

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

September 12, 2000 Board Meeting

9-4

Subject

Construction of the Lake Mathews Outlet Facilities which includes the increase in Appropriation 15277 by \$79.3 million; the award of a construction contract; the amendment of consulting contracts; and the implementation of the contingency plan.

Description

Completed in 1940 as part of the Colorado River Aqueduct (CRA), the Lake Mathews Outlet Tower delivers water to the Upper and Lower feeders to serve Metropolitan's Diemer and Weymouth filtration plants, as well as numerous service connections to member agencies. The tower provides the only means of delivering CRA water and supplies from Diamond Valley Lake to Los Angeles, Orange, and western Riverside counties.

Several outlet towers in the Southern California area have undergone seismic and structural upgrades in recent years. Specific examples include the Silverwood Lake, San Gabriel Dam, and Van Norman Reservoir outlet towers. These examples indicated the need for further analysis to verify the vulnerability of the Lake Mathews outlet tower. A comprehensive analysis was completed on the reliability of the Lake Mathews tower in August 2000. The objective of this assessment was to ensure that Metropolitan would continue to supply its customers with a reliable supply of high quality water at the lowest possible cost. The final report, the Lake Mathews Outlet Facilities Reliability Assessment (Assessment), includes 1) an updated independent assessment of the structural strength and seismic vulnerability of the existing tower, 2) a review of tower operations, 3) a review of Lake Mathews service area supplies and 4) the development of operational and interim contingency plans in the event of a tower failure. The results of the seismic evaluation confirmed the previous analyses and concluded that the tower could experience significant damage and is susceptible to failure in the event of an earthquake with a magnitude in the range of 5.25 to 6.75. The review of the operation of the tower revealed that the tower's 59 outlet valves, which allow water to be withdrawn at different levels for water quality purposes, are deteriorating and require costly and hazardous annual repairs. Currently, less than half of the valves are in working order. When the valves are inoperable or out of service for repair, the ability to control the quality of water from the lake is limited.

The Assessment concluded that the Lake Mathews outlet tower is critical to the service area, and should the tower collapse from a seismic event, it may be impossible to deliver sufficient water of acceptable quality during the summer high demand period. Although it would be reasonable to expect that sufficient quantities of water would be available during the five-month winter period, complete dependence on State project water could result in exceedance of the maximum contaminant levels for trihalomethanes and other disinfection by-products.

Three components were identified in a contingency plan. The first is the execution of an emergency operation agreement with Western Municipal Water District (Western) to deliver 35 cfs from the Mills Gravity Line to the Lake Mathews Forebay. The agreement is currently under review by Western. The cost of the connection is approximately \$500,000 and the cost of service is dependent on the final outcome of the agreement. The second component is a reduction in lake level elevation to minimize the re-construction and clean-up duration in the event of a failed tower. The lowering of the lake is currently in effect. And the third component of the contingency plan is to complete the design and specifications of temporary pumps and piping system (system) by the end of October and to siphon 80 cfs from Lake Mathews over the dike and into the forebay for downstream deliveries. A contract will be bid and executed following the completion of the design and specifications. It is anticipated that the equipment (pumps and pipes) will be available for installation by January 2001 and operational by March 2001. The cost of this system is estimated to be \$700,000.

The Assessment indicates that the tower is at risk due to a seismic event and the risk of significant demand shortfalls and water quality impacts is sufficient to warrant a recommendation to 1) proceed with the construction of the outlet facilities and 2) finalize and implement the identified contingency plan. Approval of the following recommendation will authorize the appropriation of \$79.3 million to construct the new tower and ancillary facilities (*Contract No. 1*); construct future modifications to the existing tower (*Contract No. 2*); provide construction support and management services; and implement the identified contingency plans. Approval will also authorize the award of a construction contract to J. F. Shea Co., Inc., d.b.a. Advanco Constructors (*Contract No. 1*), for the construction of the new tower and ancillary facilities, and authorize the General Manager to amend consultant agreements with Jacobs Associates for engineering support and with U.R.S. Greiner/Woodward-Clyde for geotechnical services. Award of Contract No. 2 will be brought back to the Board for approval in approximately 18 months.

If the Board approves this recommendation, the FY 2000/2001 expenditure plan will be adjusted to include funds for this project.

The environmental effects of the project were evaluated in the Final Environmental Impact Report (FEIR) certified by the Board in August 1995, and in Addendum No. 1 to the Final EIR, prepared in November 1998. The project fully complies with the California Environmental Quality Act (CEQA) and no further CEQA documentation is required for the Board to approve the proposed action.

See [Attachment 1](#) for the detailed report, [Attachment 2](#) for the location map, [Attachment 3](#) for the Abstract of Bids, [Attachment 4](#) for the Minority-Owned Business Enterprise/Women-Owned Business Enterprise Participation and [Attachment 5](#) for the Financial Statement.

Policy

Metropolitan Water District Administrative Code Section 5115: Capital Project Approval
Metropolitan Water District Administrative Code Section 8113: Construction Contract Award
Metropolitan Water District Administrative Code Section 8117: Professional and Technical Consultants.

Board Options/Fiscal Impacts

Option #1

- 1) Increase Appropriation 15277 by \$79.3 million to a total of \$92.2 million;
- 2) Award a construction contract to J. F. Shea Co., Inc., in the amount of \$44,293,773 to perform the construction of the Lake Mathews Outlet Facilities;
- 3) Amend the consulting contract with Jacobs Associates by \$1.35 million to a total of \$2.85 million to perform contractor submittal reviews, geologic interpretations, geotechnical instrumentation and monitoring, construction scheduling, grouting support, cofferdam construction support, technical support on blasting-related issues, and technical support for potential construction claims issues;
- 4) Amend the consulting contract with U.R.S. Greiner/Woodward-Clyde by \$100,000 to a total of \$700,000 to perform geologic mapping of the tunnel, junction shaft, and tower excavations; provide a geologist that is a certified diver to assist the resident engineer during the dredging of the underwater approach; and provide geologic support throughout construction, as needed; and
- 5) Implement contingency plan and delegate to the General Manager authority to enter into contracts over \$250,000.

Fiscal Impact: \$92.2 million total program expenditure.

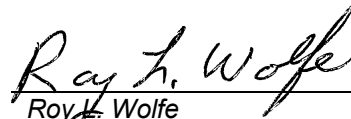
Option #2

- 1) Defer the construction of the new facilities until necessitated by a) failure of the existing tower, or b) increased demands.
- 2) Authorize the General Manager to implement the contingency plans and initiate a Lake Mathews Outlet Tower Valve Repair/Replacement Project. Staff would return to the Board with a request for a new appropriation upon completion of the conceptual design and cost estimate.

Fiscal Impact: Total program expenditures would be deferred, but total project costs would likely increase due to escalation and/or construction under emergency conditions. The capital cost of the contingency plans and valve repair/replacement project is roughly estimated in the range of \$5 million to \$7 million.

Staff Recommendation

Option #1.



Roy H. Wolfe
Manager, Corporate Resources

8/23/2000

Date



Ronald R. Jester
General Manager

8/29/2000

Date

Attachment 1 – Detailed Report

Attachment 2 – Location Map

Attachment 3 – Abstract of Bids

Attachment 4 – MBE/WBE Participation

Attachment 5 – Financial Statement

BLA #377

Detailed Report

Lake Mathews, owned by the Metropolitan Water District, is a man-made reservoir completed in 1940, and is the terminus reservoir for the Colorado River Aqueduct (CRA). The Lake Mathews outlet tower, was constructed in 1938 and modified in 1960. The existing tower delivers Colorado River water to the Upper and Lower feeders that serve Metropolitan's Diemer and Weymouth treatment plants and numerous service connections to member agencies. The tower is equipped with seven multi-valve tiers that allow releases of the highest quality water from any level in the lake to mitigate water quality changes such as taste and odors from algae growth. The tower provides the only means of delivering CRA water, as well as water stored in Diamond Valley Lake (DVL), to Los Angeles, Orange, and western Riverside counties.

Background

Because of past earthquakes and seismic-related code changes over the years, Metropolitan hired the consulting firms of Lindvall, Richter & Associates and Harding-Lawson Associates in 1978 to study the level of seismic vulnerability of the Lake Mathews outlet tower. Their report concluded that either the Elsinore or the San Jacinto Fault zones might generate a maximum credible seismic event that could destroy the tower.

As a result of the consultants' findings, Metropolitan's engineering staff prepared its own independent risk assessment of the tower. Staff agreed with the consultant that the tower's capacity to resist the forces imposed by the maximum credible earthquakes expected from the nearby faults was inadequate, and that the tower should either be strengthened or completely replaced.

Subsequently in November 1994, a study was prepared by engineering staff that compared various alternatives for either strengthening the existing tower; completely replacing the existing tower; or combining a downsized new and a modified existing tower into a single facility. The study also addressed the extensive deterioration of the existing tower's valve system. The valves have never been replaced, and the system's hydraulic lines are in constant need of repair because of their age and continuous exposure to turbulent water flows. The cost for under-water repairs of the aging hydraulic system have been excessively high and the work is labor intensive. As a result, repairs have been temporary and the long-term operation cannot be guaranteed. At this time, only about half of the 59 outlet valves are in service. Because of the extreme difficulties and extended shutdowns associated with underwater construction and repairs, it was determined that there was no feasible means for strengthening the existing tower and repairing the valve actuating system within acceptable cost limits, and that would ensure the tower's operational flexibility and delivery requirements.

The initial cost estimate to design and construct a replacement tower to meet current and future needs was approximately \$165 million.

Project Necessity

The loss of the existing tower could result in complete dependency on State Project Water (SPW) for Metropolitan's entire distribution system downstream of Lake Mathews while repairs are performed to restore safe and reliable service. Further, if the tower fails due to a seismic event on the San Andreas Fault, it is likely that the East Branch of the State Water Project would also be out of service. This would result in a significant loss of service until repairs can be made. Additionally, a collapsed tower would necessitate a redesign of the existing tower modifications; would complicate the actual construction of the modifications; and would place Metropolitan in a position of advertising for a major construction contract during a post-earthquake period of high demand for construction services and materials.

The quality of water delivered in the event of a failed tower is also a concern. If CRA water cannot be delivered out of Lake Mathews in the event of a collapsed tower, the Weymouth and Diemer plants would receive 100% SPW. SPW produces significantly higher levels of disinfection by-products than CRA water. Ozone is currently being implemented at Jensen and Mills to handle the requirements of Stage 1 of the Disinfectants/Disinfection By-Products Rule. Implementation of ozone at Diemer and Weymouth is not currently planned because these plants treat primarily CRA water. Treatment of 100% SPW at these plants would most likely result in exceeding maximum contaminate levels of trihalomethane, which would require public notification.

Algae growth, and its decay, causes significant seasonal taste and odor problems in the reservoir and is one of the main water-quality concerns at Lake Mathews. Algae blooms develop within the higher elevations of the lake during the spring and summer months, then die off in the fall, and settle to the bottom of the reservoir in the winter. The decomposition of the algae can produce a severe taste and odor problem that is not eliminated by the downstream treatment process. Because of the deteriorating condition of the tower valves, selective withdrawal of water from the lake can be difficult. Although repairing or replacing the valves would resolve this issue, a collapse of the existing tower would result in no ability to selectively withdraw water from different lake levels. Constructing a new outlet tower would replace the aging valve system in the existing tower.

Project Description

In August 1995, the Board authorized \$1.74 million to conduct an expanded analysis of alternatives for replacing the existing tower, which included an evaluation by an independent value engineering team. The analysis yielded many cost-saving solutions, which resulted in significantly lower project costs. The final recommendation resulting from the study was to construct a downsized new tower and modify the existing tower.

The new outlet tower would allow water withdrawals from the upper and middle elevations of the lake and the modified existing outlet tower would withdraw water from the lowest elevations. Water from their respective withdrawal levels would be blended at a new junction shaft downstream before it is conveyed into the distribution system. The top 125 feet of the existing tower would be cut off to reduce the lateral seismic load on the tower foundation. All of the internal valves and valve actuating systems would be removed and downstream valves at the junction shaft and Lake Mathews Forebay would control flows. This modification would allow the tower to withstand a maximum credible earthquake. Both towers, working together, would meet anticipated water quality and demand requirements. The cost of building a single tower to replace the existing tower was much higher primarily because of the cost of underwater excavation. Including the underwater approach channel, the additional excavation necessary to reach the deep-water withdrawal levels accounted for approximately \$30 million. The independent value engineering team reviewed and validated Metropolitan's two-tower approach as the most cost effective and reliable method of replacing the existing tower and meeting water quality and capacity demands. The value engineering team also confirmed the constructability of the facilities given the constraints of working within an operating reservoir.

With this analysis complete, the Board authorized an increase in the appropriation to a total of \$12.9 million to finance all costs in advance of award of a construction contract. In addition, in consideration of the potential risk of tower failure, the Board also asked staff to reevaluate the on-line date of 2010, which was adopted during the rate refinement process. In July 1998, the Board authorized proceeding with construction immediately following completion of design, and set an on-line date of 2004.

Project Status

Design of the new outlet tower and ancillary facilities was completed in July 1999. The contract for construction of the outlet facilities was advertised in September 1999, and four bids were received. The lowest responsible bidder is J. F. Shea Co., with a bid of \$44,293,773. The design and the specifications for the modification of the existing tower are 75 percent complete. All environmental and other permit requirements have been met.

Lake Mathews Outlet Facilities Reliability Assessment

Metropolitan's goal is to supply its customers with a reliable supply of high quality water at the least possible cost. As a reaffirmation of this goal, many of Metropolitan's major capital projects have undergone detailed evaluations regarding need, costs, and analysis of alternatives. Accordingly, construction of the outlet facilities was deferred and the Lake Mathews Outlet Facilities (LMOF) Reliability Assessment (Reliability Assessment) was initiated in order to reevaluate the need for the new facilities. The Reliability Assessment included a thorough evaluation of the technical, operational, cost, and risk factors associated with the project, and the development of specific contingency plans. Although a comprehensive system-wide Infrastructure Reliability Program is currently being initiated, this Reliability Assessment concentrated its efforts on the Lake Mathews outlet facilities as a critical link in delivering water to the Member Agencies.

Operational Evaluation

The LMOF Reliability Assessment concluded that if the Lake Mathews outlet tower should collapse from a seismic event on the nearby Elsinore or San Jacinto faults, it may be impossible to deliver sufficient water of acceptable quality during the summer high demand period to the central pool area. The central pool includes the Orange County and the Los Angeles basins. However, it would be reasonable to expect that the reduced demands during the five-month winter period could be met.

A contingency plan with three components was identified that should be implemented. The components are: 1) execution of an emergency operations agreement with the Western Municipal Water District to utilize the connection from the Mills Gravity Line to the Lake Mathews Forebay. The connection is designed to deliver up to 35 cfs; 2) a reduction in lake level elevation to minimize the re-construction and clean-up duration in the event of a failed tower; and 3) design and rental of pumps and temporary piping to siphon up to 80 cfs from Lake Mathews and into the forebay for downstream deliveries.

Distribution system analysis determined that a tower collapse in the summer demand period would result in a 3,900 acre-feet/month demand shortfall in the Western Riverside and Orange County area. With all three components of the contingency plan in place, the actual shortfall under this scenario could be eliminated. However, this assumes that all groundwater replenishment deliveries in the area are temporarily curtailed for three to six months. During this time, the Central Pool area, including the Weymouth and Diemer plants, would be primarily dependent on the availability of State Project Water (SPW). The main feeders from the west side of the system, including the Sepulveda Feeder, and the feeders supplying the Weymouth Plant, the Rialto Pipeline and the Etiwanda Pipeline, would be operating at their maximum capacities.

Should a major earthquake on the San Andreas fault collapse the Lake Mathews outlet tower and sever the California Aqueduct, areas served exclusively by the Weymouth and Diemer plants would have no Metropolitan service for up to six months. The bulk of Metropolitan's emergency storage reserves would be left stranded at DVL, providing western Riverside and San Diego counties with 22 months of storage, whereas the central portion of Metropolitan's service area would be left with no reservoir water supply.

In this scenario, about 31,000 acre-feet per month of demands in the Central Pool of Metropolitan's service area would not be met for up to six months. During this emergency condition, it is assumed that any loss in production of local surface water, groundwater, and recycled water would be restored in a relatively short time frame. In addition to the 35 cfs emergency deliveries from the Mills Gravity Line, it is also assumed that there would be a 25 percent reduction in regional demands during the emergency. This reduction is assumed to account for mandatory emergency conservation measures as well as any localized disruptions of service. The 25 percent reduction in regional demands translates to an approximate 50 percent reduction in demands on Metropolitan. The contingency plans would reduce this shortfall by about 10 to 15 percent.

Technical Evaluation

In order to update the previous vulnerability analysis based on current seismic design criteria, a Request for Proposals (RFP) was issued, and proposals were received from four consultants to perform an independent structural stability assessment of the existing outlet tower. The firm of Brandow & Johnston Associates was selected based upon their recent experience in reservoir outlet tower analysis. To ensure an independent assessment, the consultant was provided with minimal input, data, or direction from Metropolitan staff. Further, no previous reports and studies of the existing tower were provided. An independent consulting panel, comprised of experts in the field of reservoir outlet tower analysis, performed a peer review of the vulnerability assessment report. Both Brandow & Johnston Associates and the peer review committee confirmed Metropolitan's previous analyses and conclusions that the tower is vulnerable to failure and collapse by a moderate earthquake. Their analysis and review determined that the reinforcement steel at the tower base was inadequate to withstand the lateral forces that would be imposed by a moderate magnitude earthquake, and the tower could sustain considerable damage.

Financial Evaluation

A financial assessment for the replacement of the Lake Mathews outlet tower was also performed. The analysis took into account the regional cost of both reduced and no water deliveries during the repair period and the increased cost of proceeding with construction under adverse, post-earthquake conditions. This analysis indicates that even under the most conservative of scenarios, the proposed project has a benefit-to-cost ratio greater than one and a positive net present value as shown below.

Scenario	B/C Ratio	Net Present Value
Highest Likelihood of Failure	1.963	\$91.5 Million
Moderate Likelihood of Failure	1.355	\$33.7 Million
Lowest Likelihood of Failure	1.217	\$20.6 Million

Recommendation

The results of the Lake Mathews Outlet Facilities Reliability Assessment, supplemented by the financial and structural studies, indicate that the risk of significant demand shortfalls and water quality impacts is sufficient to warrant a recommendation to 1) proceed with the construction of the Lake Mathews Outlet Facilities, and 2) finalize and implement the identified contingency plans.

Alternatively, if the construction of the new facilities is deferred, it is recommended that 1) the identified contingency plans be finalized and implemented, and 2) a Lake Mathews Outlet Tower Valve Repair/Replacement Project be initiated. A cost estimate for these projects has not yet been determined. However, the cost could range between \$5 million to \$7 million. Initial study costs would come from funds remaining in the current appropriation. Staff would return to the Board with a request for a new appropriation upon completion of the conceptual design and detailed cost estimate.

Project Cost Estimates

The total program estimate of \$92.2 million includes the cost of the proposed contract with J. F. Shea Co. for the new outlet facilities, the future modifications to the existing tower, amendments for consulting services, engineering support services during construction, and implementation of the identified contingency plans. This total cost is significantly less than the \$165 million originally budgeted for the project. Costs were reduced as a result of an intensive value engineering effort which focused on the two-tower concept, narrowing of the underwater approach channel, and the reductions of the new tower diameter and foundation.

Program Summary Schedule

Activity/Milestone	1997	1998	1999	2000	2001	2002	2003	2004
Study/Analysis	██████████							
Final Design		██████████						
Advertise/NTP			██████████					
Construction Tower 2					██████████	██████████	██████████	
Modifications Tower 1							██████████	

Consultant Contract Amendment

In June 1997, the Board authorized the General Manager to enter into agreements with Jacobs Associates for \$1.5 million, and with Woodward-Clyde (now U.R.S. Greiner/Woodward-Clyde) for \$600,000. Jacobs Associates, assisted by U.R.S. Greiner/Woodward-Clyde, were selected under the RFP process to provide tunnel/rock support designs and geotechnical/geological services, respectively, for the project.

The agreements also included provisions to provide design support during construction; including contractor submittal reviews, geologic interpretations, geotechnical instrumentation and monitoring, construction scheduling, grouting support, cofferdam construction support, technical support on blasting related issues, and technical support for potential construction claims issues. As the Engineer of Record and because of the value of their intimate familiarity with their design, it is recommended that Jacobs Associates be retained as a consultant during the construction phase. To that end, it is recommended that the Board approve an amendment to Agreement 14334 with Jacobs Associates to increase the contract amount by \$1.35 million to a maximum agreement amount of \$2.85 million. Based on the subcontractable work identified in the post design phase, anticipated levels of participation of minority-owned and women-owned businesses was set at 10.4 percent.

This agreement with U.R.S. Greiner/Woodward-Clyde included provisions to perform geologic mapping of the tunnel, junction shaft, and tower excavations; provide a geologist that is a certified diver to assist the resident engineer during the dredging of the underwater approach; and provide geologic support throughout construction, as needed. As the geologist of record most familiar with their geotechnical and geological work, it is recommended that U.R.S. Greiner/Woodward-Clyde be retained as a consultant during the construction phase. Therefore, it is further recommended that the Board approve an amendment to Agreement 14275 with U.R.S. Greiner/Woodward-Clyde to increase the contract amount by \$100,000 for a maximum agreement amount of \$700,000. Based on the subcontractable work identified in the post design phase, anticipated levels of participation of minority-owned and women-owned businesses was set at 6.5 percent.

Award of Construction Contract

As shown in Attachment 3, a total of four bids were received and opened under Specification 1389 for the construction of the Lake Mathews Outlet Facilities. The lowest responsible bid from J. F. Shea, in the amount of \$44,293,773, complies with the requirements of the specifications and is within the cost range (\$35 million - \$45 million) specified in the contract specifications. J. F. Shea has provided Metropolitan with a letter stating the validity of its bid through September 2000. Anticipated levels of participation are shown in Attachment 4.

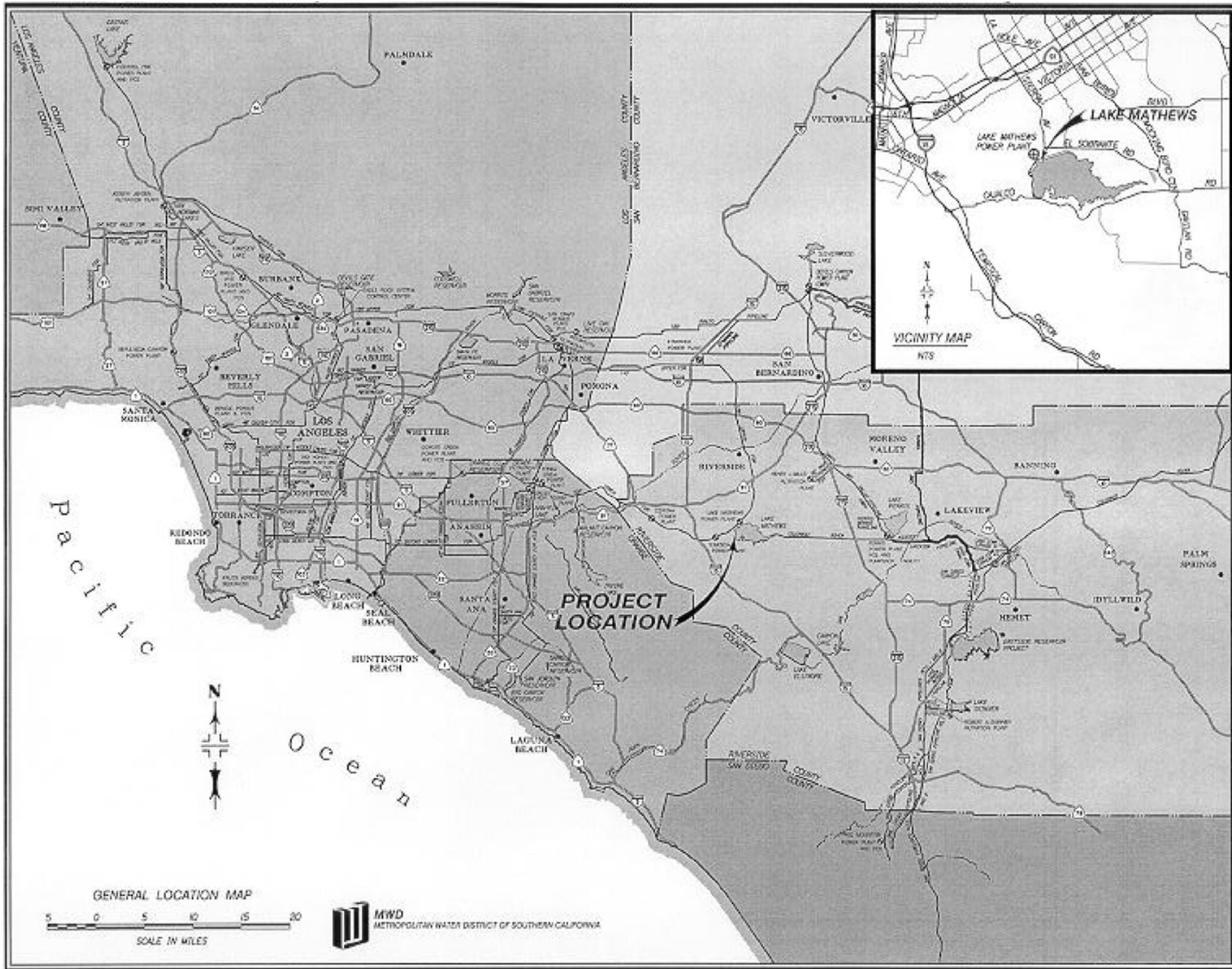
The specification established mandatory subcontracting requirements and required the bidders to conduct good-faith efforts to encourage participation of minority and women-owned business enterprises.

CEQA Compliance/Environmental Documentation

Your Board certified the Final Environmental Impact Report (FEIR) in August 1995 in support of going forward with design and ultimately construction of the Lake Mathews Outlet Facilities Project. Addendum No. 1 to the FEIR was prepared in November 1998 for the purpose of evaluating the environmental impacts associated with minor modifications to the project. None of the proposed modifications resulted in significant adverse impacts beyond those impacts already disclosed in the FEIR. The project fully complies with CEQA and no further CEQA documentation is required for your Board to approve the proposed action.



Proposed Lake Mathews Outlet Facilities



The Metropolitan Water District of Southern California

Abstract of Bids Received November 8, 1999, at 2:00 p.m.

Specifications No. 1389

Lake Mathews Outlet Facilities

The contract consists of constructing a new outlet tower, connector tunnel, junction shaft, underwater approach channel, and miscellaneous sitework at Lake Mathews.

Engineers Estimate: **\$36,367,427**

Bidder & Location	Item 1-20	Sub \$	Sub %	Met MSM*
J. F. Shea Co., Inc., dba Advanco Constructors - Upland, CA	\$44,293,773	\$11,737,150	26.50%	Yes
Kiewit Pacific Co. - Santa Fe Springs, CA	\$46,263,000	\$ 5,463,600	11.81%	Yes
Balfour Beatty/FCCI, JV - Vallejo, CA	\$48,750,360	\$ 5,090,000	10.44%	Yes
Modern Continental Construction Co., Inc. - Salt Lake City, UT	\$56,504,152	\$19,200,320	33.98%	Yes

* Mandatory Subcontractable Minimum, set at 9% with an Anticipated Level of Participation of 5% MBE and 2% WBE.

MBE/WBE PARTICIPATION**Specifications No. 1389, as Amended****Name of Bidder: J. F. Shea Co., Inc., dba Advanco Constructors****MBE/WBE Anticipated Participation Levels: 5% MBE and 2% WBE**

Name of Certified MBE/WBE Subcontractor/Supplier	Work to Be Performed or Materials To Be Supplied	Participation	
		MBE%	WBE%
Morrow Meadows Walnut, CA	Electrical		6.77%
Pacific Reinforcing Steel Santee, CA	Rebar		2.15%
J. D. Jimenez Rancho Cucamonga, CA	Site Concrete	0.23%	
Sudhakar Rialto, CA	Striping	0.03%	
D & N Concrete Pumping Gardena, CA	Concrete Pumping	0.15%	
Salgado Construction Alta Loma, CA	2 ND tier sub	2.02%	
All American Trucking/Papaioanu Trucking Corona, CA	Trucking		0.48%
Total Committed Participation		2.43%	9.4%

FINANCIAL STATEMENT

Board Action No. 3 for Appropriation No. 15277-A to finance construction contracts for all work on the Lake Mathews Outlet Facilities Project is as follows:

	BOARD ACTION NO. 2 (Nov 1996)	BOARD ACTION NO. 3 (Aug 2000)
Engineering Studies	\$ 918,000	\$ 918,000
Preliminary Design	1,526,000	1,526,000
Final Design	4,324,000	4,324,000
Post Design/Const Mgmt/Inspection/Dist Forces	0	12,437,000
Owner Costs (PM, Outreach, WQ, Envir, Ops)	1,042,000	4,085,000
Right-of-Way & Land	200,000	200,000
Operating Equipment	80,000	412,000
Materials & Supplies	240,000	1,086,000
Incidental Expenses	100,000	760,000
Professional / Technical	4,470,000	4,759,000
Construction Contracts		61,693,000
Total	\$12,900,000	\$92,200,000

FUNDING REQUEST

Program Name:	Lake Mathews Outlet Facilities		
Source of Funds:	Construction Fund (from debt proceeds and/or from Pay-As-You-Go Fund)		
Appropriation No.:	15277	Board Action No.:	3
Requested Amount:	\$79,300,000	Capital Program No.:	15277-A
Total Appropriated Amount:	\$92,200,000	Capital Program Page No.:	E-26
Total Program Estimate:	\$92,200,000	Project Goal:	S-Supply and Delivery Reliability