

- **Board of Directors**
Water Quality and Operations Committee

February 12, 2008 Board Meeting

7-3

Subject

Appropriate \$1.77 million; and authorize (1) new chlorine injection point at Lake Skinner Outlet Conduit; and (2) procurement of operating equipment for Phase II of the Quagga Mussel Control Program (Approp. 15447)

Description

The discovery of quagga mussels in the Colorado River has prompted a series of response actions from Metropolitan to conduct surveillance and to implement mitigation strategies for the control of mussel populations within Metropolitan's raw water conveyance system. The growth of quagga mussels, if unchecked, would reduce the hydraulic capacity of canals, siphons, and pipelines, and would also require regular shutdowns and millions of dollars annually for physical cleaning. In September 2007, the Board authorized construction of interim chlorine feed systems for quagga mussel control at the outlets of Copper Basin and Lake Mathews for Phase II of the Quagga Mussel Control Program. This action requests authorization for a new chlorine injection point at the Lake Skinner Outlet Conduit and equipment to maintain chlorination at Lake Skinner and Copper Basin.

New Chlorine Injection Point at Lake Skinner Outlet Conduit – Final Design, Procurement and Construction (\$1.77 million)

During the July 2007 Colorado River Aqueduct (CRA) shutdown, quagga mussels were discovered at Lake Skinner in low numbers. Continuous chlorination at the Lake Skinner Outlet Tower was initiated to control the transport of veligers (mussel larvae) to downstream users via the Lake Skinner Outlet Conduit. The Lake Skinner Outlet Conduit conveys raw water to several San Diego raw water pipelines and provides raw water to the Skinner plant for treatment. Although quagga mussels have been subsequently found in some San Diego County reservoirs, it is still prudent to continue to inactivate larvae in the raw water feeding those reservoirs.

Once the Skinner ozone facilities are placed into operation, continuous chlorination of raw water entering the Skinner plant is undesirable. Continuous chlorination of raw water would corrode stainless steel components in the new ozone contactors, degrade the catalysts in the ozone off-gas destruction system, and raise levels of raw water disinfection by-products, which counteracts the purpose of adding ozone as the primary disinfectant to lower disinfection by-product levels. To avoid these complications and to maintain continuous chlorination to the raw water delivered to downstream member agencies, staff recommends adding a new chlorine injection point along the Lake Skinner Outlet Conduit to control quagga mussels. This new chlorine injection point will be located after the takeoff to the Skinner plant and will be dedicated to chlorination of raw water supplies delivered to the San Diego pipelines. See [Attachment 2](#) for locations of existing and relocated chlorine injection points.

This action appropriates \$1.77 million and authorizes final design, procurement of materials, and construction to add a new chlorine injection point at the Lake Skinner Outlet Conduit. Work will be performed by Metropolitan staff. The total cost of construction is estimated to be \$1,240,000. In addition to construction, the appropriated funds include \$165,000 for final design; \$140,000 for project management, permitting and environmental monitoring, and technical support during construction; and \$225,000 for remaining budget. Construction is scheduled to be completed before the Skinner ozone facilities begin operation in 2009. This project has been evaluated and recommended by Metropolitan's Capital Investment Plan (CIP) Evaluation Team. Funds were not included in the fiscal year 2007/08 capital budget because the quagga mussels were detected in July 2007, after adoption of the 2007/08 budget. Upon approval of this action, the fiscal year 2007/08 capital expenditure plan will be adjusted to reflect this new work. This project is categorized as an Infrastructure Upgrade Project within Metropolitan's CIP. See [Attachment 1](#) for the Financial Statement.

Liquid Chlorine Trailers – Procurement (Utilizes Budgeted FY 2007/08 Operating Equipment Funds; No Additional Funds Required)

Metropolitan currently owns 19 liquid chlorine trailers, each capable of holding and transporting approximately 17 tons of liquefied chlorine gas. Three additional trailers, budgeted for purchase in fiscal year 2007/08, will be received in approximately eight months. These chlorine trailers will be used to meet additional chlorine needs at the Mills and Skinner plants. Due to the need for continuous chlorination of raw water at the Lake Skinner Outlet Conduit to control the spread of quagga mussels, staff recommends procurement of two additional chlorine trailers to meet the additional demand. Staff projects that chlorine usage at the Lake Skinner Outlet Conduit will reach four tons per day during the summer months due to higher raw water demands. The two proposed chlorine trailers will meet the chlorine needs at the Lake Skinner Outlet Conduit, as one chlorine trailer will be in service while the other chlorine trailer is in transit or being filled.

This action authorizes procurement of two additional liquid chlorine trailers for use at the Lake Skinner Outlet Conduit to control the spread of quagga mussels. The cost of each liquid chlorine trailer is estimated to be approximately \$150,000. No increase is required in the Water System Operations (WSO) Group's operating equipment budget for fiscal year 2007/08 for this purchase, as sufficient funds are currently available due to savings derived from purchase of some of the board-approved equipment in the pre-owned equipment market and savings derived from the competitive-bidding processes to procure other new equipment.

Mobile Chlorination Units – Procurement (Increase of \$450,000 in FY 2007/08 Operating Equipment Budget)

Continuous chlorination of water entering the CRA at Copper Basin is essential to control the spread of mussel larvae. However, this application only inactivates free-floating larvae entering the aqueduct from Copper Basin, and due to chlorine residual dissipation, does not prevent downstream propagation of existing adult mussel populations. Although large portions of the aqueduct were dewatered and dried in two separate shutdowns to kill attached adult mussels, some siphons and tunnels could not be fully drained, given the limited time available for the shutdowns. Attached mussels remain in these sections and continue to propagate larvae downstream. For these difficult-to-reach areas, continuous chlorination for a two- to three-week duration becomes the most feasible control option.

The proposed mobile chlorination equipment will provide the ability to periodically chlorinate short reaches of tunnels and siphons. The equipment will be stationed at the targeted facility to apply a controlled dosage of chlorine for two to three weeks. The equipment, which is essentially a trailer-based chemical tank farm, will consist of bleach storage tanks, chemical feed pumps and piping, secondary containment, safety equipment (e.g., leak detectors, safety showers, eye-wash stations), and a small electrical generator. Liquid bleach (sodium hypochlorite) was selected instead of granular calcium hypochlorite or liquefied chlorine gas, primarily because of its ease of use, improved ability to control dosage, less onerous permit requirements, and safer chemical handling and spill containment features. The trailers will be transported and spotted using Metropolitan's existing semi-tractors. The storage tanks will be periodically replenished from the bleach-vendor's tanker-trailer.

Although the primary use of the mobile chlorination equipment is for quagga mussel control, Metropolitan will further benefit from this acquisition because the mobile chlorination equipment will also be available for emergency response. The proposed bleach-based mobile chlorination units will be used following an earthquake, pipeline break, treatment plant chlorine interruption or other emergency, and will allow Metropolitan to quickly mobilize to add chlorine for disinfection. Two mobile chlorination units are recommended to be acquired. The two units will provide the flexibility to add chlorine at two locations simultaneously (during lower CRA flows) or additional storage capacity and reliability when the aqueduct is at higher flows.

Under Section 5108(b) of Metropolitan's Administrative Code, the Board delegates authority to purchase operating equipment through the budget process. The adopted fiscal year 2007/08 budget for the WSO Group includes \$6.9 million for the purchase of certain operating equipment. This action authorizes an increase of \$450,000 in the WSO Group's operating equipment budget for fiscal year 2007/08 for the purchase of two mobile

chlorination units to control the spread of quagga mussels along the CRA. The requested amount of \$450,000 will increase the WSO Group's 2007/08 operating equipment budget to \$7.35 million.

Summary

This action appropriates \$1.77 million and authorizes final design, procurement of materials, and construction of a new chlorine injection point at the Lake Skinner Outlet Conduit; authorizes procurement of two liquid chlorine trailers for use at the Lake Skinner Outlet Conduit using existing operating equipment funds; and authorizes a \$450,000 increase in the WSO Group's operating equipment budget for fiscal year 2007/08 for the purchase of two mobile chlorination units.

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

Project Milestone

January 2009 – Completion of chlorine injection point at the Lake Skinner Outlet Conduit

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

Metropolitan Water District Administrative Code Section 5108(b): Funding of Operating Equipment

California Environmental Quality Act (CEQA)

CEQA determination for Options #1 and #2:

New Chlorine Injection Point at Lake Skinner Outlet Conduit – Final Design, Procurement and Construction

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed project involves the funding and minor alterations of existing private or public facilities, along with the construction of minor appurtenant structures, with minor modifications in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees. These activities would result in negligible expansion of use and no possibility of significantly impacting the physical environment. Accordingly, the proposed action qualifies under Class 1, Class 3 and Class 4 Categorical Exemptions (Sections 15301, 15303, and 15304 of the State CEQA Guidelines).

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

Liquid Chlorine Trailers and Mobile Chlorination Units – Procurement

The proposed project was previously determined to be categorically exempt under the provisions of CEQA and State CEQA Guidelines. The activities associated with this project were found by the Board to be exempt under Classes 1, 3, 4, 6 and 9, Sections 15301, 15303, 15304, 15306, and 15309 of the State CEQA Guidelines on July 18, 2007. A Notice of Exemption (NOE) was filed on the project at that time. With the current board action, there is no substantial change proposed to the project since the 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 2007 NOE (Classes 1, 3, 4, 6 and 9, Sections 15301, 15303, 15304, 15306, and 15309 of the State CEQA Guidelines), and that no further environmental analysis or documentation is required.

CEQA determination for Option #3:

None required

Board Options

Option #1

Adopt the CEQA determinations and

- a. Appropriate \$1.77 million and authorize final design, procurement and construction of a new chlorine injection point at the Lake Skinner Outlet Conduit;
- b. Authorize procurement of two liquid chlorine trailers; and
- c. Authorize an increase of \$450,000 in the WSO Group’s operating equipment budget for procurement of two mobile chlorination units.

Fiscal Impact: \$1.77 million of unbudgeted capital funds under Approp. 15447, and \$450,000 of unbudgeted operating equipment funds

Business Analysis: This option will enable continued implementation of the Quagga Mussel Control Program.

Option #2

Adopt the CEQA determinations and

- a. Appropriate \$1.77 million and authorize final design, procurement and construction of a new chlorine injection point at the Lake Skinner Outlet Conduit;
- b. Authorize procurement of two liquid chlorine trailers; and
- c. Do not authorize an increase of \$450,000 in the WSO Group’s operating equipment budget for procurement of two mobile chlorination units.

Fiscal Impact: \$1.77 million of unbudgeted capital funds under Approp. 15447.

Business Analysis: This option will enable partial implementation of the Quagga Mussel Control Program. However, chlorination of specific sites along the Colorado River Aqueduct to kill adult quagga mussels will not be possible. This would result in continued colonization of quagga mussels in certain areas downstream of Copper Basin and may require additional, lengthy shutdowns to physically remove quagga mussels.

Option #3

- a. Do not authorize final design, procurement and construction of a new chlorine injection point at the Lake Skinner Outlet Conduit;
- b. Do not authorize procurement of two liquid chlorine trailers; and
- c. Do not authorize procurement of two mobile chlorination units.

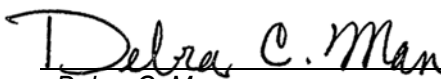
Fiscal Impact: None

Business Analysis: This option will potentially result in significant economic costs and impaired water delivery resulting from quagga mussel infestation of critical infrastructure. Continuous chlorination at the Lake Skinner Outlet Tower will be discontinued to protect treatment plant infrastructure and minimize disinfection by-products. Numerous shutdowns would be required to physically remove quagga mussels.

Staff Recommendation

Option #1

 1/22/2008
 Eddie A. Rigdon Date
 Manager, Water System Operations

 1/28/2008
 Debra C. Man Date
 for Jeffrey Kightlinger
 General Manager

Attachment 1 – Financial Statement

Attachment 2 – Location Maps

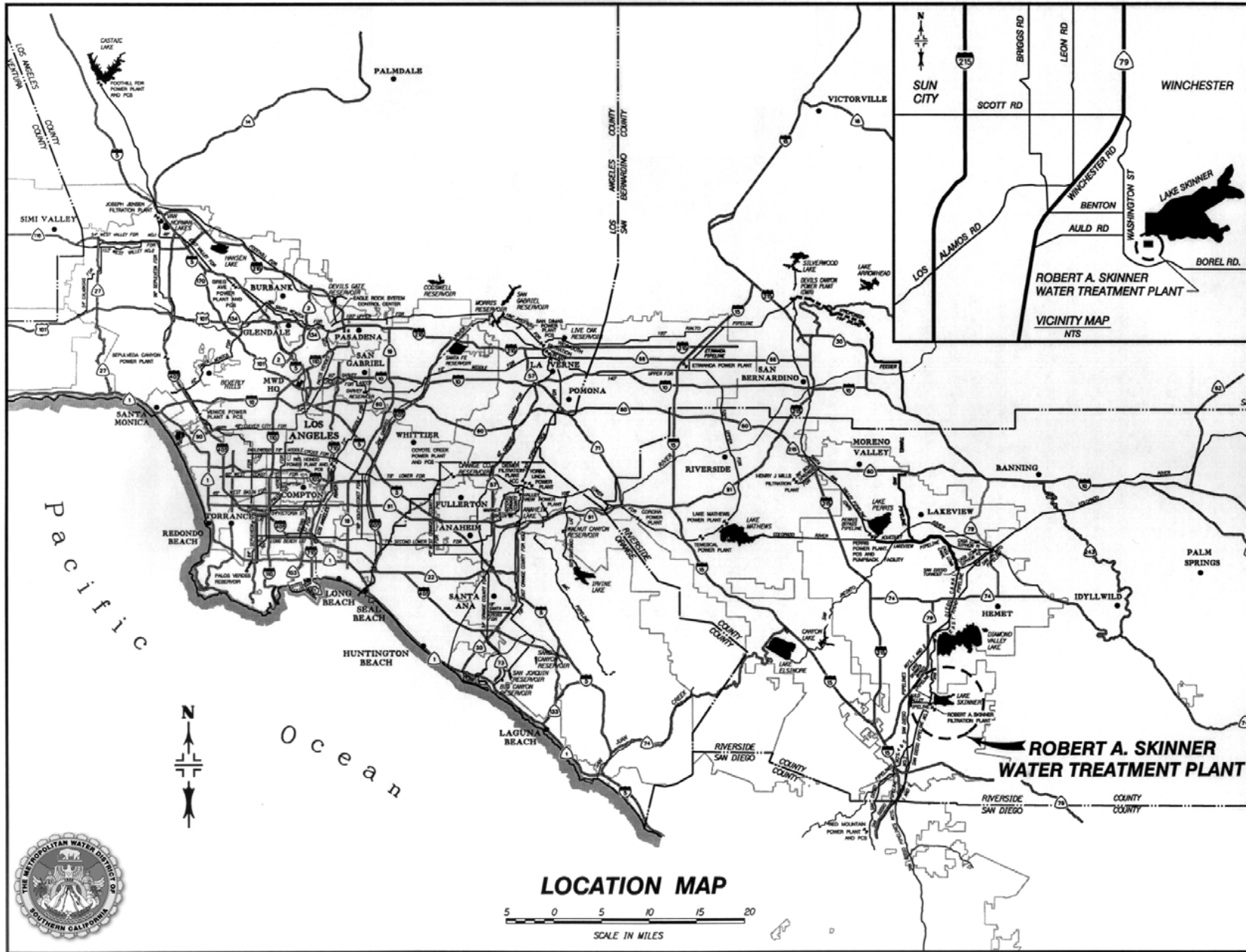
Financial Statement for Quagga Mussel Control Program

A breakdown of Board Action No. 2 for Appropriation No. 15447 is as follows:

	Previous Total Appropriated Amount (Sep. 2007)	Current Board Action No. 2 (Feb. 2008)	New Total Appropriated Amount
Labor			
Studies and Investigations	\$ 473,900	\$ -	\$ 473,900
Preliminary Design	274,500	-	274,500
Final Design	460,000	165,000	625,000
Owner Costs (Program management, construction support)	339,400	140,000	479,400
Metropolitan Force Construction	1,645,600	650,000	2,295,600
Materials and Supplies	1,589,600	460,000	2,049,600
Incidental Expenses	17,000	10,000	27,000
Professional/Technical Services	585,000	-	585,000
Equipment Use	-	20,000	20,000
Contracts	-	100,000	100,000
Remaining Budget	525,000	225,000	750,000
Total	\$ 5,910,000	\$ 1,770,000	\$ 7,680,000

Funding Request

Program Name:	Quagga Mussel Control Program		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15447	Board Action No.:	2
Requested Amount:	\$ 1,770,000	Capital Program No.:	15447-S
Total Appropriated Amount:	\$ 7,680,000	Capital Program Page No.:	N/A
Total Program Estimate:	\$ To Be Developed	Program Goal:	S-Supply and Delivery Reliability



Skinner Water Treatment Plant

