THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Action

- **Board of Directors**
  Engineering, Operations, and Technology Committee

10/14/2025 Board Meeting

7-1

Subject

Amend the Capital Investment Plan for fiscal years 2024/25 and 2025/26 to include invasive mussel mitigation and control at Metropolitan facilities; and authorize an increase of $500,000 in the operating equipment budget for the current biennium to purchase equipment to control the growth of invasive mussels; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

Since the discovery of quagga mussels in the lower Colorado River in 2007, Metropolitan has implemented surveillance and control measures within the Colorado River Aqueduct (CRA) to mitigate potential impacts on critical infrastructure. The detection of adult quagga mussels along the State Water Project (SWP) at Pyramid Lake in 2016 and Castaic Lake in 2021 resulted in the implementation of the ongoing extensive monitoring of adult mussels and veligers (mussel larvae) along the west and east branches of the SWP. In October 2024, golden mussels were discovered in the Port of Stockton and O'Neill Forebay at San Luis Reservoir and quickly spread throughout the Delta and SWP, including a veliger detected in Silverwood Lake in September 2025. The discovery of both quagga and golden mussels in the SWP prompts the need for a program to immediately address control of invasive mussels and a long-term strategy to protect Metropolitan's critical infrastructure exposed to SWP supplies.

This action amends the Capital Investment Plan (CIP) for fiscal years 2024/25 and 2025/26 to include invasive mussel mitigation and control at Metropolitan facilities receiving SWP supplies. It also authorizes an increase of $500,000 in the operation and maintenance budget for fiscal year 2025/26 to purchase operating equipment to control the growth of invasive mussels and veligers. See **Attachment 1** for the Allocation of Funds and **Attachment 2** for the Location Map.

Proposed Action(s)/Recommendation(s) and Options

Staff Recommendation: Option #1

Option #1

a. Amend the Capital Investment Plan for fiscal years 2024/25 and 2025/26 to include invasive mussel mitigation and control at Metropolitan facilities; and

b. Authorize an increase of $500,000 in the operation and maintenance budget for fiscal year 2025/26 to purchase operating equipment to control the growth of invasive mussels.

Fiscal Impact: Expenditure of $1.97 million in capital funds and $500,000 in operation and maintenance funds for fiscal year 2025/2026. All capital costs will be incurred in the current biennium and have been previously appropriated. Adding the project listed above to the CIP is not anticipated to increase CIP expenditures in the current biennium beyond those that the Board has previously appropriated.

Business Analysis: This option will enable the implementation of an invasive mussel mitigation and control initiative designed to protect critical infrastructure in Metropolitan's system and ensure reliable water deliveries to meet member agency and other local customer supply needs.

Option #2

Do not proceed with this project at this time.

Fiscal Impact: None

Business Analysis: Under this option, staff would continue monitoring invasive mussels, coordinating with the Department of Water Resources, and notifying member agencies. Water deliveries could be reduced, or outages experienced, as mussel control operations are performed.

Alternatives Considered

Staff considered incorporating the project into the next biennial CIP budget and deferring operations expenditures until the following fiscal year. However, this option would delay the implementation of the recommended actions to protect Metropolitan facilities from invasive mussels in the SWP. Based on the observed rapid migration of mussels through the SWP and staff experience with the 2007 CRA quagga mussel control program, rapid deployment of mobile operating equipment is critical to better control the growth of invasive mussels and veligers, and early evaluation of mitigation strategies will allow the implementation of potential infrastructure upgrades promptly. Staff determined that the current approach to begin the invasive mussel mitigation and control initiative will reduce the risk of mussels damaging equipment and infrastructure and impacting operational reliability.

Applicable Policy

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

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

Related Board Action(s)/Future Action(s)

By Minute Item 53596, dated April 9, 2024, the Board appropriated $3,453.2 million for O&M and operating equipment, and other operations costs for fiscal years 2024/25 and 2025/26.

By Minute Item 53598, dated April 9, 2024, the Board appropriated a total of $636.48 million for projects identified in the Capital Investment Plan for fiscal years 2024/2025 and 2025/2026.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed actions are not defined as a project under CEQA because it involves the creation of government funding mechanisms or other government fiscal activities, which do not involve any commitment to any specific project which may result in a potentially significant physical impact on the environment. (State CEQA Guidelines Section 15378(b)(4).)). Metropolitan, as the Lead Agency, will be responsible for complying with the requirements of CEQA and the State CEQA Guidelines for each project that meets the CIP criteria prior to final approval of that project. As preliminary work and design on CIP projects proceed, Metropolitan staff will conduct any necessary CEQA review and prepare the appropriate environmental documentation for consideration and approval by the Board or the General Manager, as appropriate.

CEQA determination for Option #2:

None required

Details and Background

Background

Quagga mussels and zebra mussels infestations can adversely impact aquatic environments, devastate the aquatic ecology of lakes and rivers by altering or destroying fish habitats, and render lakes more susceptible to harmful algae blooms. These mussels can also reproduce prolifically and infest critical infrastructure, including storage, pumping, conveyance, and water treatment facilities.

The first quagga mussel population established in the western United States was discovered in January 2007 at the Las Vegas Boat Harbor in Lake Mead. As quagga mussels began spreading throughout the CRA, Metropolitan established a program to conduct surveillance and to implement mitigation strategies for the control of mussel populations within Metropolitan's raw water conveyance system, which included continuous chlorination at Copper Basin, Lake Mathews and Lake Skinner; periodic cleaning of trash racks and fish screens; desiccation, cleaning and inspections during routine CRA shutdowns; extensive monitoring of veligers; and additional control measures for raw water discharges.

Mussel infestation within California was limited to the CRA until December 2016, when adult quagga mussels were first discovered in the SWP at Pyramid Lake and the Angeles Tunnel. Based on Metropolitan's previous experience with quagga mussel control, extensive monitoring of adult mussels and veligers was applied for the west and east branches of the SWP, in coordination with the Department of Water Resources and member agencies. Since invasive mussels require calcium to reproduce and thrive, and naturally occurring calcium levels in the CRA are approximately two to three times higher than calcium levels in the SWP, the risk of mussel invasion along the SWP had been considered lower than the CRA. However, veligers were consistently detected in Pyramid Lake, Castaic Lake, Foothill Feeder Pressure Control Structure, and the Jensen plant's influent during the last two years. Water leaving Castaic Lake is now considered to be infested with quagga mussels.

California's invasive mussel issue was exacerbated with the first discovery of golden mussels in North America at the Port of Stockton and O'Neill Forebay at San Luis Reservoir in October 2024. Subsequent inspections found golden mussels throughout the Delta and upper SWP. Golden mussels, like quagga and zebra mussels, are invasive and proliferate quickly, but can also adapt and thrive in harsher environments, making them a greater threat. On September 3, 2025, the Department of Water Resources confirmed the presence of a golden mussel veliger in a sample from Silverwood Lake. This finding, verified through DNA sequencing, represents the southernmost detection of golden mussels in the SWP to date.

Leveraging lessons from the 2007 CRA quagga mussel control program, staff have initiated a multi-disciplinary task force to develop a three-phased approach for mussel mitigation and control at Metropolitan facilities receiving SWP supplies. Phase I includes increased monitoring and testing, feasibility studies, and conceptual design of prioritized infrastructure upgrades, vulnerability assessments, and near-term mitigation measures utilizing rapidly deployable portable equipment. Phase I will also involve developing conceptual design for chemical injection or other control measures to control mussel and veliger growth at critical locations, such as Joseph Jensen Water Treatment Plant, Magazine Canyon, and Live Oak Reservoir. Phase II will implement prioritized infrastructure upgrades identified in Phase I of the initiative. Phase III will address long-term needs focused on refining mitigation strategies for district-wide invasive mussel control. Based on the observed rapid migration of mussels through the SWP, staff recommends moving forward with Phase I of SWP invasive mussel mitigation and control at this time.

In April 2024, the Board appropriated funds and authorized the General Manager to initiate or proceed with work on all capital projects identified in the CIP, subject to any limits on the General Manager's authority and CEQA requirements. Board authorization is required to commence work on new projects not originally included in the Board-authorized CIP. This action amends the CIP to include the SWP Invasive Mussel Mitigation and Control project. It is not anticipated that the addition of this project to the CIP will increase CIP expenditures in the current biennium beyond the amount appropriated by the Board. Funds required for work to be performed pursuant to the subject projects after fiscal year 2025/26 will be budgeted within the Capital Investment Plan Appropriation for fiscal years 2026/27 and 2027/28. This project has been reviewed in accordance with

Metropolitan's CIP prioritization criteria and was approved by Metropolitan's CIP Evaluation Team to be included in the Additional Facilities and Systems Program.

SWP Invasive Mussel Mitigation and Control – Preliminary Investigations

Planned Phase I activities include: (1) assessment of invasive mussel control measures targeting Metropolitan facilities receiving SWP supplies; (2) pilot and bench-scale testing of proposed control measures; (3) development of conceptual plans for chemical injection or other control measures at critical facilities described above; and (4) development of a programmatic approach for long-term mussel control and a master plan for potential infrastructure upgrades. All activities will be performed by Metropolitan staff.

A total of $1.97 million is allocated for this work. Allocated funds include $1.48 million for field investigations, conceptual design drawings, and technical reports; $420,000 for project management and environmental support; and $70,000 for remaining budget.

Operating Equipment for Invasive Mussel Control – Procurement

New operating equipment is necessary to support surveillance, detection, and control of mussels and larvae along Metropolitan's facilities receiving SWP supplies. Rapid deployment of mobile operating equipment is also essential to pilot proposed mitigation strategies designed to protect Metropolitan's critical infrastructure. The proposed operating equipment includes portable chlorination units, consisting of a trailer-based chemical tank farm provided with sodium hypochlorite tanks, chemical feed pumps and piping, secondary containment, a small electrical generator, and safety equipment including leak detectors, safety showers, and eye-wash stations. This equipment will be stationed at targeted facilities to periodically apply a controlled dosage of chlorine. Additional equipment includes dechlorination units, filtration and inactivation equipment, water quality monitoring equipment (e.g., nets, sampling pumps, sensors), remotely operated vehicles for mussel inspections, and microscopes.

Under Section 5108(b) of Metropolitan's Administrative Code, the Board delegates authority to purchase operating equipment through the budget process. Under Section 8122(g)(2), the General Manager may execute contracts for the purchase of materials, supplies, other consumable items such as fuels, water treatment chemicals, materials for construction projects and other bulk items, and for routine services such as waste disposal and maintenance services, which are generally identified in the budget, regardless of dollar value, provided that sufficient funds are available within the adopted budget for such materials, supplies and routine services.

The adopted budget for the purchase of operating equipment for fiscal year 2025/26 is $10.1 million. This action authorizes an increase of $500,000 in the operating equipment budget for fiscal year 2025/26 for the purchase of equipment to control the spread of invasive mussels at Metropolitan's facilities receiving SWP supplies. Purchase of the chemicals and materials required to support the operating equipment will be executed under Section 8122(g)(2), as they have been generally identified in the budget, and there are sufficient funds available. The requested amount of $500,000 will increase the 2025/26 operating equipment budget from $10.1 million to $10.6 million.

Project Milestone

June 2026 – Complete study of short-term control measures and deployment of operating equipment

9/25/2025

Mai M. Hattar *Date*
Chief Engineer
Engineering Services

9/25/2025

Deven Upadhyay *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Location Map

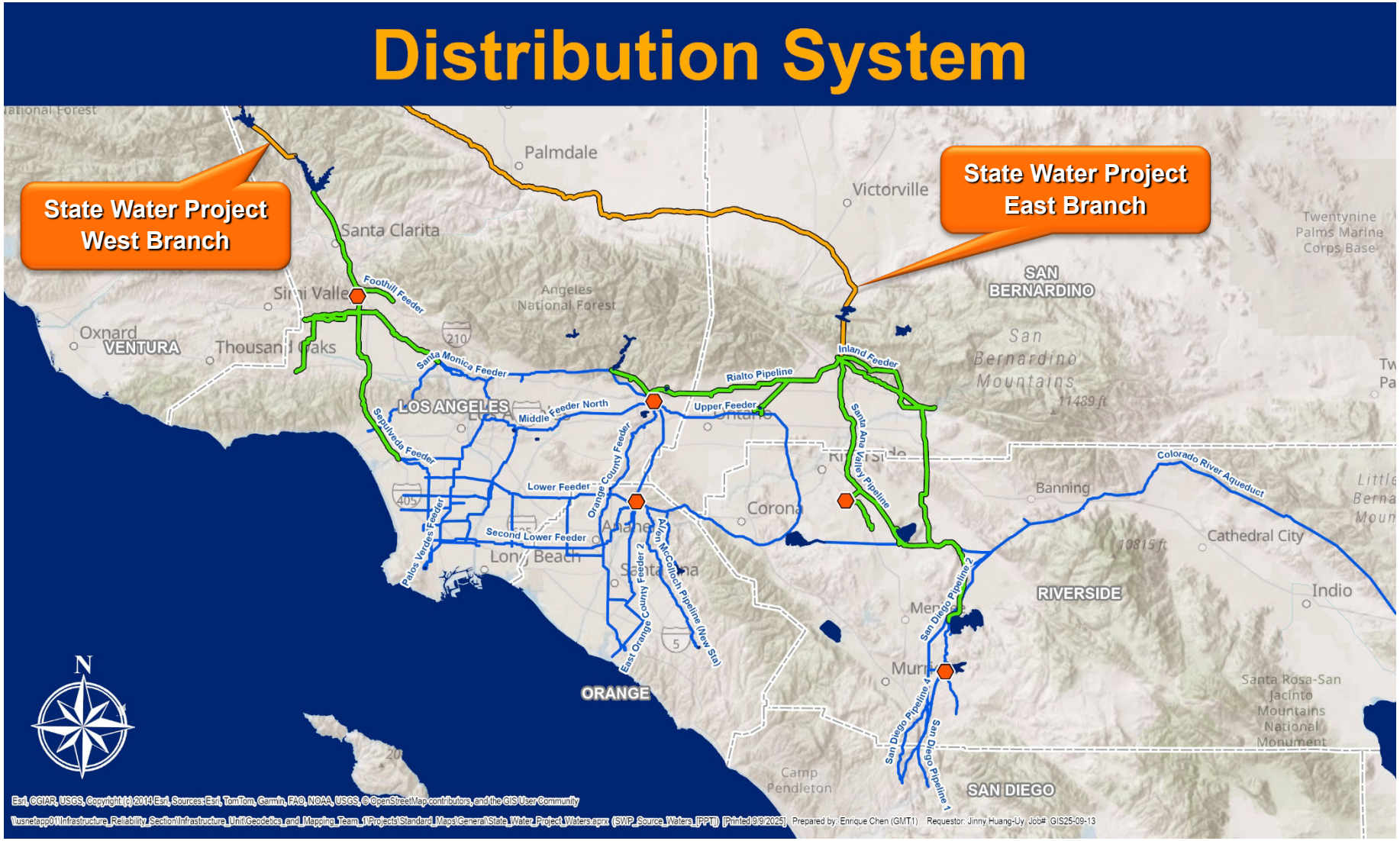
Ref# es12707437

Allocation of Funds for the SWP Invasive Mussel Mitigation and Control

	Current Board Action (Oct. 2025)
Labor	
Studies & Investigations	$ 1,480,000
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	420,000
Submittals Review & Record Drwgs.	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Right-of-Way	-
Equipment Use	-
Contracts	-
Remaining Budget	70,000
Total	**$ 1,970,000**

This is the initial allocation of capital funds to implement invasive mussel mitigation and control at Metropolitan facilities receiving SWP supplies. The total estimated cost to complete the capital project, including the funds allocated for the work described in this action, and future construction costs is anticipated to range from $30 million to $45 million.

This action also authorizes an additional expenditure of $500,000 in O&M funds in fiscal years 2025/26 to purchase operating equipment to control the growth of invasive mussels.


Distribution System
State Water Project West Branch
State Water Project East Branch
Palmdale
Victorville
Santa Clarita
Twentynine Palms Marine Corps Base
SAN BERNARDINO
Angeles National Forest
Foothill Feeder
Oxnard
VENTURA
Thousand Oaks
Santa Monica Feeder
Inland Feeder
San Bernardino Mountains
11439 ft
Rialto Pipeline
LOS ANGELES
Middle Feeder North
Upper Feeder
Sepulveda Feeder
Santa Ana Valley Pipeline
Lower Feeder
Orange County Feeder
Colorado River Aqueduct
Banning
Corona
Second Lower Feeder
Palos Verdes Feeder
Long Beach
Anaheim
Allen McColloch Pipeline (New Sta)
East Orange County Feeder 2
10815 ft
Cathedral City
San Diego Pipeline 2
RIVERSIDE
Indio
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Camp Pendleton
SAN DIEGO
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\\usnetapp01\Infrastructure_Reliability_Section\Infrastructure_Unit\Geodetics_and_Mapping_Team_1\Projects\Standard_Maps\General\State_Water_Project_Waters.aprx (SWP_Source_Waters_[PPT]) [Printed 9/9/2025] Prepared by: Enrique Chen (GMT1) Requestor: Jinny Huang-Uy Job#: GIS25-09-13