolitan's five pumping plants along the CRA is located in remote areas of Riverside or San Bernardino County, 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 and maintenance buildings, training/meeting rooms, guest lodges, and staff residences. The wastewater systems consist of a series of collection pipes which convey domestic sewage to one or more community septic tanks. Solid waste settles to the bottom of the septic tanks, where it undergoes biological treatment and is removed at regular intervals. The liquid effluent is dispersed through perforated pipes into subsurface soils in a leachfield. All of the on-site wastewater systems are permitted by the local 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. 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 sewage lift station pumps liquid effluent from the septic tanks to a leachfield located at a higher elevation to ensure adequate setback from drainage courses that lead to the Colorado River. There is a total of approximately 8.5 miles of collection lines at the five pumping plants.

The existing systems have been in operation for over 70 years and are showing signs of failure. There have been repeated instances of slow-draining sinks and toilets, broken and clogged pipes, septic tank backups, clogged leachfields, and pump failures. Metropolitan's Board previously authorized a study to assess the wastewater systems at all five pumping plants. 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. A video inspection of the collector pipes revealed cracks, broken pipe segments, root intrusion, and numerous collapses where the inspection camera could not pass through. The leachfields have reached saturation, with limited capacity to effectively disperse the wastewater. Staff recommends that the existing wastewater systems be replaced in stages. The Eagle Mountain and Gene pumping plants will be addressed under Stage 1, as these plants are exhibiting the most severe signs of deterioration. Iron Mountain, Hinds, and Intake pumping plants will be completed under Stage 2.

CRA Pumping Plant Wastewater System Replacement – Preliminary Design Phase (\$570,000)

Preliminary design phase activities for all five pumping plants will include development of design criteria for the new on-site wastewater treatment systems, based on projected flows and code requirements. Planned activities also include the initiation of permitting; preparation of environmental documentation and local surface drainage maps; potholing of utilities; and siting studies for the collection system piping and treatment system components. Field investigations will be performed to determine suitability of soils and percolation rates. The wastewater design capacities for each pumping plant will be developed and the new systems will be sized in accordance with each county's Department of Environmental Health Services guidelines, based on current and future usage requirements. Future use projections will be consistent with Metropolitan's long-term operation and staffing plans for the CRA facilities. Conceptual-level cost estimates will also be developed.

This action appropriates \$570,000 in budgeted funds and authorizes preliminary design phase activities to replace wastewater systems for the CRA pumping plants. Preliminary design phase activities will include field investigations, topographic surveys, development of construction cost estimates, and preparation of preliminary layouts and a preliminary design report. Preliminary design for the Iron Mountain, Gene, and Intake pumping plants will be performed by Metropolitan staff, while preliminary design for the Eagle Mountain and Hinds pumping plants will be performed by MWH Americas, as discussed below. Requested funds include \$276,000 for Metropolitan's activities for three pumping plants, and \$180,000 for MWH Americas' activities for two pumping plants. The requested funds also include \$88,700 for preparation of environmental documentation, permitting, and project management; and \$25,300 for remaining budget. Staff will return to the Board at a later date for authorization to commence final design phase activities.

Design Services by MWH Americas – No Action Required

Preliminary design for the replacement of wastewater systems at the Eagle Mountain and Hinds pumping plants is recommended to be performed by MWH Americas under an existing board-authorized agreement. Metropolitan has insufficient staff in house to address all five pumping plants due to other rehabilitation projects underway within the distribution system. MWH was selected through a competitive process via Request for Qualifications No. 927. In addition to the preliminary design phase activities listed above, MWH Americas' scope also includes assessment of alternative wastewater treatment systems and optimization of layouts to reduce construction and maintenance costs. The estimated cost to provide these services is \$180,000. For this agreement, Metropolitan has established a Small Business Enterprise participation level of 18 percent. No amendment to the existing MWH Americas agreement is required for this work.

This project has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds have been included in the fiscal year 2011/12 capital budget. See [Attachment 1](#) for the Financial Statement and [Attachment 2](#) for the Location Map. This project is included within capital Appropriation No. 15385, the CRA Discharge Containment program, which was initiated in fiscal year 2001/02. Past work completed under Appropriation No. 15385 includes upgrades to the equipment wash areas for all five CRA pumping plants, and transformer oil and chemical containment work at Intake pumping plant. The total appropriated amount for this program will increase from \$2,384,000 to \$2,954,000.

This project is consistent with Metropolitan's goals for sustainability by enhancing reliability of the existing conveyance and distribution system in order to maintain reliable water deliveries in the future.

Project Milestones

March 2012 – Completion of preliminary design to replace wastewater systems at Eagle Mountain and Gene pumping plants

July 2012 – Completion of preliminary design to replace wastewater systems at Iron Mountain, Hinds and Intake pumping plants

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

California Environmental Quality Act (CEQA)

CEQA determination for Options #1 and #2:

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed action consists of basic data collection and resource evaluation activities, which do not result in a serious or major disturbance to an environmental resource. This may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded. Accordingly, the proposed action qualifies as a Class 6 Categorical Exemption (Section 15306 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under a Categorical Exemption (Class 6, Section 15306 of the State CEQA Guidelines).

CEQA determination for Option #3:

None required

Board Options

Option #1

Adopt the CEQA determination and

- a. Appropriate \$570,000; and
- b. Authorize preliminary design to replace deteriorated wastewater systems at all five CRA pumping plants.

Fiscal Impact: \$570,000 in budgeted funds under Approp. 15385

Business Analysis: This option will provide reliable and efficient treatment and disposal of wastewater in compliance with environmental regulations.

Option #2

Adopt the CEQA determination and

- a. Appropriate \$240,000; and
- b. Authorize preliminary design to replace deteriorated wastewater systems at Eagle Mountain and Gene pumping plants.

Fiscal Impact: \$240,000 in budgeted funds under Approp. 15385

Business Analysis: This option will address the two most severely deteriorated wastewater systems. Staff will monitor conditions at the other wastewater systems and return to the Board at a later date if problems develop. Deferral of work at the remaining three CRA pumping plants may result in potential violation of permits, increased potential public health risks, and increased maintenance costs.

Option #3

Do not authorize preliminary design to replace wastewater systems at the five CRA pumping plants.

Fiscal Impact: None

Business Analysis: Deferral of the CRA pumping plants wastewater systems will result in increased potential public health risks and maintenance costs, potential violation of permits, and likely urgent repairs as the wastewater systems continue to degrade.

Staff Recommendation

Option #1


Gordon Johnson
Manager/Chief Engineer, Engineering
Services

12/19/2011

Date


Jeffrey Kightlinger
General Manager

12/21/2011

Date

Attachment 1 – Financial Statement

Attachment 2 – Location Map

Ref# es12612575

Financial Statement for CRA Discharge Containment Program

A breakdown of Board Action No. 7 for Appropriation No. 15385 for the CRA Wastewater System Replacement project¹ is as follows:

	Previous Total Appropriated Amount (Dec. 2009)	Current Board Action No. 7 (Jan. 2012)	New Total Appropriated Amount
Labor			
Studies & Investigations	\$ 468,000	\$ 240,000	\$ 708,000
Final Design	222,000	-	222,000
Owner Costs (Program mgmt., permitting, envir. monitoring)	381,000	87,200	468,200
Construction Inspection & Support	17,000	-	17,000
Metropolitan Force Construction	188,000	36,000	224,000
Materials & Supplies	65,000	-	65,000
Incidental Expenses	58,000	1,500	59,500
Professional Services (MWH Americas)	161,000	180,000	341,000
Equipment Use	10,000	-	10,000
Contracts	541,000	-	541,000
Remaining Budget	273,000	25,300	298,300
Total	\$ 2,384,000	\$ 570,000	\$ 2,954,000

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.:	7
Requested Amount:	\$ 570,000	Capital Program No.:	15385
Total Appropriated Amount:	\$ 2,954,000	Capital Program Page No.:	283
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 \$305,000.

Location Map

