The Metropolitan Water District of Southern California

Agenda

The mission of the Metropolitan Water District of Southern California is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

EOT Committee
D. Erdman, Chair
M. Camacho, Vice Chair
D. Alvarez
G. Bryant
B. Dennstedt
S. Faessel
L. Fong-Sakai
R. Lefevre
J. McMillan
C. Miller
J. Morris
M. Petersen
G. Peterson
K. Seckel
T. Smith

Engineering, Operations, and Technology Committee

Meeting with Board of Directors *

February 12, 2024

9:30 a.m.

Monday, February 12, 2024 Meeting Schedule

09:30 a.m. EOT
12:00 p.m. Break
12:30 p.m. EIA
03:00 p.m. FAIRP

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MWD Headquarters Building • 700 N. Alameda Street • Los Angeles, CA 90012
Teleconference Locations:
Cedars Sinai Medical Center • 8700 Beverly Blvd • Los Angeles, CA 90048
3008 W. 82nd Place • Inglewood, CA 90305
525 Via La Selva • Redondo Beach, CA 90277

* The Metropolitan Water District's meeting of this Committee is noticed as a joint committee meeting with the Board of Directors for the purpose of compliance with the Brown Act. Members of the Board who are not assigned to this Committee may participate as members of the Board, whether or not a quorum of the Board is present. In order to preserve the function of the committee as advisory to the Board, members of the Board who are not assigned to this Committee will not vote on matters before this Committee.

1. Opportunity for members of the public to address the committee on matters within the committee's jurisdiction (As required by Gov. Code Section 54954.3(a))

**** CONSENT CALENDAR ITEMS -- ACTION ****

2. CONSENT CALENDAR OTHER ITEMS - ACTION

A. Approval of the Minutes of the Engineering, Operations, and Technology Committee for January 8, 2024 (Copies have been submitted to each Director, any additions, corrections, or omissions) **21-2992**

Attachments: 02122024 EOT 2A (01082024) Minutes

3. CONSENT CALENDAR ITEMS - ACTION

7-1 Authorize an increase of $4.34 million to an agreement with Pure Technologies U.S. Inc. for a new not-to-exceed total amount of $4.41 million to furnish and monitor an acoustic fiber optic prestressed concrete cylinder pipe monitoring system along the Foothill Feeder; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA **21-2981**

Attachments: 02132024 EOT 7-1 B-L
02122024 EOT 7-1 Presentation

7-2 Award a $7,842,856 contract to Power Engineering Construction Co. for the installation of a new floating wave attenuator at Diamond Valley Lake; the General Manager has determined that the project is exempt or otherwise not subject to CEQA **21-2982**

Attachments: 02132024 EOT 7-2 B-L
02122024 EOT 7-2 Presentation

7-3 Authorize an agreement with Stantec Consulting Services Inc. in an amount not to exceed $1 million for preliminary design to rehabilitate the solids removal systems at the Joseph Jensen and Henry J. Mills Water Treatment Plants; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA **21-2983**

Attachments: 02132024 EOT 7-3 B-L
02122024 EOT 7-3 Presentation

7-4 Award a $544,501 procurement contract to Electric Machinery Company – A WEG Group to furnish one brushless motor exciter system for Gene Pumping Plant Unit No. 1; the General Manager has determined that the proposed actions are exempt or otherwise not subject to CEQA **21-2984**

Attachments: 02132024 EOT 7-4 B-L
02122024 EOT 7-4 Presentation

7-5 Award a $2,375,700 contract to J.F. Shea Construction Inc. for construction of a hazardous waste handling and storage facility at the La Verne site; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA **21-2985**

Attachments: 02132024 EOT 7-5 B-L
02122024 EOT 7-5 Presentation

7-6 Authorize amendments to two agreements for energy and transmission services with the Arizona Electric Power Cooperative, related to the termination and credits services provisions of those agreements; the General Manager has determined the proposed action is exempt or otherwise not subject to CEQA **21-2991**

Attachments: 02132024 EOT 7-6 B-L
02122024 EOT 7-6 Presentation

**** END OF CONSENT CALENDAR ITEMS ****

4. OTHER BOARD ITEMS - ACTION

8-1 Authorize increase in change order authority for three contracts to conduct urgent rehabilitation of prestressed concrete cylinder pipe on the Allen-McColloch Pipeline: (1) a $12 million increase for Contract 2002 with Northwest Pipe Company, (2) a $10.5 million increase for Contract 2026 with J.F. Shea Construction Inc., and (3) a $2 million increase for Contract 2088 with Structural Preservation Systems; the General Manager has determined that the proposed actions are exempt or otherwise not subject to CEQA **21-2980**

Attachments: 02132024 EOT 8-1 B-L
02122024 EOT 8-1 Presentation

5. BOARD INFORMATION ITEMS

9-2 Strategy for Implementation of Drought Mitigation Actions in Response to the August 2022 Board Resolution **21-2987**

Attachments: 02132024 EOT 9-2 B-L
02122024 EOT 9-2 Presentation

6. COMMITTEE ITEMS

a. Quarterly Cybersecurity Update **21-2986**
[Conference with Metropolitan Director of Info Tech Services, Information Technology, Jacob Margolis, or designated agents on threats to public services or facilities; to be heard in closed session pursuant to Gov. Code Section 54957(a)]

b. Strategic Infrastructure Resilience Plan Development **21-2988**

Attachments: 02122024 EOT 6b Presentation

c. 2023 System Operations: A Year in Review **21-2990**

Attachments: 02122024 EOT 6c Presentation

d. Source Water Protection update **21-2989**

Attachments: 02122024 EOT 6d Presentation

7. MANAGEMENT ANNOUNCEMENTS AND HIGHLIGHTS

a. Engineering Services, Information Technology, and Water System Operations activities **21-2993**

Attachments: 02122024 EOT 7a ESG Monthly Activities
02122024 EOT 7a IT Monthly Activities
02122024 EOT 7a WSO Monthly Activities
02122024 EOT 7a Presentation

8. SUBCOMMITTEE REPORTS AND DISCUSSION

a. Report from Subcommittee on Subcommittee on Pure Water Southern California and Regional Conveyance **21-2995**

b. Discuss and provide direction to Subcommittee on Pure Water Southern California and Regional Conveyance **21-2994**

9. FOLLOW-UP ITEMS

NONE

10. FUTURE AGENDA ITEMS

11. ADJOURNMENT

NOTE: This committee reviews items and makes a recommendation for final action to the full Board of Directors. Final action will be taken by the Board of Directors. Committee agendas may be obtained on Metropolitan's Web site https://mwdh2o.legistar.com/Calendar.aspx. This committee will not take any final action that is binding on the Board, even when a quorum of the Board is present.

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Requests for a disability-related modification or accommodation, including auxiliary aids or services, in order to attend or participate in a meeting should be made to the Board Executive Secretary in advance of the meeting to ensure availability of the requested service or accommodation.

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

MINUTES

ENGINEERING, OPERATIONS & TECHNOLOGY COMMITTEE

January 8, 2024

Chair Erdman called the meeting to order at 9:30 a.m.

Members present: Directors Alvarez, Bryant, Camacho, Dennstedt (entered after roll call), Erdman, Faessel, Fong-Sakai, Lefevre (teleconference posted location), McMillan (entered after roll call), Miller (entered after roll call), Morris, Petersen (entered after roll call), Peterson, Seckel, and Smith (entered after roll call).

Members absent: Director Chacon

Other board members present: Chair Ortega, Directors Ackerman, Dick, Garza, Goldberg, Kurtz, McCoy, and Pressman (teleconference posted location).

Committee staff present: Bednarski, Chapman, Chaudhuri, Eckstrom, Hagekhalil, Lahouti, Parsons, Upadhyay, and Wheeler

1. OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO ADDRESS THE COMMITTEE ON MATTERS WITHIN THE COMMITTEE'S JURISDICTION (As required by Gov. Code Section 54954.3(a))

1. Katy Wagner – Sierra Club California – In support of Pure Water Treatment Center

Directors Dennstedt, McMillan, Miller, Petersen, and Smith entered the meeting.

CONSENT CALENDAR ITEMS – ACTION

2. CONSENT CALENDAR OTHER ITEMS – ACTION

A. Approval of the Minutes of the Engineering, Operations, and Technology Committee for November 13, 2023 (Copies have been submitted to each Director, any additions, corrections, or omissions)

3. CONSENT CALENDAR OTHER ITEMS – ACTION

7-1 Subject: Authorize an agreement with the Center for Smart Infrastructure in an amount not to exceed $2 million to fund the organization's startup costs and focused water innovation research; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Presented by: Michael Thomas, Unit Manager, Capital Program Management Unit

Director Miller asked that items 7-1, 7-5, and 7-6 be pulled for discussion.

The following Directors provided comments or asked questions on 7-1:

1. Fong-Sakai
2. Alvarez
3. Peterson
4. Faessel
5. Dick
6. Morris

Staff responded to the Directors questions and comments.

Director Peterson made a motion seconded by Director Miller to table Item 7-1 until there is an adopted budget.

The vote was:

Ayes:	Directors Alvarez, Bryant, Camacho, Dennstedt, Erdman, Faessel, Fong-Sakai, Lefevre, McMillan, Miller, Morris, Petersen, Peterson, Seckel, and Smith.
Noes:	None
Abstentions:	None
Not voting:	None
Absent:	Director Chacon

The motion passed by a vote of 15 ayes, 0 noes, 0 abstention, and 1 absent.

7-2 Subject: Authorize an increase of $4,800,000 in change order authority for the contract to upgrade the domestic water treatment systems at the five Colorado River Aqueduct pumping plants; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Presented by: Patrizia Hall – Engineer, Engineering Services Group

Motion: Authorize an increase of $4,800,000 in change order authority for the contract to upgrade the domestic water treatment systems at the five Colorado River Aqueduct pumping plants

Director Smith requested that item 7-2 be discussed and voted on separately.

The following Directors provided comments or asked questions:

1. Ortega
2. Smith
3. Miller
4. Garza
5. Camacho

Staff responded to the Directors questions and comments.

Director Smith made a motion seconded by Director Faessel to approve Item 7-2, option 1

The vote was:

Ayes:	Directors Alvarez, Bryant, Camacho, Dennstedt, Erdman, Faessel, Fong-Sakai, Lefevre, McMillan, Miller, Morris, Petersen, Peterson, Seckel, and Smith.
Noes:	None
Abstentions:	None
Not voting:	None
Absent:	Director Chacon

Item 7-2, option 1 passed by a vote of 15 ayes, 0 noes, 0 abstention, and 1 absent.

7-3 Subject: Authorize agreements with (1) Jacobs Engineering Group Inc. in an amount not to exceed $3.425 million; and (2) Brown and Caldwell in an amount not to exceed $2.26 million for design of security system improvements at several facilities throughout Metropolitan's Distribution System; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA. [Consultation with Metropolitan Team Manager, Engineering Services, Sandip Budhia, or designated agents on threats to public services or facilities; may be heard in closed session pursuant to Gov. Code Section 54957(a)]

Presented by: None; no presentation requested

Motion: a. Authorize an agreement with Jacobs Engineering Group Inc. in an amount not to exceed $3.425 million for design of security system improvements at three water treatment plants; and
b. Authorize an agreement with Brown and Caldwell in an amount not to exceed $2.26 million for design of security system improvements at one water treatment plant and several HEPs and PCSs

7-4 Subject: Award a $549,592.04 contract to Caasi Flow Control for procurement of plug valves to be installed on the Foothill Feeder and Rialto Pipeline; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Presented by: None; no presentation requested

Motion: Award a $549,592.04 procurement contract to Caasi Flow Control for 20 plug valves

7-5 Subject: Authorize an agreement with Application Software Technology LLC in an amount not to exceed $800,000 for the Oracle E-Business Suite Procurement Services Module Implementation; the General Manager has determined that the proposed action is exempt or otherwise not subject to authorize an increase of $4,800,000 in change order authority for the contract upgrade the domestic water treatment systems at the five Colorado River Aqueduct pumping plants; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Presented by: None; no presentation requested

Motion: Authorize an agreement with Applications Software Technology LLC in an amount not to exceed $800,000 for the Oracle E-Business Suite Procurement Services Module Implementation

The following Directors provided comments or asked questions:

1. Miller
2. Ortega
3. Smith
4. Faessel

Staff responded to the Directors questions and comments.

7-6 Subject: Authorize agreements with: (1) Alvarez, LLC in an amount not to exceed $1,923,940 to provide professional services and technical support; and (2) Cloudhouse Technologies Limited in an amount not to exceed $801,900 for licenses for up to a period of three years, to migrate legacy applications to supported Windows servers for the Application Server Upgrade project; the General Manager has determined the proposed actions are exempt or otherwise not subject to CEQA. [REVISED SUBJECT 1/3/24]

Presented by: None; no presentation requested

Motion: Authorize agreements with: (1) Alvarez, LLC in an amount not to exceed $1,923,940 to provide professional services and technical support; and (2) Cloudhouse Technologies Limited in an amount not to exceed $801,900 for licenses for up to a period of three years, to migrate legacy applications to supported Windows servers for the Application Server Upgrade project.

The following Directors provided comments or asked questions:

1. Miller

Staff responded to the Directors questions and comments.

After completion of the presentations, Director Morris made a motion, seconded by Director Bryant, to approve the consent calendar consisting of item 2A, and items 7-3, 7-4, 7-5, and 7-6.

The vote was:

Ayes:	Directors Alvarez, Bryant, Camacho, Dennstedt, Erdman, Faessel, Fong-Sakai, Lefevre, McMillan, Miller, Morris, Petersen, Peterson, Seckel, and Smith.
Noes:	Directors Fong-Sakai item 7-5 & 7-6, Smith item 7-6
Abstentions:	None
Not voting:	None
Absent:	Director Chacon

The motion for Items 2A, 7-3, and 7-4 passed by a vote of 15 ayes, 2 noes, 0 abstention, and 1 absent.

The motion for Item 7-5 passed by a vote of 14 ayes, 1 noes, 0 abstention, and 1 absent.

The motion for Item 7-6 passed by a vote of 13 ayes, 2 noes, 0 abstention, and 1 absent.

**** END OF CONSENT CALENDAR ITEMS ****

4. OTHER BOARD ITEMS – ACTION

NONE

5. BOARD INFORMATION ITEMS

NONE

Chair Erdman announced item 6d would be heard after item 6a.

6. COMMITTEE ITEMS

a. Subject: Allen McColloch Pipeline - Inspection Update Action Plan

Presented by: Howard Lum, Section Manager, Design Section

Mr. Lum reported on the following:

- Condition assessment of AMP Prestressed Concrete Cylinder Pipeline (PCCP) including results of recent inspection and preliminary risk analysis
- Mitigation measures and pipeline rehabilitation plan for five priority pipelines
- AMP Pipeline failure and repairs in 1999 as well as additional AMP urgent repairs
- AMP PCCP Risk Reduction Action Plan
- Approach to contracting urgent rehabilitation
- Project schedule

Director Petersen left the meeting.

The following Directors provided comments or asked questions

1. Camacho
2. Peterson
3. Erdman
4. Smith
5. McMillan
6. Seckel

Staff responded to the Directors questions and comments.

d. Subject: Nitrification Management

Presented by: Paul Rochelle, Section Manager, Water Quality

Mr. Rochelle reported on the following:

- Conditions that influence nitrification and potential water quality impacts
- History of chloramines at Metropolitan and early research
- Preventing and managing nitrification
- 2023 nitrification event, management and control actions
- New challenges and future actions to minimize nitrification

The following Directors provided comments or asked questions.

1. Seckel
2. Peterson

Staff responded to the Directors questions and comments.

b. Subject: 2023 System Operations: A Year in Review

Item Deferred

c. Subject: Zero Emission Fleet Transition

Presented by: Sergio Escalante, Section Manager, Operations Support Services

Mr. Escalante reported on the following:

- Metropolitan's transition to a Zero Emission Vehicle (ZEV) fleet
- Diverse pool of fleet assets
- New CARB regulations and 2022 Climate Action Plan
- Actions taken to date for ZEV transition and task force activities
- Transition plan and challenges, operational reliability and resiliency, regulatory timeline and impacts, and budgetary challenges

The following Directors provided comments or asked questions

1. Seckel
2. Peterson

Staff responded to the Directors questions and comments.

Directors Dennstedt, and Fong- Sakai, left the meeting.

Director Bryant left the meeting.

Director Smith left the meeting.

7. MANAGEMENT ANNOUNCEMENTS AND HIGHLIGHTS

a. Subject: Engineering Services, Information Technology, and Water System Operations Activities
Presented by: Deven Upadhyay, Executive Officer/Assistant General Manager-Water Resources
Shane Chapman, Assistant General Manager Operations

Mr. Chapman reported on the following:

- Early 2024 operations preserving SWP supplies
- Current shutdowns
- Quagga mussel monitoring update
- State Water Board approves DPR regulations
- 50th Anniversary of Water Quality Section

8. SUBCOMMITTEE REPORTS AND DISCUSSION

a. Discuss and provide direction to Subcommittee on Pure Water Southern California and Regional Conveyance

Nothing to report.

9. FOLLOW-UP ITEMS

NONE

10. FUTURE AGENDA ITEMS

Chair Erdman stated that we will bring back the Year End Review item in February.

11. ADJOURNMENT

The next meeting will be on February 12, 2024.

Meeting adjourned at 12:07 p.m.

Dennis Erdman
Chair

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

2/13/2024 Board Meeting

7-1

Subject

Authorize an increase of $4.34 million to an agreement with Pure Technologies U.S. Inc. for a new not-to-exceed total amount of $4.41 million to furnish and monitor an acoustic fiber optic prestressed concrete cylinder pipe monitoring system along the Foothill Feeder; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

The Foothill Feeder, which has portions of prestressed concrete cylinder pipe (PCCP), is the primary source of water supply for the Joseph Jensen Water Treatment Plant (Jensen plant) and the western portions of Metropolitan's system. Regular inspections of PCCP lines, including the Foothill Feeder, are an integral component of Metropolitan's long-term management strategy to rehabilitate at-risk PCCP pipelines. However, the Foothill Feeder presents unique inspection challenges due to its large diameter of 201 inches and the complexity of dewatering this pipe for inspections. An acoustic fiber optic (AFO) monitoring system is recommended to provide continuous online monitoring of PCCP portions of the Foothill Feeder; this technology will allow for remote real-time monitoring of the feeder without the need for inspection-related shutdowns to conduct periodic inspections.

This action authorizes an amendment to an existing agreement to furnish a state-of-the-art fiber optic monitoring system within the Foothill Feeder to provide for real-time monitoring of the 5.9 miles of PCCP portions of the feeder, and to provide ten years of monitoring services for the AFO system. 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

Authorize an increase of $4,340,000 to an existing agreement with Pure Technologies U.S. Inc. for a new amount not to exceed $4,410,000 to furnish and monitor an AFO system for the Foothill Feeder.

Fiscal Impact: Expenditure of $5.89 million in capital funds. Approximately $300,000 will be incurred in the current biennium and has been previously authorized. The remaining funds for this action will be accounted for in the Capital Investment Plan (CIP) budget for the next biennium following board approval of the budget.
Business Analysis: This option would increase the reliability of Metropolitan's distribution system consistent with the goals identified for the PCCP Rehabilitation Program.

Option #2

Do not authorize the agreement at this time.
Fiscal Impact: None
Business Analysis: This option forgoes an opportunity to enhance system reliability with a real-time PCCP pipeline monitoring system.

Alternatives Considered

Staff considered several alternatives to utilizing AFO monitoring, including the continuation of current inspection methods that utilize periodic electromagnetic testing technology. This method requires staff to first shut down and fully drain the entire pipeline. Staff and consultants then walk through the line with the inspection tool. Under this approach, inspections are planned on a five-year cycle, but are highly susceptible to delays due to operational and environmental permitting constraints. Due to the costs and logistic issues associated with this approach, this alternative would potentially delay condition assessment for a critical PCCP pipeline.

Staff also considered using Pure's Pipe Diver® technology for the inspections. Pipe Diver is a long-distance, free-swimming condition assessment tool that operates while the pipeline remains in service. This technology has been used successfully on the Sepulveda Feeder. However, this technology is not appropriate for the 201-inch diameter Foothill Feeder as the Pipe Diver is limited to pipelines with a maximum diameter of 120 inches.

The selected alternative to procure an AFO monitoring system on the Foothill Feeder is a cost-effective alternative when compared to continuing the ongoing electromagnetic inspection program. Staff estimated the potential cost savings of using the AFO monitoring system based on the historical costs of the electromagnetic inspection program which include consultant costs, force labor to support the shutdowns, and the cost of water lost during the shutdown. Using this historical information, the procurement of the AFO monitoring system will be approximately $500,000 less expensive than electromagnetic inspection over an initial 10-year period. These savings assume that two inspections are conducted on the Foothill Feeder over the ten-year period using the current electromagnetic technologies, which require the full dewatering of the pipeline. Additionally, the AFO monitoring system will allow staff to closely monitor the condition of the PCCP portions of the feeder on a continuous real-time basis. With the Foothill Feeder as the sole source of State Water Project water to the Jensen plant, this approach is consistent with Metropolitan's goal of being able to ensure the feeder's continued integrity and operational reliability. Upon positive performance of the AFO monitoring system on this feeder, staff may recommend an expansion of the use of this technology for other Metropolitan pipelines.

Applicable Policy

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

Metropolitan Water District Administrative Code Section 8140: Competitive Procurement

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

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

By Minute Item 51128, dated March 13, 2018, the Board certified the Final Supplemental EIR for planned shutdown and inspection of the Foothill Feeder and adopted related documents.

By Minute Item 52778, dated April 12, 2022, the Board appropriated a total of $600 million for projects identified in the CIP for Fiscal Years 2022/23 and 2023/24.

Summary of Outreach Completed

Public outreach was conducted as part of the CEQA process. Further outreach to the general public is not planned as this project is located in remote locations away from homes and businesses. Staff will coordinate shutdown activities with member agencies.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The environmental effects from maintaining the PCCP pipe in the Foothill Feeder were evaluated in the Foothill Feeder Repair and Future Inspection Final Supplemental Environmental Impact Report (Final SEIR), which was certified by the Board on March 13, 2018. During that same meeting, the Board also approved the amended Findings of Fact (findings), the amended Mitigation Monitoring and Reporting Program, the amended Statement

of Overriding Considerations, and the proposed modifications to the originally approved Foothill Feeder Repair and Future Inspection Final SEIR. The present board action is based on shutdown, inspection, and maintenance and not on any changes to the approved project. Hence, the previous environmental documentation approved by the Board in conjunction with the proposed action fully complies with CEQA and the State CEQA Guidelines. Accordingly, no further CEQA documentation is necessary for the Board to act on the proposed action.

CEQA determination for Option #2:

None required

Details and Background

Background

The Foothill Feeder conveys untreated water from the West Branch of the State Water Project into the western portion of Metropolitan's service area. The feeder extends south from Castaic Lake, crosses under the Santa Clara River and several of its tributaries, and terminates at the Jensen plant. The feeder is approximately 14.5 miles long, of which 5.9 miles are constructed of 201-inch-diameter PCCP. This is the largest diameter PCCP pipe in Metropolitan's PCCP inventory.

PCCP consists of a concrete core with high-strength steel prestressing wires tightly wound around the outside. The wires are wrapped around a cement slurry bed and coated with cement mortar, which serves as the finished outer surface. A thin steel cylinder is encased within the concrete pipe to provide a water barrier. The strength of PCCP is provided in large measure by the prestressing wires. PCCP has been found to have a reduced service life due to corrosion and breakage of the prestressing wires under certain conditions.

Metropolitan maintains a comprehensive program to inspect, manage, and rehabilitate its PCCP feeders. This includes inspecting PCCP pipelines every five to seven years using electromagnetic technology, which is the primary means within the industry for identifying broken prestressing wires in PCCP. Successive inspections allow staff to monitor the condition of the pipelines, identify changes to the pipeline baseline condition, track prestressing wire breakage over time, and use this information to proactively prioritize the order of PCCP sections to be relined.

Electromagnetic inspections typically require the pipeline to be dewatered and pipeline inspectors to enter the pipeline and traverse the length of the line with an electromagnetic wire break detection instrument. For the Foothill Feeder, these inspections are usually conducted on a 5- to 7-year cycle, depending on the availability of the feeder to be shut down and dewatered. To date, three electromagnetic inspections of the feeder have been conducted since 2005. However, dewatering of the Foothill Feeder has become increasingly difficult. Dewatering this large-diameter pipeline is a costly and time-consuming process that results in the loss of approximately 150 acre-feet of water. This water is discharged into several natural drainages, which are habitat for the Unarmored Threespine Stickleback (UTS), a fish species listed as endangered under both the Federal and California Endangered Species Acts and a fully protected species under the California Fish and Game Code Section 5515. To allow dewatering, Metropolitan has had to sponsor project-specific legislation, obtain specialized permits, and perform compensatory mitigation for the UTS. To limit impacts to UTS in the Santa Clara River watershed, discharge flows during dewatering are restricted, strictly monitored, and regulated by environmental permit requirements. The dewatering restrictions prolong the duration of the shutdowns, and dewatering typically requires seven days, which can impact member agency operations.

AFO monitoring systems are "listening" devices that are calibrated to detect the sounds of PCCP wire breaks. Unlike the traditional electromagnetic inspection methods, which provide a snapshot of data, AFO systems provide continuous monitoring. An AFO system would eliminate the need for staffed pipe inspections and the time-consuming process of slowly dewatering the pipeline. The AFO system resides in the interior of the pipeline and is monitored remotely. The system includes a fiber optic cable sensitive to the sound caused by wire breaks. The cable extends to a data acquisition computer that continuously "listens" for the distinct sound of wires breaking. When the system detects a potential wire break in the pipeline, it is first sent through a series of acoustic and analog filters, and then proprietary software is used to determine whether the event requires further analysis.

If analysis is required, the acoustic events are manually evaluated to confirm that the event is a wire break and to determine the location.

AFO monitoring systems have been used by water utilities for nearly two decades. In 2011, Metropolitan's Board authorized a piloted test of the technology on the Second Lower Feeder for a one-year period. Although the AFO system performed well, it was decided to discontinue use of the system due to the relative ease to shut down and dewater the feeder. Other utilities using the AFO monitoring systems include the San Diego County Water Authority (SDCWA), the city of Houston, the Washington Suburban Sanitary Commission, and the Miami-Dade Water and Sewerage Department.

Based on the successful use of AFO technology by other large water agencies, staff recommends proceeding with the procurement of an AFO monitoring system for the Foothill Feeder. The AFO system has a proven track record, and its use on this feeder will reduce the number of costly dewatering cycles and provide more timely data on the conditions of Foothill's PCCP segments. Staff will utilize the results from this application to determine if an expanded use of the AFO monitoring system on additional PCCP pipelines is warranted.

Foothill Feeder AFO Monitoring System – Procurement and Monitoring

The planned activities for procurement and monitoring of the Foothill Feeder AFO monitoring system include furnishing the AFO monitoring equipment, including fiber optic cables and data acquisition equipment; providing field services support; and monitoring the data for ten years to be performed by Pure Technologies U.S. Inc. (Pure) as described below. Metropolitan forces will modify existing accessway flanges at eight accessways to allow placement of the AFO cable; construct a 300-foot-long duct bank for the fiber optic cable from the Foothill Feeder to the Foothill Feeder Control Structure; and provide power and install the data acquisition unit within the control structure.

The estimated AFO procurement and monitoring cost is $5,890,000, which includes $4,340,000 for Pure to furnish and monitor the acoustic fiber optic monitoring system for ten years; $321,000 for design of the modifications to accessway piping, AFO duct banks, and connections to the data acquisition unit; $787,000 for Metropolitan force activities as described above; $243,000 for project management, environmental monitoring, and inspection; and $199,000 for remaining budget. See **Attachment 1** for the Allocation of Funds.

Technical Services (Pure Technologies U.S. Inc.) – Amendment to Agreement

Pure is recommended to furnish and monitor the new AFO pipe monitoring system under an existing sole-source agreement for the Foothill Feeder. Pure will furnish the equipment, program the data monitoring system, and remotely monitor the system for a period of ten years. Pure was previously prequalified by Metropolitan in 2017 as the only respondent with technology proven to be able to continuously monitor PCCP pipelines for wire breaks while the pipeline remains in operation. Based on online research and interviews with other large utilities, staff have determined that Pure is the only supplier of commercially available AFO monitoring systems. For example, the SDCWA presently conducts its AFO monitoring system by way of a sole source professional services contract with Pure.

Staff entered into an agreement with Pure to plan and assess the potential application of the AFO system for the Foothill Feeder under the General Manager's authority for agreements less than $250,000. These activities are now complete, and Metropolitan staff is currently designing needed components, which include flange modifications and AFO system connections. The Pure agreement now requires an amendment to furnish the wire break detection equipment and provide monitoring services for up to ten years. Staff contacted other users of the Pure AFO wire break detection system and confirmed the requested amount is consistent with unit prices for similar installations at other agencies.

Project Milestone

January 2025 – AFO Monitoring System online

1/18/2024

John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

1/24/2024

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Location Map

Ref# Es12691674

Allocation of Funds for Foothill Feeder Acoustic Fiber Optic PCCP Monitoring System

	Current Board Action (Feb. 2024)
Labor	
Studies & Investigations	$ -
Final Design	321,000
Owner Costs (Program mgmt., contract admin.)	149,000
Submittals Review & Record Drwgs.	34,000
Fabrication Inspection & Support	60,000
Metropolitan Force Construction	622,000
Materials & Supplies	150,000
Incidental Expenses	15,000
Professional/Technical Services	
Pure Technologies U.S. Inc.	4,340,000
Right-of-Way	-
Equipment Use	-
Contracts	-
Remaining Budget	199,000
Total	**$ 5,890,000**

The total amount expended to date for the Foothill Feeder Acoustic Fiber Optic PCCP Monitoring System is approximately $63,000. The total estimated cost to complete the project, including the amount appropriated to date and funds allocated for the work described in this action, is $5.953 million.


Distribution System
N
CASTAIC LAKE
Foothill Feeder
Foothill Feeder
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
SILVERWOOD LAKE
VENTURA COUNTY
LOS ANGELES COUNTY
Upper Feeder
LIVE OAK RESERVOIR
Rialto Pipeline
GARVEY RESERVOIR
Middle Feeder
Upper Feeder
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
Lower Feeder
Colorado River Aqueduct
LAKE PERRIS
LAKE MATHEWS
PALOS VERDES RESERVOIR
PACIFIC OCEAN
DIAMOND VALLEY LAKE
ORANGE COUNTY
RIVERSIDE COUNTY
LAKE SKINNER
RIVERSIDE COUNTY
SAN DIEGO COUNTY

Engineering, Operations, & Technology Committee

Foothill Feeder Fiber Optic Pipe Monitoring

Item 7-1

February 12, 2024

Item 7-1
Foothill Feeder Fiber Optic Pipe Monitoring

Subject

Authorize an increase of $4.34 million to an agreement with Pure Technologies U.S. Inc. for a new not-to-exceed total amount of $4.41 million to furnish and monitor an acoustic fiber optic PCCP monitoring system along the Foothill Feeder

Purpose

Furnish a state-of-the-art PCCP monitoring system and monitor for ten years to avoid the need for lengthy shutdowns in the future

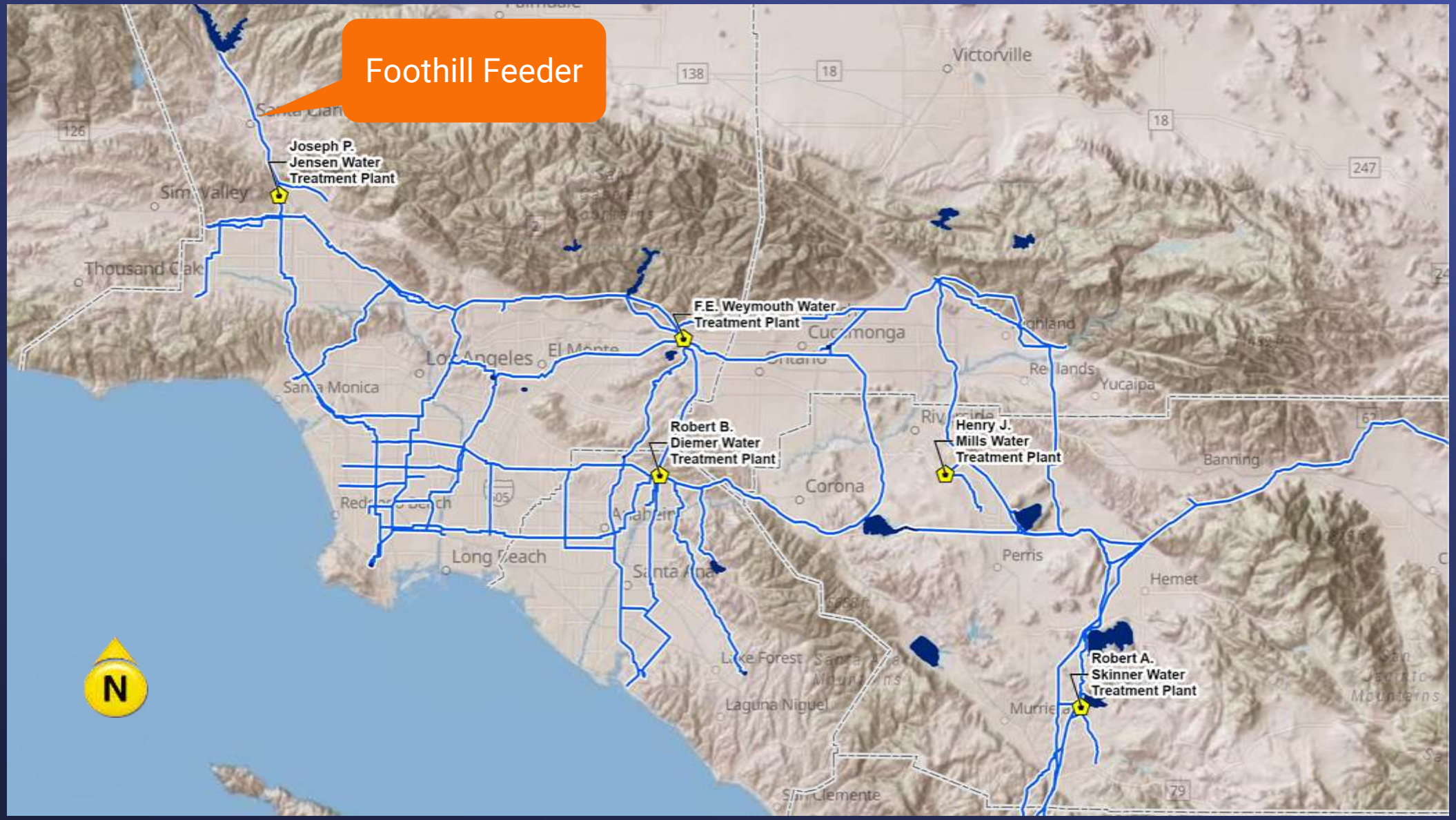
Recommendation and Fiscal Impact

Authorize increase to an existing agreement with Pure Technologies U.S. Inc.

Fiscal Impact of $5.89 M

Budgeted

Distribution System



PCCP Risk Management Strategy

PCCP Management Strategy

- Conduct regular inspections, monitoring & assessments
- Monitor stray currents & install drain stations where necessary
- Perform individual urgent segment repairs as needed
- Plan & execute long-term rehabilitation

Foothill Feeder

Conveys untreated State Water Project water from Castaic Lake to the Jensen Plant

- Completed: 1968
- Length: 14.6 miles
  - Tunnels: 8.7 miles
  - PCCP: 5.9 miles
- Diameter: 201-inch
- Inspected 3 times since 2005
- Most recent inspection – Feb 2019

Foothill Feeder Dewatering

Unarmored Threespine Stickleback

Unique Issues for Foothill Feeder

- Environmental Restrictions
  - Dewatering requires discharge into Santa Clara River & tributaries
  - May impact fully-protected unarmored threespine stickleback
- Metropolitan has sponsored legislation, obtained permits, & performed compensatory mitigation
- Permit requirements result in a prolonged shutdown

Foothill Feeder PCCP Monitoring System

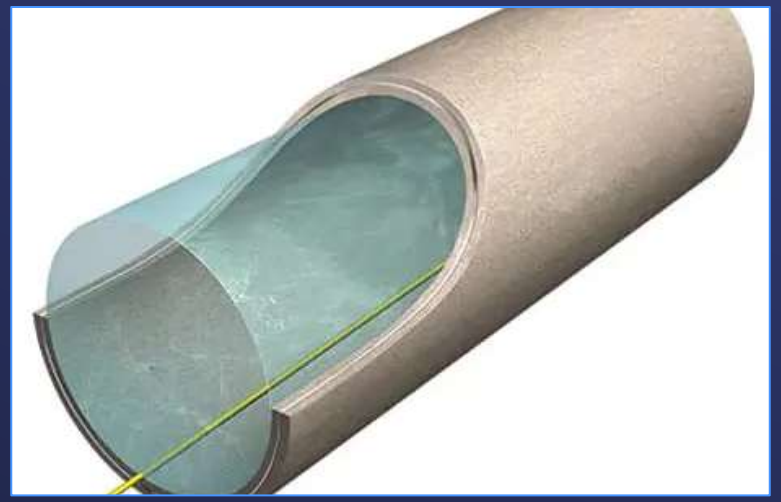
Alternatives Considered

- Considered Alternative – continue periodic staffed electromagnetic inspections
  - Requires full pipeline shutdown & dewatering
  - One planned shutdown every five years
  - Extended shutdowns due to operational & environmental permitting constraints
- Considered Alternative – use PipeDiver®
  - Not available for 201-inch diameter pipe
- Selected Alternative – procure an AFO monitoring system
  - Provides continuous monitoring

Foothill Feeder PCCP Monitoring System

Fiber Optic Pipe Monitoring

- Consists of a data acquisition unit & fiber optic cable
- Detect, record, & locate PCCP wire breaks
- Cable internal to pipeline
- Provides continuous monitoring



Fiber Optic Cable Inside Pipeline

Agreement Amendment – Pure Technologies

Foothill Feeder PCCP Monitoring System

- Pure Technologies is the only supplier of commercially available AFO monitoring systems
- Scope of Work
  - Furnish acoustic fiber optic monitoring system
  - Remotely monitor the system for 10 years
- Amendment amount: $4.34 million (this action)
- New NTE amount: $4,410,000

Foothill Feeder PCCP Monitoring System

Metropolitan - Scope of Work

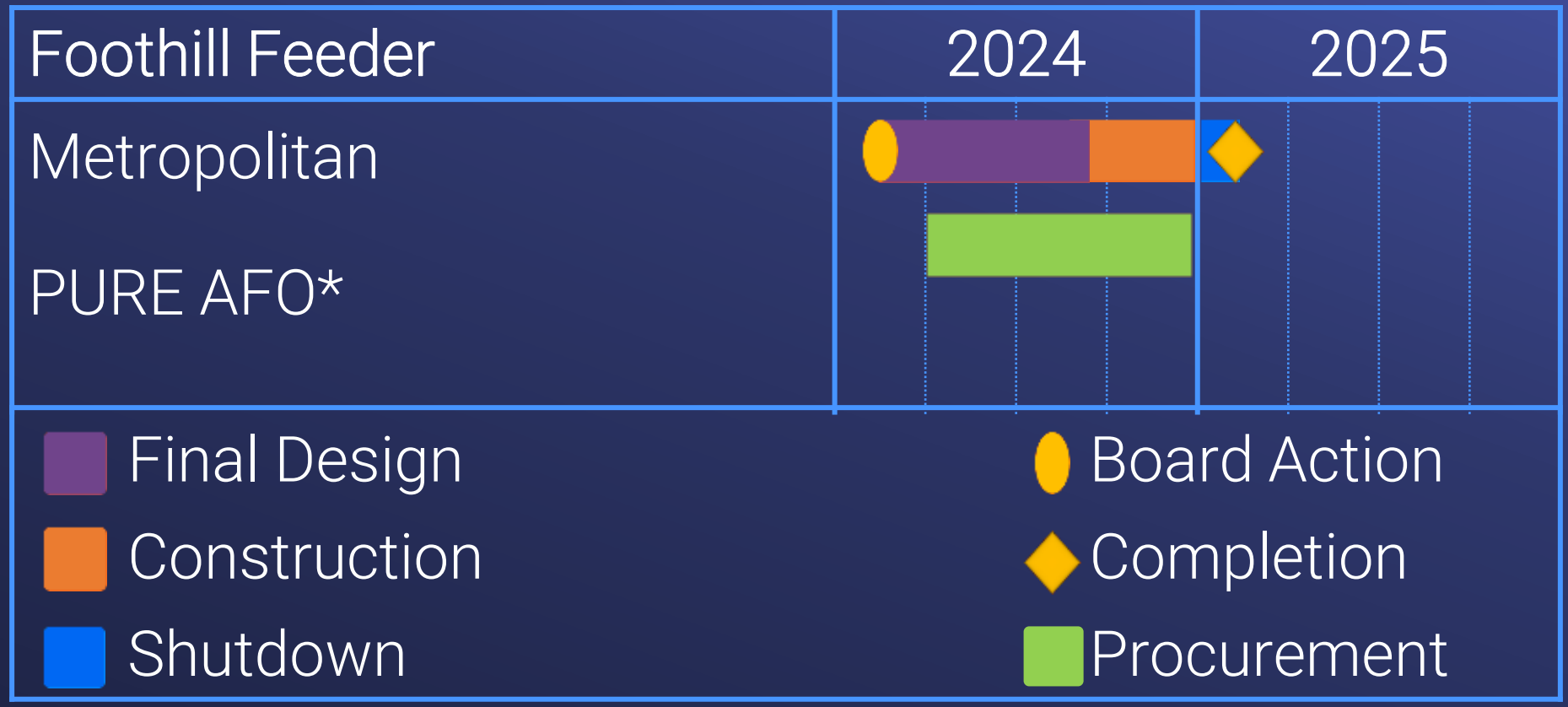
- Design
  - Modifications to accessway piping
  - AFO duct banks & connections to the data acquisition unit for monitoring
- Force Activities
  - Fabrication & installation of flanges at eight accessways
  - Construction of 300-ft long duct bank
  - Install power & connection to data acquisition unit
- Perform project management, environmental monitoring & field support

Allocation of Funds

Foothill Feeder AFO Monitoring System

Metropolitan Labor	
Final Design	$ 321,000
Owner Costs (Proj. Mgmt., Contract Admin., Envir. Support)	243,000
Force Construction	787,000
Professional/Technical Services	
Pure Technologies U.S. Inc.	4,340,000
Remaining Budget	199,000
	Total $ 5,890,000

Project Schedule



*Ongoing monitoring services will continue to 2035

Board Options

- Option #1

  Authorize an increase of $4,340,000 to an existing agreement with Pure Technologies U.S. Inc. for a new amount not to exceed $4,410,000 to furnish and monitor an AFO system for the Foothill Feeder.

- Option #2

  Do not authorize the agreement at this time.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

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

2/13/2024 Board Meeting

7-2

Subject

Award a $7,842,856 contract to Power Engineering Construction Co. for the installation of a new floating wave attenuator at Diamond Valley Lake; the General Manager has determined that the project is exempt or otherwise not subject to CEQA

Executive Summary

A wave attenuator system is required at Diamond Valley Lake (DVL) to protect boats and the launch ramp from excessive wave action. The original DVL wave attenuator was installed in 2003 and later repaired in 2021 to address urgent structural deteriorations while plans for a more extensive rehabilitation were in development. Following completion of that planning effort, staff recommends an upgrade of the DVL wave attenuation system at this time.

This action awards a contract to install a new replacement attenuator and to refurbish and move the existing attenuator to another location. When this project is completed, the configuration of the new DVL wave attenuator system will consist of two wave attenuators, which will provide added protection to the DVL East Marina and launch ramp area, enhance safety for visitors, and will continue to benefit the surrounding communities by providing recreational opportunities. See **Attachment 1** for the Allocation of Funds, **Attachment 2** for the Abstract of Bids, **Attachment 3** for the Listing of Subcontractors, and **Attachment 4** for the Location Map.

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

Staff Recommendation: Option #1

Option #1

Award a $7,842,856 construction contract to Power Engineering Construction Co. to install a new floating wave attenuator and to refurbish and move the existing attenuator to another location at the DVL East Marina.

Fiscal Impact: Expenditure of $9.875 million in capital funds. Approximately $100,000 will be incurred in the current biennium and has been previously authorized. The remaining funds for this action will be accounted for in the Capital Investment Plan (CIP) budget for the next biennium following board approval of the budget.

Business Analysis: This option will enable the public to continue to safely use DVL for recreational boating and fishing, which are attractions and activities that draw visitors serviced by the Concession Agreement Between The Metropolitan Water District of Southern California and RRM-CLM- dba Vista Recreation ("Concession Agreement").

Option #2

Do not proceed with the project at this time.

Fiscal Impact: None

Business Analysis: Under this option, Metropolitan will further consider options detailed in the alternatives considered section of the board letter. In the interim, there may be a need to close or limit boating-related recreational use of DVL by the public under Metropolitan's paramount rights powers in the Concession

Agreement to ensure public safety and to further Metropolitan's operation of its water-related facilities. This may also result in Metropolitan indefinitely impacting the concessionaire's operations and negatively affecting rent generation.

Alternatives Considered

Staff considered multiple alternatives to the recommended approach for providing long-term protection to the marina from the force of incoming waves. The first alternative was to fully refurbish the existing attenuator to extend its service life. This alternative did not guarantee a service life longer than five to ten years in its current location. Due to its relatively small size, the existing attenuator would remain susceptible to failure during extreme weather events, jeopardizing continued marina operations. A second alternative was replacing the existing attenuator in-kind and constructing a larger supplemental attenuator. This was the costliest alternative and did not significantly increase the service life over the selected alternative.

Under a third alternative, construction of a long-term attenuator upgrade would be deferred for 12 to 18 months. This alternative would defer the near-term expenditure of CIP funds; however, the existing wave attenuator would continue to deteriorate. The continued deterioration of the existing attenuator would likely mean that this attenuator would need to be replaced in the future contract instead of being refurbished as in the current plan. This approach would likely increase the eventual cost of the future contract.

The selected alternative refurbishes and moves the existing attenuator to a new location and constructs and installs a new and larger attenuator at the location of the existing attenuator. The two attenuators will work in tandem to mitigate the impacts of wind-driven waves near the East Marina. This alternative offers the most cost-effective solution with the best long-term protection of the East Marina and is consistent with the plan identified in the October 2020 board action.

Applicable Policy

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

Metropolitan Water District Administrative Code Section 8140: Competitive Procurement

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

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

By Minute Item 52138, dated October 13, 2020, the Board authorized rehabilitation of the Diamond Valley Lake Attenuator.

By Minute Item 52778, dated April 12, 2022, the Board appropriated a total of $600 million for projects identified in the CIP for Fiscal Years 2022/2023 and 2023/2024.

Summary of Outreach Completed

Lake-related projects are a specialty type of work, and staff has reached out to specialized contractors to get a better understating of the construction market for this type of work. As a result, the Small Business Enterprise participation level was reduced to allow for competitive bidding.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is exempt from CEQA because it involves repair or minor alteration of an existing public facility and equipment involving negligible or no expansion of existing or former use and no possibility of significantly impacting the physical environment. (State CEQA Guidelines Section 15301.) In addition, the proposed action is exempt from CEQA because it consists of replacement or reconstruction of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have the same purpose and capacity as the structure replaced. (State CEQA Guidelines Section 15302.)

CEQA determination for Option #2:

None required

Details and Background

Background

Metropolitan's DVL provides emergency storage in the event of a major earthquake, carryover storage as a reserve for drought conditions, and seasonal storage to meet annual member agency demands. DVL is Metropolitan's largest reservoir, with a maximum storage capacity of 810,000 acre-feet. In addition to its water supply benefits, DVL also provides recreational opportunities for the region.

The DVL East Marina opened to the general public in 2003 and is currently leased and operated on Metropolitan's behalf by a private entity through a ten-year concession agreement between Metropolitan and RRM-CLM- dba Vista Recreation, running from October 1, 2021, to September 30, 2031. Under the current concession agreement, RM-CLM- dba Vista Recreation is required to provide recreational access to the public for fishing, private boat launches, and boat rentals, subject to contractual provisions permitting Metropolitan to close or limit the concessionaire's use of the marina and DVL waters as needed by Metropolitan for its core water-related functions and operations and the repair, construction, and use of its facilities and for public safety.

Wind-generated waves traveling across the lake toward the East Marina create turbulent conditions for visitors attempting to board and launch vessels on the lake. These conditions pose a risk of property damage and possible injury to marina visitors. On windy days, the boat launch facilities are closed to public use as the current wave attenuator cannot mitigate waves under these conditions.

As part of the marina construction, a single floating wave attenuator was installed by Metropolitan in 2003 to diminish the impact of wind-generated waves traveling across the lake in a manner that protects the boat ramp launch operations. The existing floating wave attenuator consists of 16 reinforced concrete box segments, which are connected with post-tensioned cables running throughout its length. The attenuator is 800 feet long by 8 feet wide with a depth of 8 feet and includes a metal skirt system that extends below the waterline. The current concession agreement allocates to Metropolitan ownership, control, maintenance, repair, and replacement powers for any wave attenuator and associated anchoring and cabling systems that are installed in the DVL area.

Over many years of service in a harsh freshwater environment, the existing single attenuator has suffered significant structural damage, including cracked concrete sections that exposed reinforcing bars. A feasibility study was conducted for Metropolitan in 2019 by a consultant who specializes in this type of work to evaluate the current attenuator system's effectiveness and make recommendations on the rehabilitation or replacement options for the attenuator. The study recommended that improvements be conducted in two stages. Stage 1 included making urgent repairs to the existing attenuator to ensure the continuation of safe recreational boating operations and to preserve the asset until a rehabilitation or replacement design could be developed. This urgent work was completed in 2021. Stage 2 work includes more extensive improvements to the existing attenuator and adds a second attenuator in the lake to improve the performance of the overall wave attenuator system. This approach will provide a cost-effective, long-term solution to ensure safe recreational boating access to the public. The final design for Stage 2 is complete, and staff recommends the award of a construction contract at this time.

Diamond Valley Lake Wave Attenuator System Replacement – Construction

The scope of the contract includes: (1) rehabilitating portions of the existing attenuator, including repair of spalled concrete and installing anchor blocks; (2) relocating the refurbished existing attenuator to a new location in the lake; and (3) installing a new attenuator system at the current site of the existing attenuator. The new attenuator will be 800 feet long by 12 feet wide with a depth of 8 feet. The combined use of two wave attenuators will increase the mass and inertia of the attenuator system and improve its ability to reflect most of the wave energy away from the boat launching area.

A total of $9.875 million is required to perform this work. In addition to the amount of the contract, allocated funds for professional services include $60,000 for Kennedy Jenks Consultants to provide construction support related to the design of the wave attenuator system; and $10,000 for environmental monitoring through an on-call consultant agreement. This work will be completed under existing board-authorized agreements. Allocated funds

for Metropolitan staff include $783,000 for construction management and inspection; $375,000 for submittals review, responding to requests for information, and preparation of record drawings; $352,000 for contract administration, environmental monitoring support, and project management; and $452,144 for remaining budget. **Attachment 1** provides the allocation of required funds.

Award of Construction Contract (Power Engineering Construction Co.)

Specifications No. 2004 for the installation of a new attenuator was advertised for bids on August 25, 2023. As shown in **Attachment 2**, four bids were received and opened on November 21, 2023. The bid from Power Engineering Construction Co. in the amount of $7,842,856 complies with the requirements of the specifications. The engineer's estimate was $11.1 million. Staff investigated the difference between the engineer's estimate and the low bid and attributed the difference to a conservative engineer's estimate and aggressive outreach to contractors by Metropolitan staff, which included extending the bid period. For this contract, Metropolitan established a Small Business Enterprise participation level of at least 15 percent of the bid amount. Power Engineering Construction Co. has committed to meeting this participation level. The subcontractors for this contract are listed in **Attachment 3**.

Metropolitan staff will perform construction management and inspection. Engineering Services' performance metric target for construction management and inspection of projects with construction more than $3 million is 9 to 12 percent. For this project, the performance metric for inspection is 10.9 percent of the total construction cost. The total cost of construction for this project is $7,842,856.

Project Milestone

May 2026 – Complete construction of the wave attenuator system

1/29/2024

John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

1/29/2024

Adel Hagekhalil *Date*
General Manager

Attachment 1 –Allocation of Funds

Attachment 2 – Abstract of Bids

Attachment 3 – List of Subcontractors for Low Bidder

Attachment 4 – Location Map

Ref# es12696146

Allocation of Funds for Diamond Valley Lake Wave Attenuator System Replacement Project

	Current Board Action (Feb. 2024)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	352,000
Submittals Review & Record Drwgs.	375,000
Construction Inspection & Support	783,000
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Envinronmental Consultant	10,000
Kennedy Jenks	60,000
Right-of-Way	-
Contracts	
Power Engineering Construction Co.	7,842,856
Remaining Budget	452,144
Total	**$ 9,875,000**

The total amount expended for the Diamond Valley Lake Wave Attenuator System Replacement Project is approximately $675,000. The total estimated cost to complete this project, including funds spent to date and funds allocated for the work described in this action, is $10.55 million.

The Metropolitan Water District of Southern California

Abstract of Bids Received on November 21, 2023, at 2:00 P.M.

Specifications No. 2004
Diamond Valley Lake Wave Attenuator System Replacement

The work consists of replacing the existing floating wave attenuator (FWA) with a new system; installing the new FWA; positioning new anchor cables with attachments to existing and new anchor blocks; and rehabilitating and relocating the existing FWA to a new position south of the current location.

Engineer's Estimate: $11.1 million

Bidder and Location	Total	SBE Amount	SBE %	Met SBE[1]
Power Engineering Construction Co. Alameda, CA	**$7,842,856**	**$1,176,428**	**15%**	**Yes**
Jilk Heavy Construction Inc. Brea, CA	$8,435,000	-	-	-
Pacific Maritime Group San Diego, CA	$9,330,000	-	-	-
GMZ Engineering Inc. Westlake Village, CA	$10,310,00	-	-	-

[1] SBE (Small Business Enterprise) participation level was established at 15 percent for this contract.

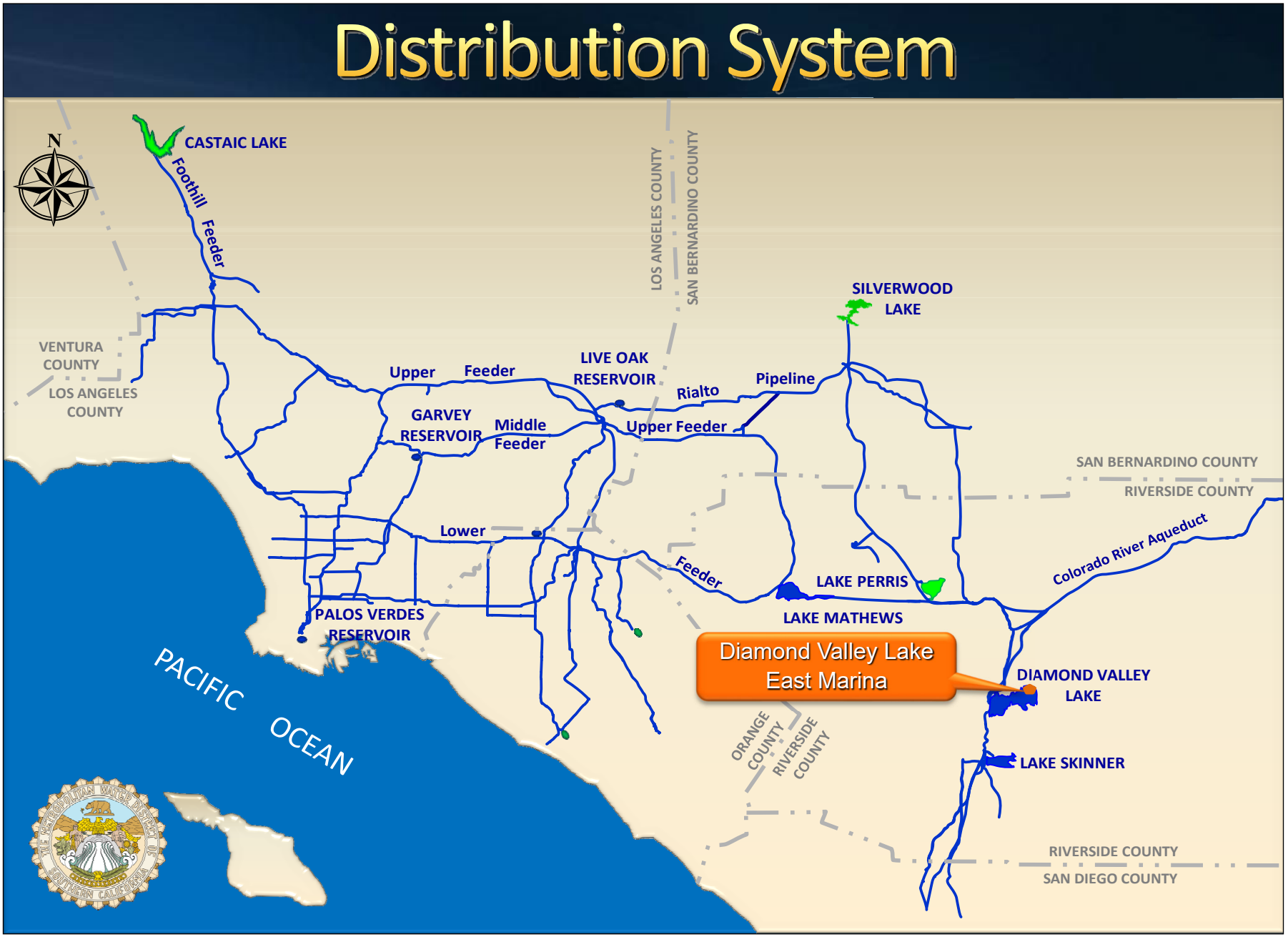
The Metropolitan Water District of Southern California

Subcontractors for Low Bidder

Specifications No. 2004
Diamond Valley Lake Wave Attenuator System Replacement

Low bidder: Power Engineering Construction Co.

Subcontractor and Location	Service Category, Specialty
Crescent Diving & Contracting Inc. Crescent Hills, CA	Diving
Galvez Trucking Inc. Anaheim, CA	Trucking/Hauling Services


Distribution System
N
CASTAIC LAKE
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Colorado River Aqueduct
LAKE PERRIS
LAKE MATHEWS
PALOS VERDES RESERVOIR
Diamond Valley Lake East Marina
DIAMOND VALLEY LAKE
PACIFIC OCEAN
ORANGE COUNTY
RIVERSIDE COUNTY
LAKE SKINNER
RIVERSIDE COUNTY
SAN DIEGO COUNTY

Engineering, Operations, & Technology Committee

Diamond Valley Lake Wave Attenuator System Replacement

Item 7-2

February 12, 2024

Item 7-2
DVL Attenuator System Replacement

Subject

Award a $7,842,856 contract to Power Engineering Construction Co. for the installation of a new floating wave attenuator at Diamond Valley Lake

Purpose

Provide safe, long-term public access to DVL for recreational boating and fishing

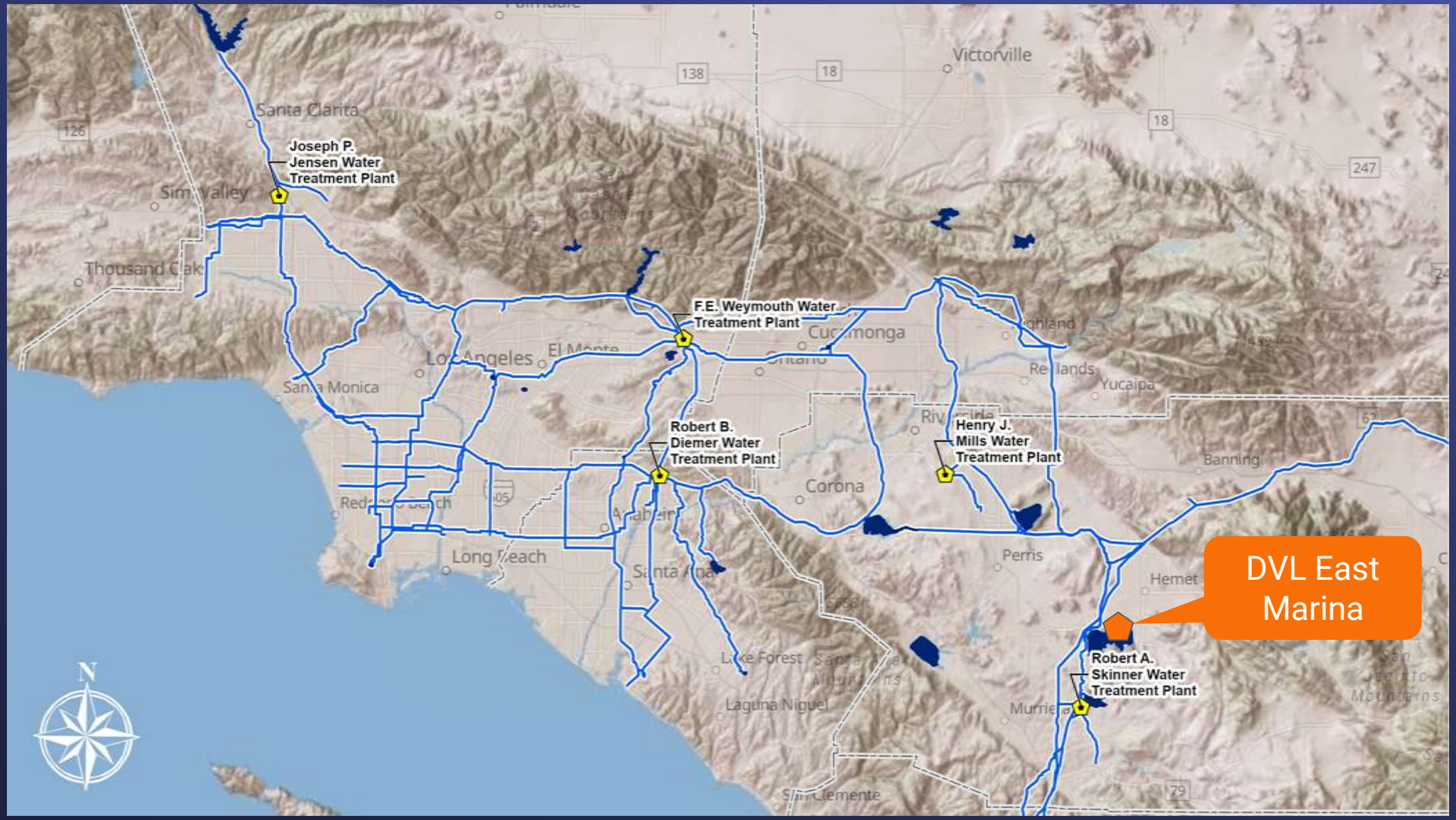
Recommendation and Fiscal Impact

Award a $7,842,856 construction contract to Power Engineering Construction Co. to install a new floating wave attenuator and to refurbish and move the existing attenuator to another location at the DVL East Marina.

Fiscal Impact of $9.875 million in capital funds

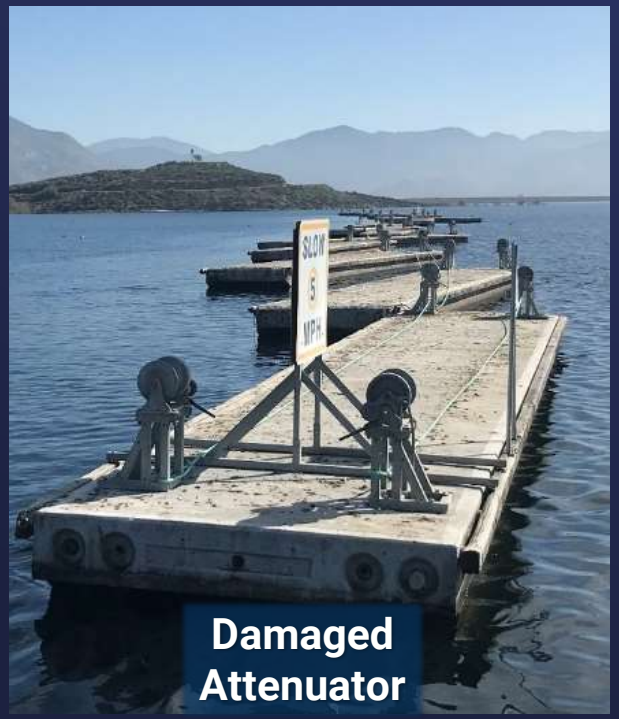
Budgeted

Location Map



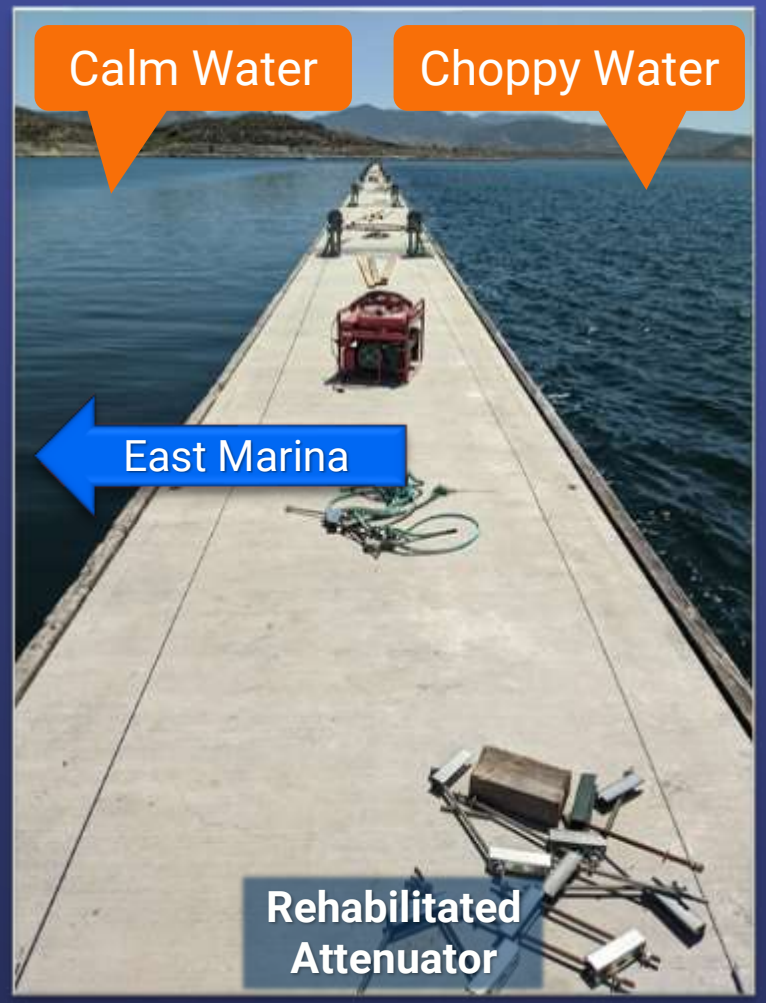
Project Area

DVL Wave Attenuator System Replacement

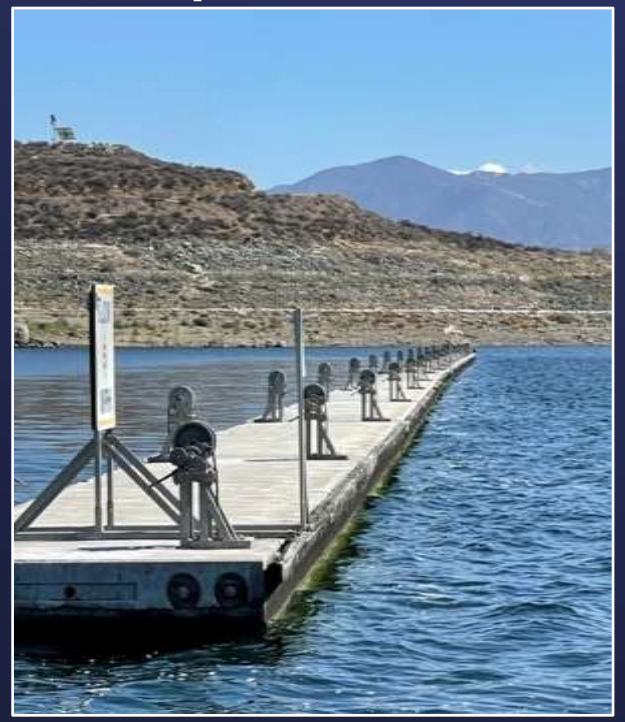


Background

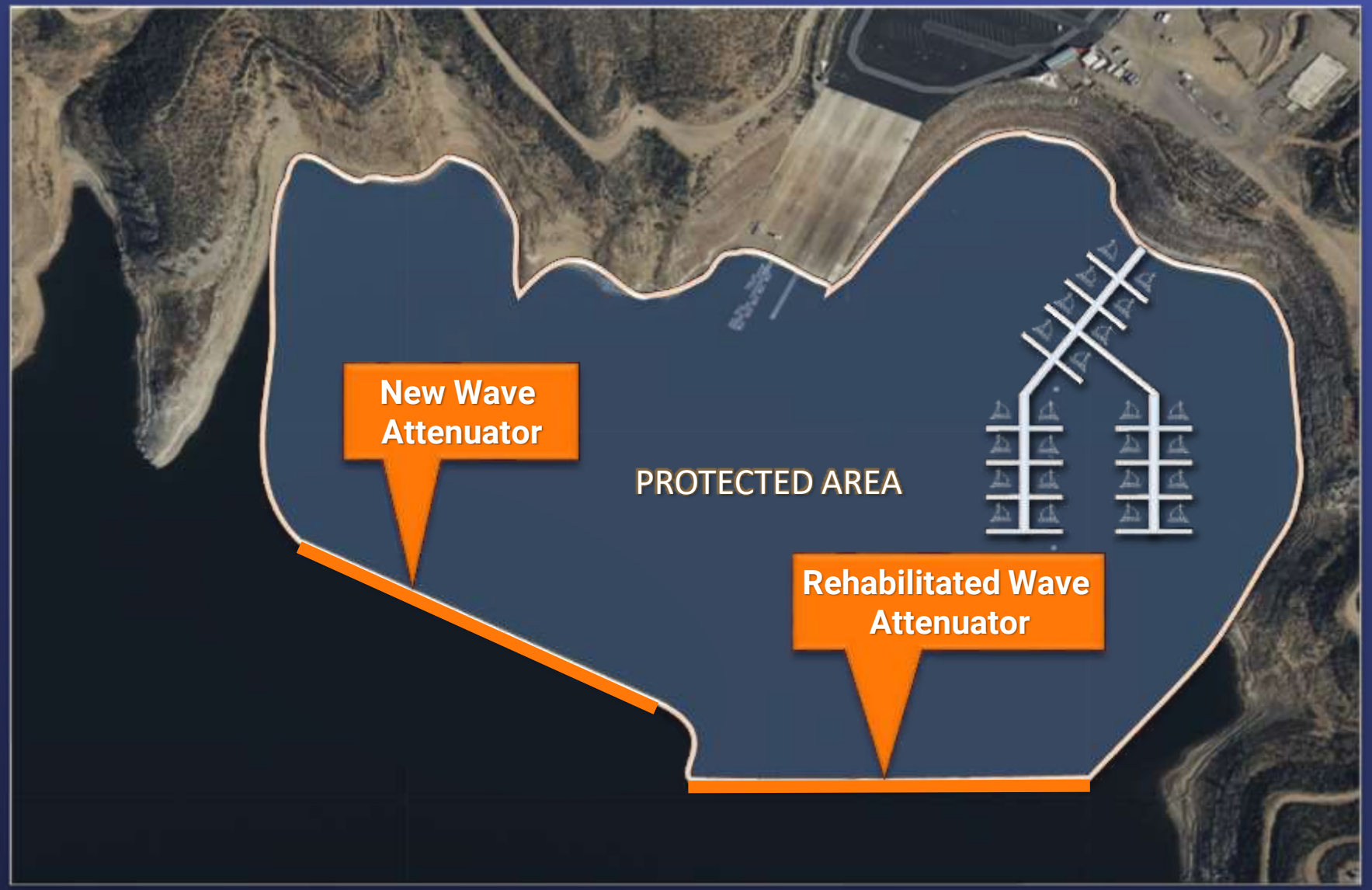
- Constructed in 2003
- Diminishes wind generated waves at the marina
- Creates safe & stable boarding environment
- 16 reinforced concrete box segments
- 800 feet long & 8 feet wide
- Initial plan - two attenuators
- Sustained damage in harsh environment
- Urgent rehabilitation in 2021



DVL Wave Attenuator System Replacement



Future System Configuration



DVL Wave Attenuator System Replacement

Project Benefits & Considerations

- Allows continued public access for recreational boating
- Improves boat launching safety
- Decreases potential of further deterioration or sudden failure
- Decreases potential of closing the marina to boating
- Delays increase future scope of rehabilitation & costs
- Demonstrates dedication to recreation with stakeholders

DVL Wave Attenuator System Replacement

Alternatives Considered

- Fully refurbish existing attenuator in current location
  - High cost / low benefits
  - Replacement needed shortly after refurbishment
- Replace existing attenuator in-kind & construct a new larger supplementary attenuator
  - More expensive
  - Minimal service life benefits over selected alternative
- Postpone contract award for 12 – 18 months
  - Further deterioration & potential failure
  - May lead to closing the marina area
  - Ability to reutilize existing attenuator uncertain
  - Increased costs for future construction contract

DVL
Wave
Attenuator
System
Replacement

Selected Alternative

- Add new attenuator, refurbish existing & relocate existing attenuator
  - Improves safety
  - Cost-effective
  - Ensures public access
  - Maximizes value of existing assets
  - Decreases expenses
  - Long-term protection

DVL
Wave
Attenuator
System
Replacement

Contractor – Scope of Work

- Rehabilitate existing wave attenuator
- Relocate existing attenuator to a new location
- Fabricate & install new attenuator
- Place additional concrete anchors
- Connect anchor cables

Bid Results
Specifications No. 2004

Bids Received	November 21, 2023
No. of Bidders	4
Lowest Responsible Bidder	Power Engineering Construction Co.
Low Bid	$7,842,856
Range of Other Bids	$8,435,000 to $10,310,000
Engineer's Estimate	$11,100,000
SBE Participation*	15%

*SBE (Small Business Enterprise) participation level set at 15%

DVL
Wave
Attenuator
System
Replacement

Metropolitan - Scope of Work

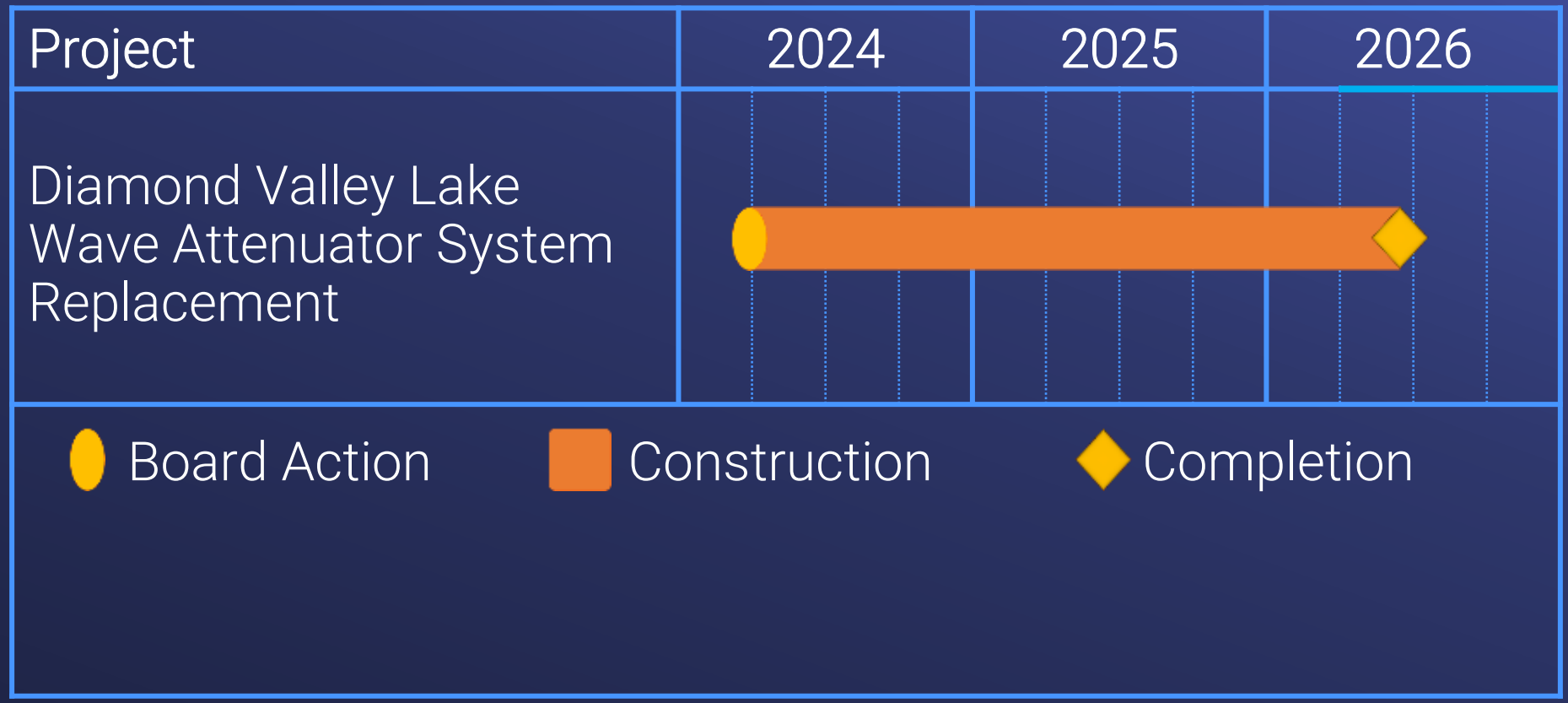
- Construction management & inspection
- Submittals review & preparation of record drawings
- Environmental monitoring
- Project management & project controls

Allocation of Funds

Diamond Valley Lake Wave Attenuator System Replacement

Metropolitan Labor	
Owner Costs (Proj. Mgmt., Contract Admin., Envir. Support)	$ 352,000
Construction Inspection & Support	783,000
Submittals Review, Tech. Support, Record Dwgs.	375,000
Professional/Technical Services	
Kennedy Jenks	60,000
Environmental Services	10,000
Contracts	
Power Engineering Construction Co.	7,842,856
Remaining Budget	452,144
Total	$ 9,875,000

Project Schedule



Board Options

- Option #1

  Award a $7,842,856 construction contract to Power Engineering Construction Co. to install a new floating wave attenuator and to refurbish and move the existing attenuator to another location at the DVL East Marina.

- Option #2

  Do not proceed with the project at this time.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

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

2/13/2024 Board Meeting

7-3

Subject

Authorize an agreement with Stantec Consulting Services Inc. in an amount not to exceed $1 million for preliminary design to rehabilitate the solids removal systems at the Joseph Jensen and Henry J. Mills Water Treatment Plants; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

Sedimentation is a critical unit process within the overall treatment scheme at Metropolitan's water treatment plants. Each of the sedimentation basins at the Joseph Jensen Water Treatment Plant (Jensen plant) and the Henry J. Mills Water Treatment Plant (Mills plant) rely on a system that conveys solids from the bottom of each basin to an adjacent solid handling facility at each plant. Critical components of these systems have exceeded their recommended operational life and require improvements and rehabilitations to improve operational functionality and reliability.

This action authorizes an agreement with Stantec Consulting Services Inc. (Stantec) in an amount not to exceed $1 million to provide preliminary design services for the rehabilitation of the sedimentation basins solids removal systems at the Jensen and Mills plants. See **Attachment 1** for the Allocation of Funds, **Attachment 2** for the List of Subconsultants, and **Attachment 3** for the Location Map.

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

Staff Recommendation: Option #1

Option #1

Authorize an agreement with Stantec Consulting Services Inc. in an amount not to exceed $1 million for preliminary design to rehabilitate the sedimentation basins solids removal systems at the Joseph Jensen and Henry J. Mills Water Treatment Plants.

Fiscal Impact: Expenditure of $2.3 million in capital funds. Approximately $100,000 in capital funds will be incurred in the current biennium and have been previously authorized. The remaining funds for this action will be accounted for in the Capital Investment Plan (CIP) budget for the next biennium following board approval of the budget.

Business Analysis: This option will improve the reliability and efficiency of the sedimentation basin's solids removal systems at the Mills and Jensen plants, maintain treated water quality, and enhance flexibility within the distribution system to meet member agency demands.

Option #2

Do not proceed with the project at this time.

Fiscal Impact: None

Business Analysis: Under this option, staff would continue to inspect and perform localized repairs to the sedimentation basin solids removal system equipment, as required. If damage to equipment can no longer be reliably repaired, the system will be removed from service until the equipment is replaced.

Alternatives Considered

Alternatives considered to complete the preliminary design for sedimentation basin solids removal systems at the Jensen and Mills plants included assessing the availability and capability of in-house Metropolitan staff to complete this work. Metropolitan's staffing strategy for utilizing consultants and in-house Metropolitan staff has been: (1) to assess current work assignments for in-house staff to determine the potential availability of staff to conduct this work; and (2) utilize consultants for long-term rehabilitation projects, when resource needs exceed available in-house staffing or require specialized technical expertise.

Staff has determined that specialized technical expertise is required to complete the preliminary design for the replacement of the end-wheels and motor drive systems for the Jensen traveling bridges and the control upgrades required for the Mills traveling bridges. Metropolitan staff does not routinely perform detailed design of this equipment. After assessing the current workload for in-house staff, the relative priority of this project, and the specialized technical expertise required, staff recommends the use of a professional services agreement to complete the subject project. This approach will allow for the completion of not only this project, but also other budgeted capital projects within their current schedules and ensure that the work is conducted in the most efficient manner possible.

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 49704, dated March 11, 2014, the Board authorized preliminary design to rehabilitate the traveling bridges at Jensen Modules Nos. 2 and 3 at the Joseph Jensen Water Treatment Plant.

By Minute Item 52778, dated April 12, 2022, the Board appropriated a total of $600 million for projects identified in the CIP for Fiscal Years 2022/2023 and 2023/2024.

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 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 actions qualify for a Class 6 Categorical Exemptions (Class 6, Section 15306 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

Details and Background

Background

Located in the community of Granada Hills, the Jensen plant was placed into service in 1972 and treats water from the West Branch of the State Water Project (SWP). Located within the city of Riverside, the Mills plant was placed into service in 1978, and treats water from the East Branch of the SWP and occasionally from Diamond Valley Lake. Both plants use a multi-step water treatment process consisting of pre-oxidation and disinfection with ozone, coagulation, flocculation, sedimentation, granular media filtration, and chlorine-ammonia disinfection. Following ozonation and initial chemical addition, water enters the plant's treatment basins to start the flocculation process, which is designed to gently mix small particles and colloids in the water so that they

agglomerate to form settleable or filterable particles that can be subsequently removed by sedimentation and filtration.

Sedimentation is a critical unit process within a conventional water treatment plant. The sedimentation basins at Jensen Modules Nos. 2 and 3 and Mills Modules Nos. 3 and 4 share a similar design approach and similar configuration. The Jensen basins are 104 feet wide by 425 feet long, and the Mills basins are 105 feet wide by 365 feet long. Each of these basins is equipped with a traveling bridge that spans the width of the basin and moves along its length. The bridges have wheels that ride on metal rails mounted on top of the basin walls. Each bridge carries a high-torque, slow-speed motor and drive system that moves the bridge, pumps, sweep arms, and other equipment necessary for the vacuum removal of settled solids from the sedimentation basin floor.

Jensen plant staff has reported a continuing series of misalignment problems with the traveling bridges at Modules Nos. 2 and 3. As the equipment continues to age, the frequency of misalignment problems is increasing in frequency, resulting in increased maintenance, reduced solids removal efficiency, and potentially reduced plant capacity as the basins are removed from service for repairs. In March 2014, Metropolitan's Board authorized preliminary design to rehabilitate the traveling bridges at Jensen Modules Nos. 2 and 3 sedimentation basins. To date, staff has reviewed corrective maintenance records and incidents, and performed assessments of the existing bridge mechanical and electrical components, instrumentation and control processes, and current solids removal efficiency. Specialized technical expertise is required to further evaluate replacement alternatives for the Jensen traveling bridges end-wheels and the existing motor drive system, and then conduct preliminary design of the recommended alternative.

At the Mills plant, solids removed from each sedimentation basin are discharged to the on-site retention basins. However, the discharge flow cannot be adequately controlled with existing equipment, and excessive amounts of water are often inadvertently siphoned to the retention basins. The excess water in the removed solids then causes increased solids drying time and reduced retention basin capacity. In recent years, staff performed a comprehensive assessment of critical components of the traveling bridges at Mills Modules No. 3 and 4, including their pump technology, electrical features, and instrumentation and control processes. The assessment recommended that the controls and equipment for the bridges be upgraded to enhance the efficiency of the solids removal process.

To enhance the solids removal efficiency at the Jensen and Mills plants, misalignment of the Jensen traveling bridges and upgrades to the control equipment of the Mills bridges need to be fully addressed. Staff recommends that the preliminary design to rehabilitate the Jensen and Mills basins solids removal systems be conducted by a specialized consultant under a new professional services agreement, which is the subject of this action.

Jensen and Mills Basins Solids Removal System Rehabilitation – Preliminary Design

Planned activities to complete preliminary design to rehabilitate the Jensen and Mills basins solids removal systems include: (1) detailed field inspections of existing equipment; (2) evaluation of industry standards and characteristics of recommended assemblies and replacement equipment; (3) development of final design criteria; (4) preparation of preliminary design drawings and three-dimensional models; (5) development of construction cost estimates and schedules for the upgraded basins solids removal system at each plant; and (6) preparation of preliminary design reports for each facility. These activities will be performed by Stantec as discussed below. Metropolitan staff will prepare the piping and instrumentation diagrams, perform overall project management and control system design, conduct surveys, provide technical oversight, and review the consultant's work.

A total of $2.3 million is required for this work. Allocated funds include $1 million for preliminary design activities by Stantec under a new agreement as described below. Allocated funds for Metropolitan staff activities include $364,000 for the design services described above, and technical oversight and review of consultant's work; $482,000 for project management, environmental support, and project controls; and $246,000 for remaining budget. Other allocated funds include $208,000 for value engineering and environmental services, which will be performed by specialty firms under contracts planned to be executed under the General Manager's Administrative Code authority. **Attachment 1** provides the allocation of the required funds. The total estimated cost to complete this project, including the amount appropriated to date, funds allocated for the work described in this action, and future construction costs, is anticipated to range from $43 million to $47 million.

Engineering Services (Stantec Consulting Services Inc.) – New Agreement

Stantec is recommended to complete preliminary design for the rehabilitation of the basin solids removal systems at the Jensen and Mills plants, as described above. Stantec was selected through a competitive process under Request for Proposals No. 1355. Stantec was selected for this project based on their staff qualifications, experience in the design of similar projects, and technical approach and methodology.

This action authorizes an agreement with Stantec for a not-to-exceed amount of $1 million to provide engineering services to complete preliminary design for the rehabilitation of the basin solids removal systems at the Jensen and Mills plants. For this agreement, Metropolitan has established a Small Business Enterprise participation level of 25 percent. Stantec has agreed to meet this level of participation. See **Attachment 2** for a listing of the subconsultants.

Project Milestone

May 2025 – Completion of preliminary design of Jensen and Mills basins solids removal system rehabilitation

1/23/2024
John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

1/23/2024
Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Listing of Subconsultants

Attachment 3 – Location Map

Ref# es12694339

Allocation of Funds for Jensen and Mills Basins Solids Removal System Rehabilitation

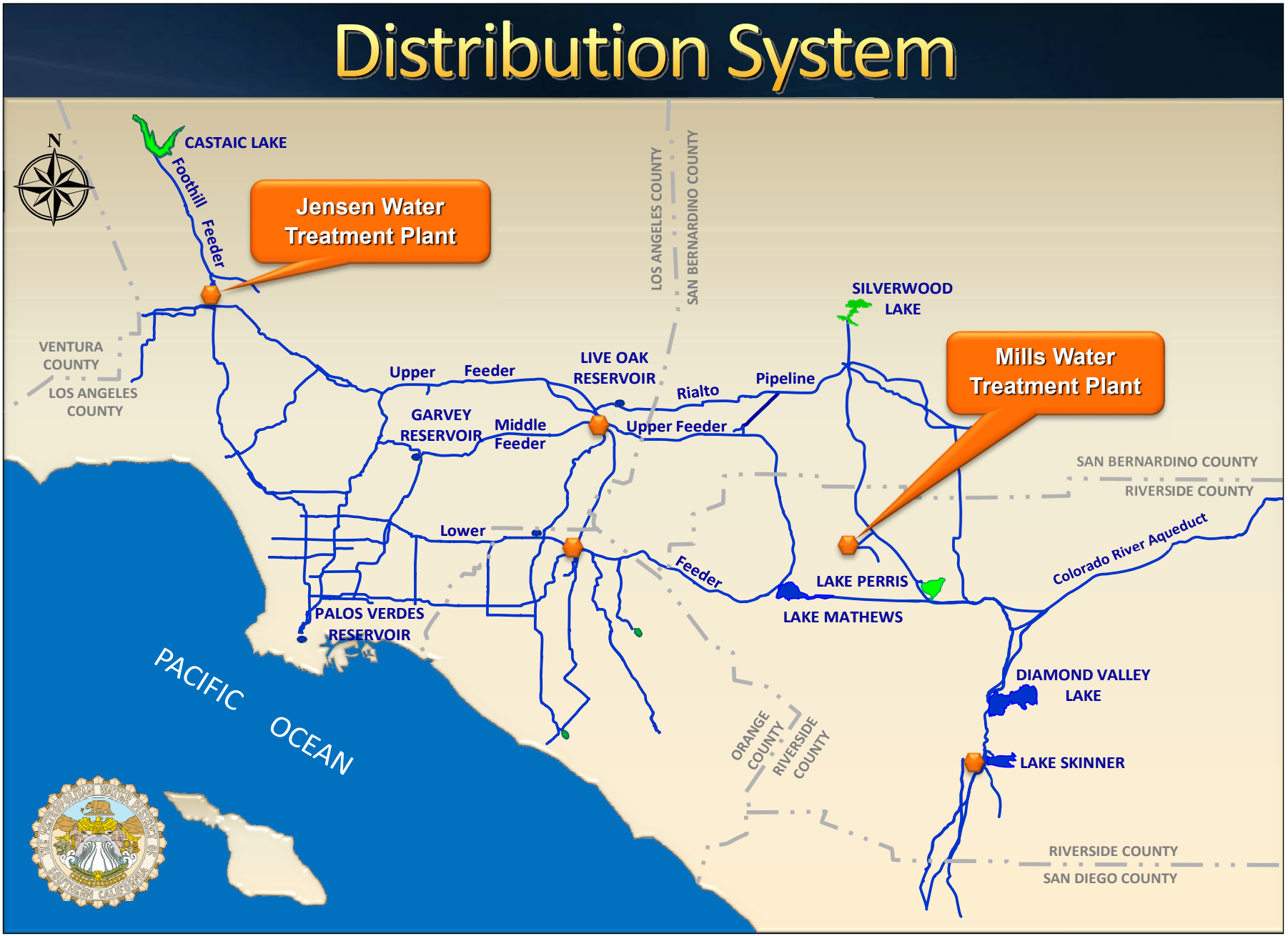
	Current Board Action (Feb. 2024)
Labor	
Studies & Investigations	$364,000
Final Design	-
Owner Costs (Program mgmt., envir. support)	482,000
Submittals Review & Record Drwgs.	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Stantec Consulting Services Inc.	1,000,000
Value Engineering	160,000
Environmental Services	48,000
Right-of-Way	-
Equipment Use	-
Contracts	-
Remaining Budget	246,000
Total	**$ 2,300,000**

The total amount expended to date to rehabilitate the Jensen and Mills basins solids removal systems is approximately $750,000. The total estimated cost to complete this project, including the amount appropriated to date, funds allocated for the work described in this action, and future construction costs, is anticipated to range from $43 million to $47 million.

The Metropolitan Water District of Southern California

Subconsultants for Agreement with Stantec Consulting Services Inc.
Jensen and Mills Basins Solids Removal System Rehabilitation

Subconsultant and Location	Service Category; Specialty
DRP Engineering Inc. Monterey Park, California	CAD and Drafting
Paul Hansen Engineering LLC El Segundo, California	Cost Estimating and Scheduling


Distribution System
N
CASTAIC LAKE
Foothill Feeder
Jensen Water Treatment Plant
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
SILVERWOOD LAKE
VENTURA COUNTY
LOS ANGELES COUNTY
Upper Feeder
LIVE OAK RESERVOIR
Rialto Pipeline
Mills Water Treatment Plant
GARVEY RESERVOIR
Middle Feeder
Upper Feeder
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
Lower Feeder
Colorado River Aqueduct
LAKE PERRIS
LAKE MATHEWS
PALOS VERDES RESERVOIR
PACIFIC OCEAN
DIAMOND VALLEY LAKE
ORANGE COUNTY
RIVERSIDE COUNTY
LAKE SKINNER
RIVERSIDE COUNTY
SAN DIEGO COUNTY

Engineering, Operations, & Technology Committee

Jensen and Mills Solids Removal System Rehabilitation

Item 7-3

February 12, 2024

Item 7-3
Jensen and Mills Solids Removal System Rehabilitation

Subject

Authorize an agreement with Stantec Consulting Services Inc. in an amount not to exceed $1 million for preliminary design to rehabilitate the solids removal systems at the Joseph Jensen and Henry J. Mills Water Treatment Plants

Purpose

Rehabilitation of the solids removal system at the Jensen and Mills plants to improve operational functionality and reliability

Recommendation and Fiscal Impact

Authorize an agreement with Stantec Consulting Services Inc.

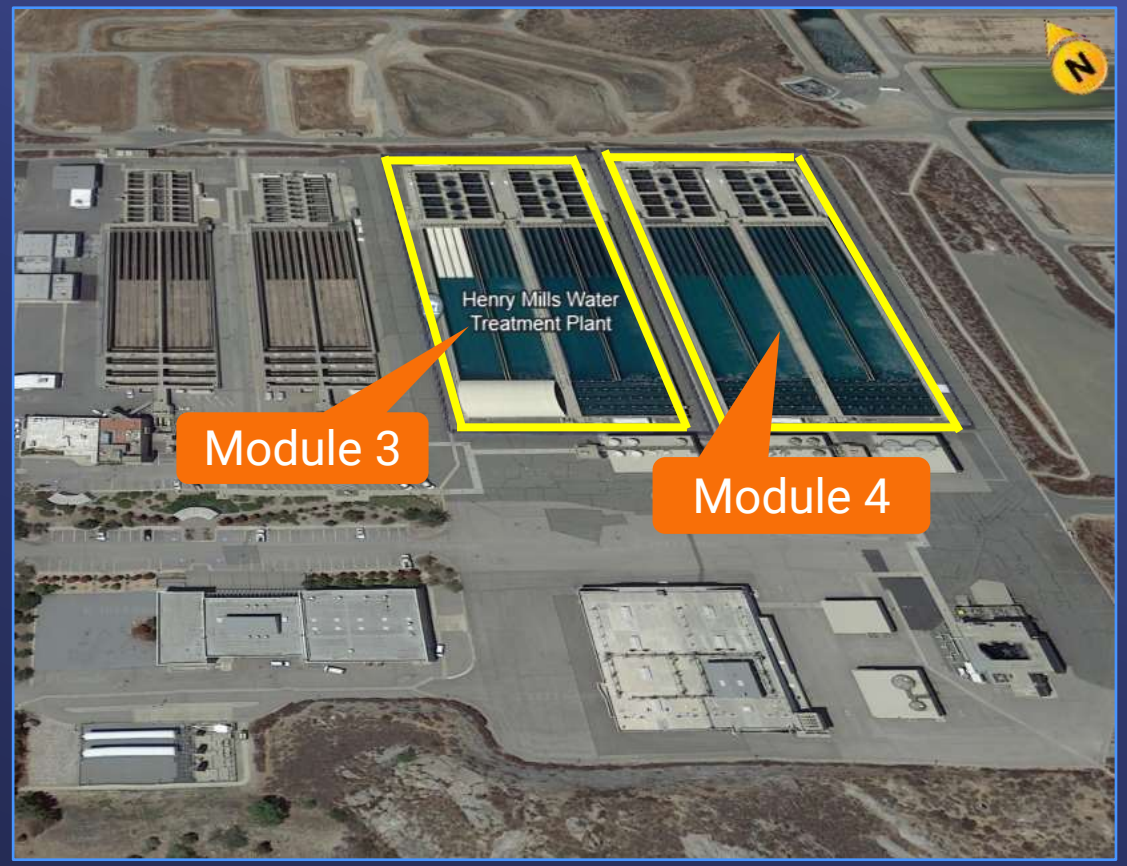
Fiscal Impact of $2,300,000

Budgeted

Location Map

Project Location

Jensen Modules 2 & 3 Sedimentation Basins

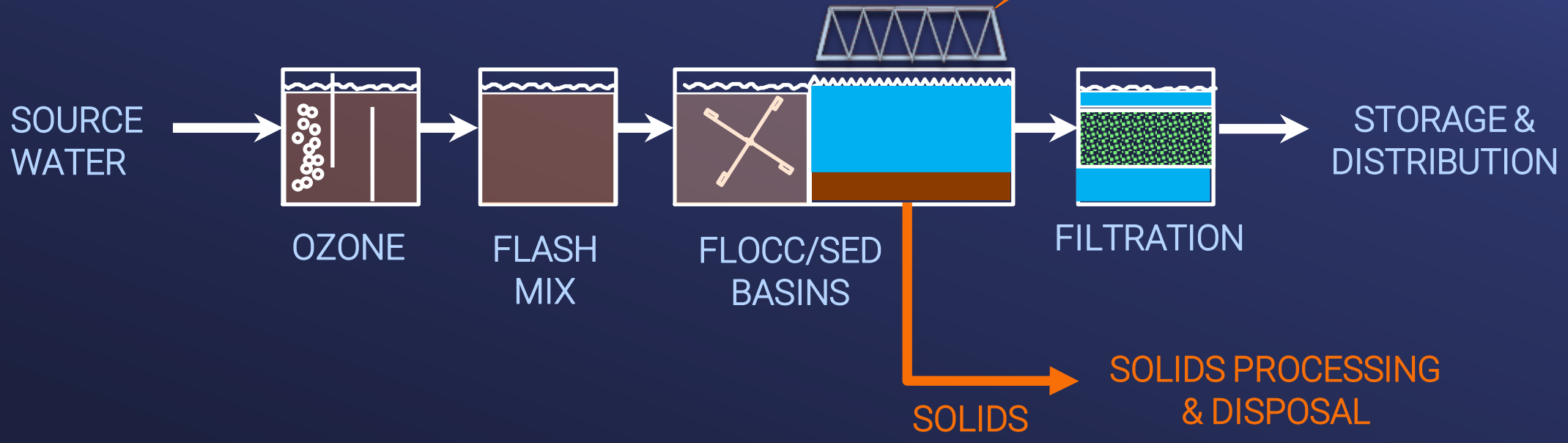


Mills Modules 3 & 4 Sedimentation Basins

Background

- Each basin is equipped with a traveling bridge to convey solids
- Solids conveyance equipment
  - Pumps
  - Sweep arms
  - Suction piping

Traveling Bridge at Jensen plant



Background – Jensen Plant

- Traveling bridge alignment problems
  - Increasing maintenance required
  - Decreased solids removal efficiency

Motor drive at end of service life

Gaps in rail

End-wheels damaged

Background – Mills Plant

- Excess water in solids increases drying time
- Control system is outdated ~ reached end of service life

Existing Vacuum System

Existing Control Panel

Jensen and Mills Solids Removal System Rehabilitation

Project Scope

Jensen plant

- Replace existing traveling bridge end-truck structure & drive system
- Upgrade bridge control system & power supply
- Replace 48 basin inlet gate actuators

Mills plant

- Replace bridge assembly & upgrade with VFD
- Replace existing vacuum system with a pumping system
- Automate solids removal system

Jensen and Mills
Solids Removal System Rehabilitation

Metropolitan Scope of Work

- Prepare piping & instrumentation diagrams
- Perform survey
- Technical oversight
- Review of consultant's work
- Project management

Jensen and Mills
Solids Removal System Rehabilitation

Alternatives Considered

- Metropolitan staff to complete all preliminary design activities
  - Resource needs exceed staff availability
  - Specialized technical expertise required
- Selected Alternative – Use consultant services with specialized expertise

Jensen and Mills Solids Removal System Rehabilitation

New Agreement – Stantec Consulting Services Inc.

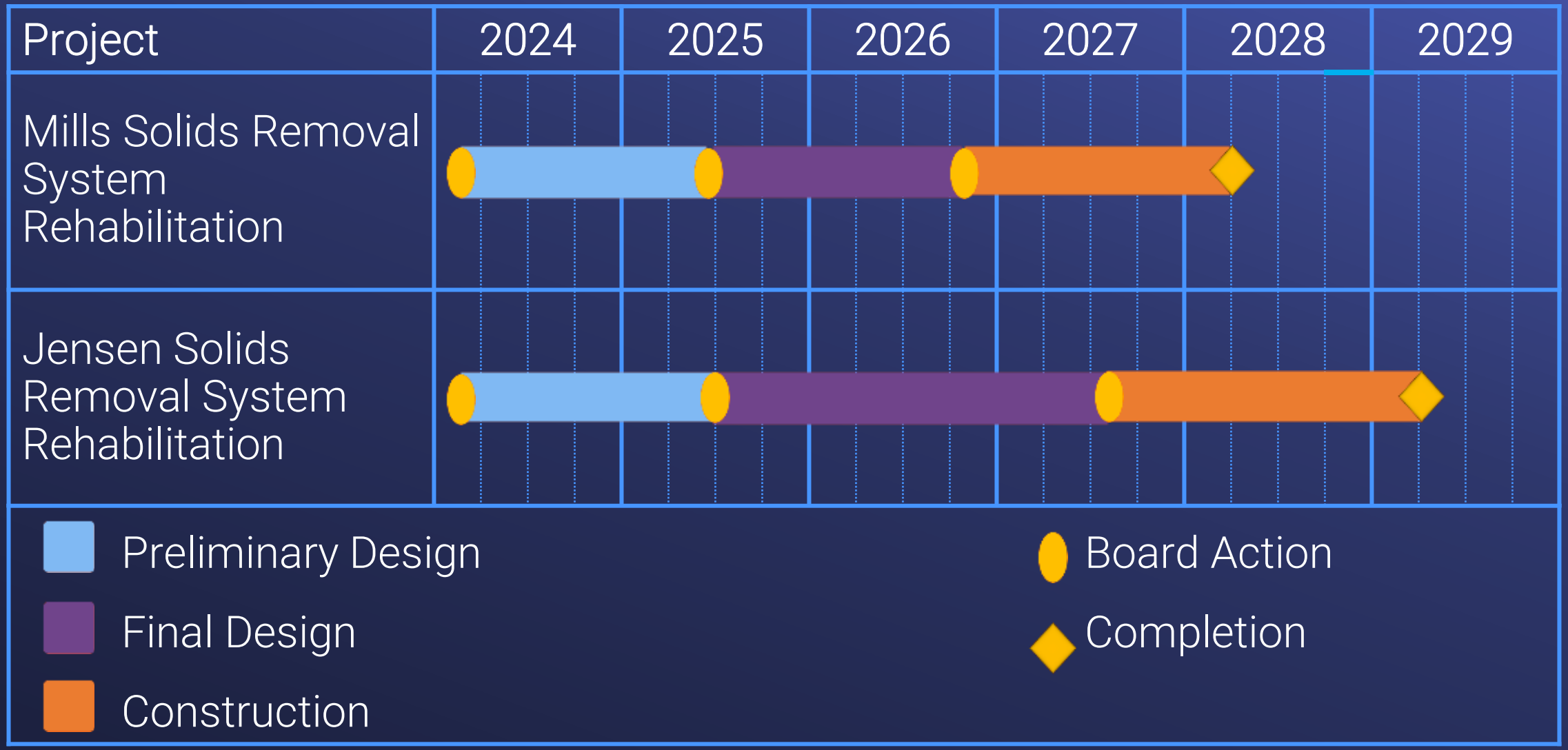
- Selected through RFP No. 1355
- Scope of Work
  - Preliminary design services for Jensen & Mills solids removal system rehabilitation
    - Evaluation of industry standards for replacement equipment
    - Design criteria & cost estimates
    - Preliminary design report
- NTE amount: $1,000,000
- SBE participation level: 25%

Allocation of Funds

Jensen and Mills Solids Removal System Rehabilitation

Metropolitan Labor	
Studies & Investigations	$ 364,000
Owner Costs (Proj. Mgmt., Envir. Support)	482,000
Professional/Technical Services	
Stantec Consulting Services Inc.	1,000,000
Value Engineering	160,000
Environmental Services	48,000
Remaining Budget	246,000
Total	$ 2,300,000

Project Schedule



Board Options

- Option #1

  Authorize an agreement with Stantec Consulting Services Inc. in an amount not to exceed $1 million for preliminary design to rehabilitate the sedimentation basins solids removal systems at the Joseph Jensen and Henry J. Mills Water Treatment Plants.

- Option #2

  Do not proceed with the project at this time.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

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

2/13/2024 Board Meeting

7-4

Subject

Award a $544,501 procurement contract to Electric Machinery Company – A WEG Group to furnish one brushless motor exciter system for Gene Pumping Plant Unit No. 1; the General Manager has determined that the proposed actions are exempt or otherwise not subject to CEQA

Executive Summary

The Colorado River Aqueduct's (CRA) 45 pump units and their accompanying motors were installed during the 1930s, 1940s, and 1950s. The CRA's synchronous pump motors use brush-type exciter systems to maintain motor speed. The existing motor exciter systems require extensive maintenance, and the reoccurring refurbishment cycle requires that a pump motor be shut down for several weeks when this work is conducted. Instead of refurbishing existing motor exciter systems as part of a larger multi-year program to rehabilitate the 45 CRA motors and pumps, staff is planning to conduct a pilot project to install a new modern motor exciter in an existing pump motor. Upon achieving successful results from the pilot project, the overall pump rehabilitation program can be streamlined and may allow the CRA pumps and motors to take advantage of current motor exciter technology.

This action awards a procurement contract to furnish one brushless motor exciter system for Gene Pumping Plant Unit No. 1 as a pilot project for a multi-year program to rehabilitate the 45 CRA motors and pump units. See **Attachment 1** for the Allocation of Funds, **Attachment 2** for the Abstract of Bids, and **Attachment 3** for the Location Map.

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

Staff Recommendation: Option #1

Option #1

Award a procurement contract to Electric Machinery Company – A WEG Group in an amount not to exceed $544,501 to furnish a brushless motor exciter system for Gene Pumping Plant Unit No. 1.

Fiscal Impact: Expenditure of $785,000 in capital funds. Approximately $35,000 will be incurred in the current biennium and has been previously authorized.
Business Analysis: This option will enhance the reliability of the CRA and reduce the potential for capacity limitations or unplanned shutdowns. The remaining funds for this action will be accounted for in the Capital Investment Plan (CIP) budget for the next biennium following board approval of the budget.

Option #2

Do not proceed with the project at this time.
Fiscal Impact: None
Business Analysis: This option will forego an opportunity to enhance CRA reliability and may lead to increased risk over time of capacity limitations or unplanned outages of the CRA.

Alternatives Considered

During the planning and design phase, staff considered refurbishing the existing brush-type motor exciter system. This alternative requires ongoing training for pumping plant personnel to optimize the use of the aging system and a high level of continuous maintenance. In addition, some motor exciter components would need to be manufactured by staff as needed replacement parts are no longer available. The selected option takes advantage of current technology and decreases long-term maintenance of the system while providing an opportunity to evaluate current technology in this application.

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 Actions(s)/Future Action(s)

By Minute Item 50610, dated October 10, 2016, the Board authorized preliminary investigations to rehabilitate the Colorado River Aqueduct main pumps.

By Minute Item 52778, dated April 12, 2022, the Board appropriated a total of $600 million for projects identified in the CIP for Fiscal Year 2022/2023 and 2023/2024.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

On October 11, 2016, the Board approved the CRA Main Pump Rehabilitation project. The Board determined the project to be exempt from CEQA pursuant to Section 15301, Section 15302, Section 15306, and Section 15309 of the State CEQA Guidelines. The current board action does not result in any substantial change to the project. Accordingly, no further CEQA determinations or documentation are necessary.

CEQA determination for Option #2:

None required

Details and Background

Background

The CRA is a 242-mile-long conveyance system that transports water from the Colorado River to Lake Mathews. It consists of five pumping plants, 124 miles of tunnels, siphons, and reservoirs, 63 miles of canals, and 55 miles of cut-and-cover conduits. The aqueduct was constructed in the late 1930s and placed into service in 1941.

Each of Metropolitan's five pumping plants has nine main pump units. At each of the 45 pumping units, an exciter is housed inside each pump motor. The excitation systems provide the direct current power to maintain the synchronous motors at synchronous speed. The original equipment installed in the 1940s has experienced normal wear and tear over 80 years. The exciters require significant maintenance due to brush wear that generates carbon dust contamination. In addition, extensive refurbishment is needed every few years in order to keep the equipment operational. When refurbishment is required, a pump motor is shut down and taken offline for several weeks due to the many excitation components that need to be replaced and adjusted. These extended outage periods could lead to a potential impact on CRA water deliveries if unexpected problems arise with multiple exciter systems and their corresponding motors.

The last time a major effort was undertaken to rehabilitate and refurbish the CRA pump units was in the mid-1980s. Staff has now initiated a comprehensive, multi-year program to rehabilitate the pump units, including the motor exciters, at all five CRA pumping plants to extend the service life and maintain the overall reliability of the CRA system. In the planning efforts for this rehabilitation program, staff has been evaluating various current technologies and recommends a pilot project to assess the use of a brushless exciter system to modernize operations and decrease long-term maintenance of the pump motors.

This action awards a procurement contract to furnish one brushless motor exciter system for Gene Pumping Plant Unit No. 1. Staff plans to install the new exciter system as a pilot project. This strategy will allow staff to validate the installation, assess system compatibility, determine run-time performance, and establish maintenance frequencies before installing them across the other 44 units. Metropolitan forces will install the system with guidance from the manufacturer's engineer.

Gene Pumping Plant Unit No. 1 Brushless Motor Exciter System – Procurement

A total of $785,000 is required to perform this work. In addition to the amount of the procurement contract, the allocated funds include $65,000 for factory fabrication inspection and functional testing; $78,000 for submittals review, technical support, and responding to manufacturer requests for information; $64,000 for contract administration and project management; and $33,499 for remaining budget. **Attachment 1** provides the allocation of required funds.

Award of Procurement Contract (Electric Machinery Company – A WEG Group)

Specifications No. 2056 for furnishing one brushless motor exciter system at Gene Pumping Plant's Motor Unit No. 1 was advertised for bids on October 5, 2023. As shown in **Attachment 2**, one bid was received and opened on December 19, 2023. Staff investigated the reasons for the single bid and attributed it to the limited number of vendors currently manufacturing such specialty equipment. The bid from Electric Machinery Company – A WEG Group in the amount of $544,501 complies with the requirements of the specifications. This amount includes all sales and use taxes imposed by the State of California.

This action awards a $544,501 procurement contract to Electric Machinery Company – A WEG Group to furnish one brushless motor exciter system for Gene Pumping Plant Unit No. 1. As a procurement contract, there are no subcontracting opportunities.

Project Milestone

November 2024 – Delivery of motor exciter

1/18/2024

John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

1/23/2024

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Abstract of Bids

Attachment 3 – Location Map

Ref# es12693532

Allocation of Funds for Gene Pumping Plant Unit No. 1 Brushless Motor Exciter System

	Current Board Action (Feb. 2024)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt., contract admin.)	64,000
Submittals Review & Record Drwgs.	78,000
Construction Inspection & Support	65,000
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Right-of-Way	-
Equipment Use	-
Contracts	
Electric Machinery Company - A WEG Group	544,501
Remaining Budget	33,499
Total	**$ 785,000**

The total amount expended to date to replace the Gene Pumping Plant Unit No. 1 Brushless Motor Exciter System is approximately $60,000. The total estimated cost to complete the Gene Pumping Plant Unit No. 1 Brushless Motor Exciter System, including the amount appropriated to date, funds allocated for the work described in this action, and future construction costs, is anticipated to range from $1.1 million to $1.3 million.

The Metropolitan Water District of Southern California

Abstract of Bids Received on December 19, 2023, at 2:00 P.M.

Specifications No. 2056
Furnishing a Brushless Motor Exciter System for Gene Pumping Plant Unit No. 1

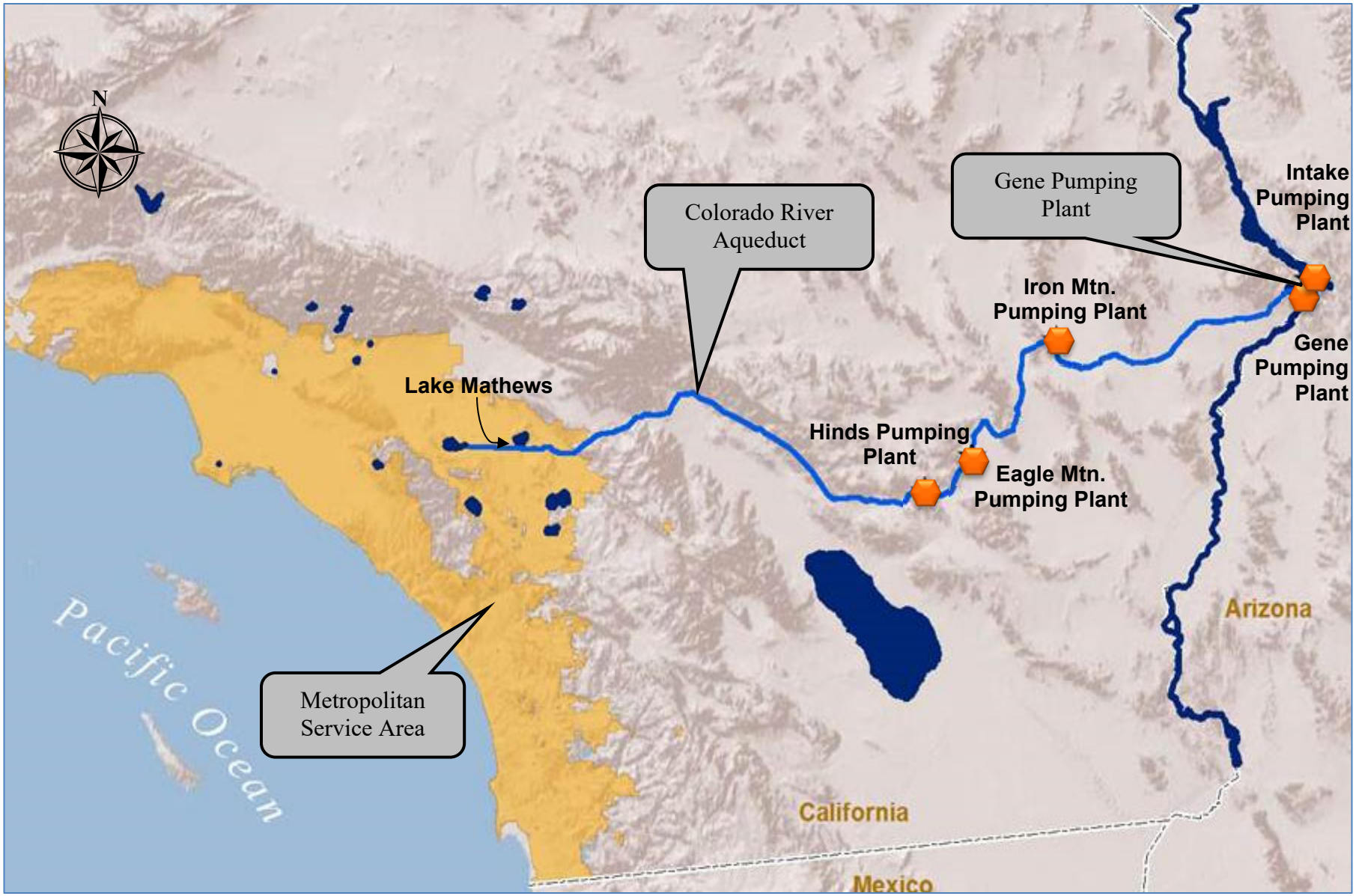
The work includes furnishing one brushless motor exciter system and field services of the manufacturer or manufacturer's representative for Gene Pumping Plant Unit No. 1.

Budgetary estimate: $350,000 to $400,000

Bidder and Location	Base Bid Price Total[1,2]
Electric Machinery Company – A WEG Group Minneapolis, MN	**$544,501**

[1] Includes sales and use taxes of 7.75 percent imposed by the state of California.
[2] As a procurement contract, there are no subcontracting opportunities.

Location Map



Engineering, Operations, & Technology Committee

Gene Pumping Plant Unit No. 1 Brushless Motor Exciter System – Procurement

Item 7-4

February 12, 2024

Item 7-4
Gene Pumping Plant Unit No. 1
Brushless Motor Exciter System - Procurement

Subject

Award a $544,501 procurement contract to Electric Machinery Company – A WEG Group to furnish one brushless motor exciter system for Gene Pumping Plant Unit No. 1

Purpose

Procure one brushless motor exciter system to conduct a pilot project that will take advantage of current technology, extend the service life & reduce the potential of unplanned shutdowns

Recommendation and Fiscal Impact

Award a procurement contract

Fiscal Impact of $785,000

Budgeted

Location Map

Gene Pumping Plant Unit No. 1

Brushless Motor Exciter System - Procurement

Brush Type Motor Exciter (Typ.)

Background

- CRA has 45 main motor units at the five pumping plants
  - Exciter housed inside pump motor
  - Exciter system provides direct current power to maintain synchronous speed
  - Motor unit's exciter exhibiting wear & tear after 80+ years of service
  - Exciters needed substantial maintenance due to brush wear causing carbon contamination
- Staff initiated comprehensive, multi-year program to rehabilitate pump units
  - Pilot project recommended

Gene Pumping Plant
Unit No. 1

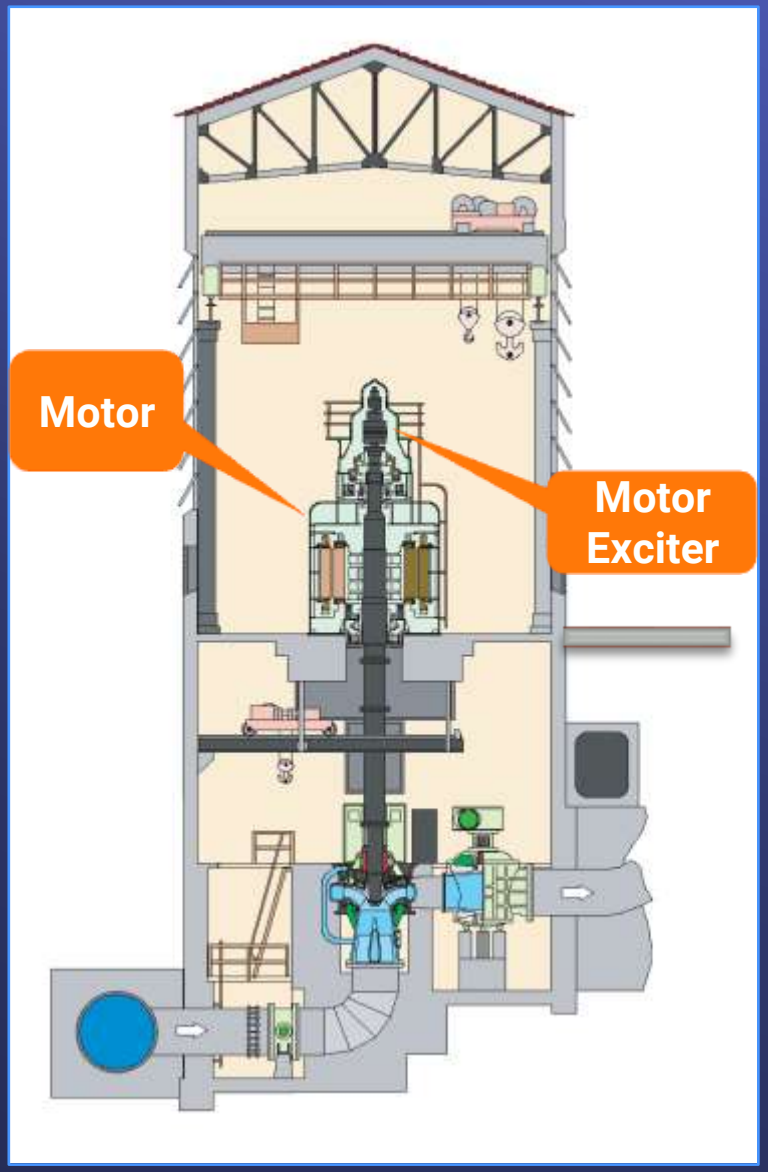
Brushless Motor Exciter System - Procurement

Alternatives Considered

- Refurbish the existing brush-type motor exciter system
  - Requires training personnel to optimize the aged system, manufacture obsolete parts & provide ongoing maintenance
- Selected Alternative
  - Takes advantage of current technology
  - Potentially decreases long-term maintenance

Scope of Work

- Contractor
  - Furnish one brushless motor exciter system for Gene Pumping Plant Unit No. 1
- Metropolitan
  - Factory fabrication inspection
  - Submittals review
  - Contract administration & project management



CRA Pumphouse Configuration (Typ.)

Bid Results
Specifications No. 2056

Bids Received	December 19, 2023
No. of Bidders	1
Responsible Bidder	Electric Machinery Company – A WEG Group
Bid	$544,501
SBE Participation*	N/A

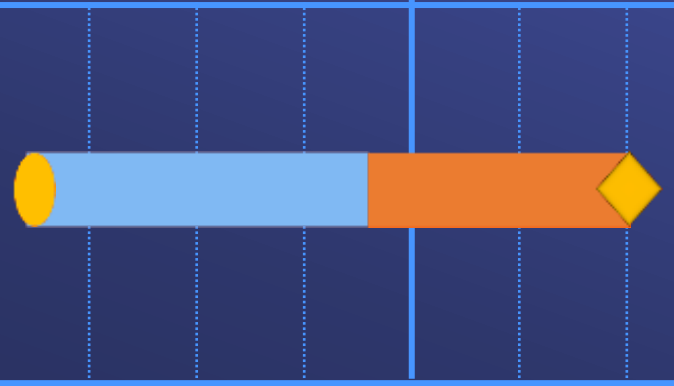
*SBE (Small Business Enterprise) participation level not established for procurement contract

Allocation of Funds

Gene Pumping Plant Unit No. 1
Brushless Motor Exciter System – Procurement

Metropolitan Labor	
Owner Costs (Proj. Mgmt., Contract Admin.)	$ 64,000
Procurement Inspection & Support	65,000
Submittals Review, Tech. Support	78,000
Procurement Contract	
Electric Machinery Company – A WEG Group	544,501
Remaining Budget	33,499
Total	$ 785,000

Project Schedule

Project	2024	2025
Gene Pumping Plant Brushless Motor Exciter System		

Procurement
Construction
Board Action
Completion

Board Options

- Option #1

  Award a procurement contract to Electric Machinery Company – A WEG Group in an amount not to exceed $544,501 to furnish a brushless motor exciter system for Gene Pumping Plant Unit No. 1.

- Option #2

  Do not proceed with the project at this time.

Board Options

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

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

2/13/2024 Board Meeting

7-5

Subject

Award a $2,375,700 contract to J.F. Shea Construction Inc. for construction of a hazardous waste handling and storage facility at the La Verne site; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

Hazardous waste is generated through routine operations across the La Verne site. The existing hazardous waste handling and storage facility at the La Verne site has limited containment capacity and needs to be enlarged and enhanced with safety features, including leak detection, eyewashes, safety showers, and notification alarms. To develop an efficient and cost-effective project, the new facility will be constructed at the site of a decommissioned chemical feed facility at the La Verne site. These improvements will enhance staff safety and increase operational flexibility. Design is complete, and construction of the new facility is recommended at this time.

This action awards a $2,375,700 construction contract to J.F. Shea Construction Inc. to construct a new hazardous waste handling and storage facility at the La Verne site. See **Attachment 1** for the Allocation of Funds, **Attachment 2** for the Abstract of Bids, **Attachment 3** for the Subcontractors for Low Bidder, and **Attachment 4** for the Location Map.

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

Staff Recommendation: Option #1

Option #1

Award a $2,375,700 contract to J.F. Shea Construction Inc. for construction of a hazardous waste handling and storage facility at the La Verne site.

Fiscal Impact: Expenditure of $3,400,000 in capital funds. Approximately $200,000 will be incurred in the current biennium and have been previously authorized. The remaining funds for this action will be accounted for in the Capital Investment Plan (CIP) budget for the next biennium following board approval of the budget.
Business Analysis: This option will reduce the risk of accidental discharges to the off-site storm drain system and enhance workplace safety.

Option #2

Do not proceed with the project at this time.
Fiscal Impact: None
Business Analysis: This option would forego an opportunity to reduce the risk of potential stormwater contamination and enhance workplace safety.

Alternatives Considered

During the planning phase of this project, staff considered modifying the existing hazardous waste handling and storage facility. Extensive modifications would be required, including enlarging the secondary containment area and constructing a fixed canopy. Staff also evaluated multiple potential locations for a new facility and

determined that a nearby decommissioned sulfuric acid storage and feed facility is ideally located for waste handling and storage due to its proximity to critical facility operations, including the coating shops and the Water Quality Laboratory. In addition, the decommissioned facility has a permanent, in-ground secondary containment structure with an existing fixed canopy. The selected alternative to repurpose the decommissioned sulfuric acid facility provides the best value to Metropolitan with reduced overall project costs.

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 51349, dated October 9, 2018, the Board authorized preliminary design to improve hazardous waste storage at the La Verne site.

By Minute Item 52778, dated April 12, 2022, the Board appropriated a total of $600 million for projects identified in the CIP for Fiscal Years 2022/23 and 2023/24.

Summary of Outreach Completed

Metropolitan has coordinated with the local fire authority to confirm fire and life safety facility requirements.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is exempt from CEQA because the action consists of the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features involving negligible or no expansion of existing or former use and no possibility of significantly impacting the physical environment. In addition, the proposed action consists of replacement or reconstruction of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have substantially the same purpose and capacity as the structure replaced (State CEQA Guidelines Sections 15301 and 15302).

CEQA determination for Option #2:

None required

Details and Background

Background

The F.E. Weymouth Water Treatment Plant (Weymouth plant) was placed into service in 1941 and is located in the city of La Verne. In addition to the Weymouth plant, the La Verne site accommodates numerous support facilities, including the Water Quality Laboratory, the La Verne Shops, and water distribution facilities. Hazardous wastes, such as waste chemicals, oil, paint, paint thinners, and antifreeze, are generated through routine operations across the La Verne site, including regulatory sample handling and analysis, fabrication and coating of new and refurbished parts, and daily plant operations.

The existing hazardous waste handling and storage facility at the La Verne site was constructed in the early 2000s. The facility consists of a fenced-in, paved lot with portable secondary containment skids and an uncovered unloading area, which limits activity during rainy conditions. Hazardous wastes are collected and placed into either metal or plastic drums and separated by type: acid, base, flammable, oxidizer, and miscellaneous. The drums are temporarily stored on specialized pallets within a fenced, 80-foot by 60-foot area.

Following Title 22 of the California Code of Regulations, the waste-containing drums are stored on-site for no more than 90 days and must be transported off-site for appropriate disposal. Title 22 also stipulates that the hazardous waste storage area must have measures to protect stormwater runoff in the event of an accidental

discharge. While the original design complied with codes and regulations at the time of construction, the hazardous waste handling and storage facility requires several upgrades to meet increasing needs for stable long-term service and to enhance compliance with current codes.

In October 2018, Metropolitan's Board authorized preliminary design to improve hazardous waste storage at the La Verne site. During preliminary design, staff evaluated the option to repurpose a nearby sulfuric acid storage and feed facility that was decommissioned upon construction of the Weymouth plant's ozonation facilities. An assessment of the facility's condition confirmed that the containment area and structural canopy are intact, and the facility can be converted to provide a properly equipped hazardous waste handling and storage area. As a result, staff moved forward with final design to convert the decommissioned sulfuric acid facility into a hazardous waste handling and storage facility. Final design is now complete, and staff recommends the award of a construction contract at this time.

The recommended improvements will increase the capacity of the storage area, including the secondary containment area, to reduce the risk of stormwater contamination and discharge off-site. The facility will also be equipped with real-time leak detection, eyewashes, safety showers, and notification alarms to the Weymouth plant's control room. These improvements will enhance personnel safety and operational flexibility of all the functions and facilities that it supports.

La Verne Hazardous Waste Handling and Storage Facility – Construction

The scope of the construction contract consists of the following: converting the decommissioned sulfuric acid feed facility at the La Verne site into a new hazardous waste handling and storage facility featuring secondary containment areas with steel grating and exterior wall paneling; trenching and installation of electrical duct banks for lighting and power; installation of a storage container with lights, outlets, and a ramp; construction of security fencing and gates; installation of safety eyewash and shower units; and related site work including demolition, grading, and paving. Metropolitan forces will provide Supervisory Control and Data Acquisition integration for leak detection, installation of safety signage, and striping to support construction activities.

A total of $3.4 million is allocated for this work. In addition to the amount of the contract described below, other funds to be allocated include $297,000 for construction management and inspection; $121,000 for Metropolitan force construction activities as described above; $207,000 for submittals review, technical support during construction, responding to requests for information, and preparation of record drawings; $94,000 for contract administration, environmental monitoring, and project management; and $305,300 for the remaining budget. **Attachment 1** provides the allocation of the required funds. The total estimated cost to complete the work, including the amount appropriated to date and funds allocated for the work described in this action, is $4.3 million.

Award of Construction Contract (J.F. Shea Construction Inc.)

Specification No. 1992 for the construction of the hazardous waste handling and storage facility at the La Verne site was advertised for bids on November 14, 2023. As shown in **Attachment 2**, three bids were received and opened on December 21, 2023. The low bid from J.F. Shea Construction Inc. in the amount of $2,375,700 complies with the requirements of the specifications. The other bids ranged from approximately $2.80 million to $3.36 million, while the engineer's estimate for this project was $1.98 million. Staff investigated the difference between the engineer's estimate and the low bid and attributed the key differences to increased costs for specialty trades, including electrical and instrumentation work, as well as specialty coatings. For this contract, Metropolitan established a Small Business Enterprise participation level of at least 25 percent of the total bid amount. J.F. Shea Construction Inc. has agreed to meet this level of participation. The subcontractors for this contract are listed in **Attachment 3**.

This action awards a $2,375,700 contract to J.F. Shea Construction Inc. for the construction of the hazardous waste handling and storage facility at the La Verne site. As described above, Metropolitan staff will perform construction management and inspection. Engineering Services' performance metric target range for construction management and inspection of projects with construction less than $3 million is 12 to 15 percent. For this project, the performance metric goal for inspection is 11.9 percent of the total construction cost ($2,496,700), which includes the construction contract ($2,375,700) and Metropolitan force construction ($121,000).

Project Milestone

June 2025 – Completion of construction

1/23/2024

John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

1/25/2024

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Abstract of Bids

Attachment 3 – Subcontractors for Low Bidder

Attachment 4 – Location Map

Ref# es12700000

Allocation of Funds for La Verne Hazardous Waste Staging and Containment Facility

	Current Board Action (Feb. 2024)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	94,000
Submittals Review & Record Drwgs.	207,000
Construction Inspection & Support	297,000
Metropolitan Force Construction	90,000
Materials & Supplies	31,000
Incidental Expenses	-
Professional/Technical Services	-
Right-of-Way	-
Equipment Use	-
Contracts	-
J.F. Shea Construction Inc.	2,375,700
Remaining Budget	305,300
Total	**$ 3,400,000**

The total amount expended to date for the hazardous waste staging and containment facility at the La Verne site is approximately $900,000. The total estimated cost to complete the project, including the amount appropriated to date, and funds allocated for the work described in this action, is $4.3 million.

The Metropolitan Water District of Southern California

Abstract of Bids Received on December 21, 2023, at 2:00 P.M.

Specifications No. 1992
La Verne Hazardous Waste Staging and Containment Facility

The work consists of constructing a dedicated area for staging and containment of hazardous waste, featuring secondary containment areas with steel grating and exterior wall paneling; trenching and installation of electrical duct banks for lighting and power; a storage container with lights, outlets, and a ramp; security fencing and gates; safety eyewash and safety units; and related site work including demolition, grading, and paving.

Engineer's estimate: $1,980,000

Bidder and Location	Total	SBE $	SBE %	Met SBE[1]
J.F. Shea Construction Inc. Walnut, CA	**$2,375,700**	**$1,301,258**	**54.8%**	**Yes**
R2 Build Laguna Hills, CA	$2,807,000	-	-	-
Houalla Enterprises Ltd. Newport Beach, CA	$3,356,295	-	-	-

[1] Small Business Enterprise (SBE) participation level established at 25% for this contract.

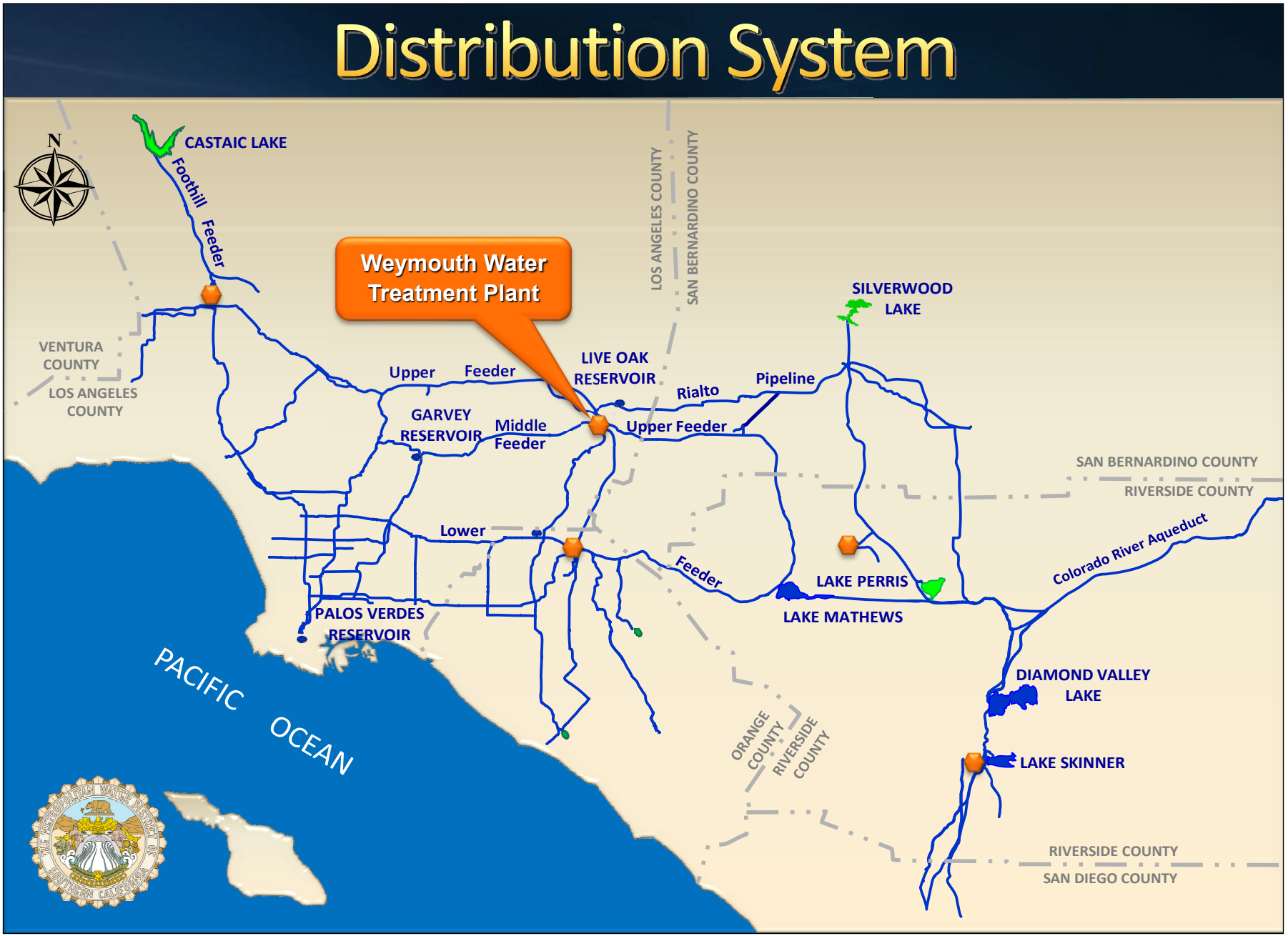
The Metropolitan Water District of Southern California

Subcontractors for Low Bidder

Specifications No. 1992
La Verne Hazardous Waste Staging and Containment Facility

Low bidder: J.F. Shea Construction Inc.

Subcontractor	Service Category; Specialty
Alcom Fence Company Riverside, CA	Fencing
Amber Steel Company Rialto, CA	Rebar
Onyx Paving Co. Inc. Temecula, CA	Asphalt Concrete Paving
Penhall Company Anaheim, CA	Demolition
Red Wave Comm & Elec Inc. La Habra, CA	Electrical
Techno Coatings Inc. Anaheim, CA	Painting


Distribution System
N
CASTAIC LAKE
Foothill Feeder
Weymouth Water Treatment Plant
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
SILVERWOOD LAKE
VENTURA COUNTY
LOS ANGELES COUNTY
Upper Feeder
LIVE OAK RESERVOIR
Rialto Pipeline
GARVEY RESERVOIR
Middle Feeder
Upper Feeder
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
Lower Feeder
Colorado River Aqueduct
LAKE PERRIS
LAKE MATHEWS
PALOS VERDES RESERVOIR
PACIFIC OCEAN
DIAMOND VALLEY LAKE
ORANGE COUNTY
RIVERSIDE COUNTY
LAKE SKINNER
RIVERSIDE COUNTY
SAN DIEGO COUNTY

Engineering, Operations, & Technology Committee

La Verne Hazardous Waste Handling and Storage Facility

Item 7-5

February 12, 2024

Item 7-5
La Verne Hazardous Waste Handling & Storage Facility

Subject

Award a $2,375,700 contract to J.F. Shea Construction Inc. for construction of a hazardous waste handling and storage facility at the La Verne site

Purpose

Construction of a new hazardous waste handling and storage facility at the La Verne site to increase staff safety and operational flexibility

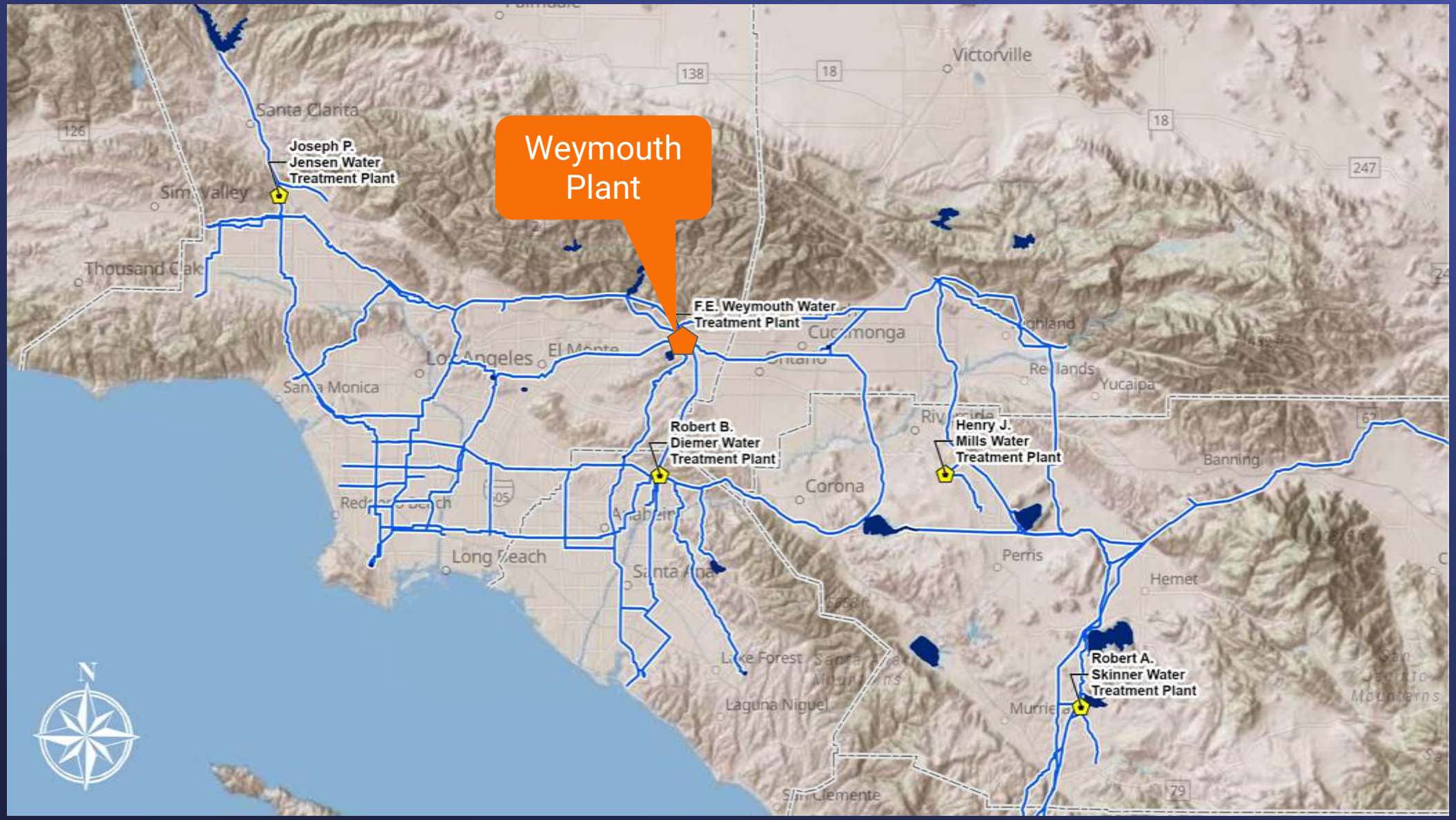
Recommendation and Fiscal Impact

Award a construction contract to J.F. Shea Construction Inc. for construction of a hazardous waste handling and storage facility at the La Verne Site

Fiscal Impact of $3.4 M

Budgeted

Location Map



Background – Existing Facility

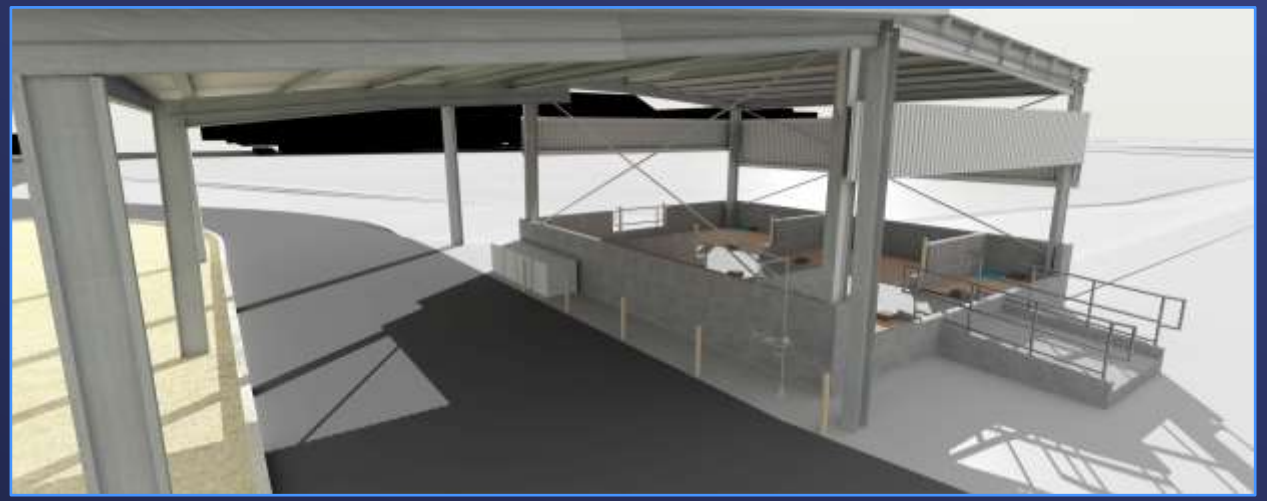
- Used for staging of hazardous waste generated at the site before transportation off-site for appropriate disposal
- Uncovered unloading area
- Secondary containment requires improvements
- Insufficient storage area

Existing Facility

Background – New Facility

- Decommissioned Sulfuric Acid Tank Farm to be repurposed
  - Canopy & secondary containment to be reused
- Increased storage capacity sufficient for current & future functions at La Verne
- Added enhanced safety features
  - Real-time leak detection
  - Safety eyewashes & showers
  - Enhance personnel safety

Existing Decommissioned Sulfuric Acid Tank Farm



3D Model of New Facility

La Verne
Hazardous
Waste Handling
& Storage Facility

Alternatives Considered

- Modify existing hazardous waste handling & storage facility
  - Extensive modifications required
- Selected Alternative – Repurpose a decommissioned sulfuric acid facility
  - Ideally located for waste handing & storage
  - Permanent in-ground secondary containment structure with existing fixed canopy

La Verne
Hazardous
Waste Handling
& Storage Facility

Scope of Work

- Contractor
  - Modify secondary containment areas to include steel grating
  - Install:
    - exterior wall paneling
    - electrical duct banks
    - security fencing & gates
    - safety eyewash & shower units
- Metropolitan
  - SCADA integration for leak detection
  - Install safety signage & striping

Bid Results
Specifications No. 1992

Bids Received	December 21, 2023
No. of Bidders	3
Lowest Responsible Bidder	J.F. Shea Construction Inc.
Low Bid	$2,375,700
Other Bids	$2,807,000 and $3,356,295
Engineer's Estimate	$1,980,000
SBE Participation*	25%

*SBE (Small Business Enterprise) participation level set at 25%

Allocation of Funds

La Verne Hazardous Waste Handling and Storage Facility

Metropolitan Labor		
Owner Costs (Proj. Mgmt., Contract Admin., Envir. Support)	$	94,000
Construction Inspection & Support		297,000
MetForce Construction		90,000
Submittals Review, Tech. Support, Record Dwgs.		207,000
Materials & Supplies		31,000
Contracts		
J.F. Shea Construction Inc.		2,375,700
Remaining Budget		305,300
Total	$	3,400,000

Project Schedule

Board Options

- Option #1

  Award a $2,375,700 contract to J.F. Shea Construction Inc. for construction of a hazardous waste handling and storage facility at the La Verne site.

- Option #2

  Do not proceed with the project at this time.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Action

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

2/13/2024 Board Meeting

7-6

Subject

Authorize amendments to two agreements for energy and transmission services with the Arizona Electric Power Cooperative, related to the termination and credits services provisions of those agreements; the General Manager has determined the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

The Arizona Electric Power Cooperative (AEPCO), a generation and transmission cooperative headquartered in Benson, Arizona, performs Transmission Operations (TOP) functions and energy scheduling functions for Metropolitan's Colorado River Aqueduct Transmission System (CRATS) and five pumping stations. These functions are carried out under two agreements authorized by the Board in 2017 – the Power System Operation Services Agreement (PSOS Agreement) and the Scheduling and Trading Services Agreement (STS Agreement).

To date, Metropolitan's relationship with AEPCO has been cost-effective and beneficial for both parties. AEPCO's operators have become increasingly familiar with the CRATS and, in the summer of 2022, successfully helped Metropolitan navigate the most serious electric system emergency since the energy crisis of 2000-2001. However, recent developments in the electricity market, both nationwide and in the Southwest specifically, have increased the perceived risk profile for both AEPCO and Metropolitan. These changes include market volatility, increasingly stringent mandatory reliability compliance obligations, and the development of renewable energy and energy storage projects in preparation for a shift to a carbon-free economy. In response to these developments, and in the interest of maintaining a mutually beneficial and cost-effective relationship, Metropolitan staff and AEPCO have negotiated several key changes to the PSOS and STS agreements to mitigate some of AEPCO's perceived increased risks without directly increasing Metropolitan's costs for these services.

This action would authorize amendments to the termination provision of the PSOS Agreement and the termination and credit services provisions of the STS Agreement to address, respectively, potential future changes to the CRATS and Metropolitan's activities in California's energy markets.

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

Staff Recommendation: Option #1

Option #1

Authorize amendments to the Power System Operation Services Agreement and Scheduling and Trading Services Agreement, both with the Arizona Electric Power Cooperative, related to the termination and credit services provisions of those agreements.

Fiscal Impact: No immediate fiscal impact.
Business Analysis: Approving the proposed amendment presents the risk that an unanticipated change to the North American Electric Reliability Corporation (NERC) reliability impact status of the CRATS (from low- to medium- or high-risk) could lead AEPCO to invoke the one-year termination clause, requiring Metropolitan to either (1) obtain TOP services from an alternative provider within the one-year termination window or (2) establish a TOP program within Metropolitan with the attendant added infrastructure and

personnel costs (primarily building and staffing a 24-hour control center) within the one-year termination window. Staff's assessment is that an unanticipated change to the reliability impact status of the CRATS is possible but unlikely to occur.

Option #2

Do not authorize amendments to the Power System Operation Services Agreement and Scheduling and Trading Services Agreement.

Fiscal Impact: No immediate fiscal impact.

Business Analysis: There is a significant risk that failure to implement the proposed amendments to the PSOS and STS agreements will result in AEPCO invoking the three-year termination clause in the current agreement in the near-term, even in the absence of a change in NERC's categorization of the CRATS, in order to mitigate AEPCO's perceived risks. Termination would require Metropolitan to either obtain TOP services from an alternative provider within the current three-year termination window or establish a TOP in-house within that timeframe.

Alternatives Considered

Staff has been negotiating the proposed amendments with their counterparts at AEPCO for more than a year, and AEPCO's management will not accept the status quo with respect to either the termination provision in the PSOS Agreement or the Credit Services provision in the STS Agreement. Staff is currently assessing the costs, benefits, and risks of several long-term options if Metropolitan is forced to seek alternatives to the TOP services provided under the AEPCO agreements. These analytical efforts are currently underway, but they will not be completed in time to respond to AEPCO's request to implement the amendments to the PSOS and STS agreements presented in this action.

Overall, staff believes that the current agreement, with these changes, and partnership with AEPCO will continue to be beneficial to Metropolitan, with no immediate increased cost and minimal future risk.

Applicable Policy

Policy Principle on Energy/Restructuring (Minute Item 41941, June 11, 1996)

Policy Principle on Energy (Minute Item 457598, August 19, 2008)

Adoption of Energy Management Principles (Minute Item 48371, August 17, 2010)

Energy Sustainability Plan (Report No. 1630, Vol. 1, November 2020)

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

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

Board authorization of PSOS and STS Agreements and Class D membership in AEPCO (Minute Item 50885, July 11, 2017)

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is not defined as a project under CEQA because it involves organizational, maintenance, or administrative activities; personnel-related actions; and/or general policy and procedure making that will not result in direct or indirect physical changes in the environment. (Public Resources Code Section 21065; State CEQA Guidelines Section 15378(b)(2) and (5).)

CEQA determination for Option #2:

None required

Details and Background

Background

Metropolitan owns a 230 kilovolt (kV) transmission system that provides power to its Colorado River Aqueduct (CRA) pumps. Metropolitan also has long-term contracts for energy from Hoover and Parker Dams, which is transmitted to the CRA pumps over Metropolitan's transmission lines. Additional power is procured through California's centralized energy markets or via bilateral contracts. For the thirty years prior to the approval of the AEPCO agreements, Southern California Edison (SCE) provided Metropolitan with energy and transmission services under a 1987 Service and Interchange Agreement. SCE elected not to renew this agreement in 2017 due to market changes, and following a search for a new service provider, the Board authorized the successor PSOS and STS Agreements with AEPCO.

AEPCO is a non-profit, membership-based generation and transmission cooperative established in 1961 and located in Benson, Arizona. AEPCO's Class A members are traditional Rural Electrification Agency (REA) co-operatives and participate jointly in generation and transmission projects, and are primarily responsible for AEPCO's governance. Class D members, including Metropolitan, the Central Arizona Project, and Valley Electric Association, among others, are mostly non-REA entities that receive services from AEPCO and participate in its governance to a lesser degree. AEPCO provides energy management and scheduling services through the Alliances for Cooperative Energy Services Power Marketing, LLC (ACES). AEPCO also operates 866 miles of high-voltage electric transmission lines and 625 megawatts (MW) of generation capacity, meeting the requirements of NERC mandatory electric reliability standards through their modern control center.

The STS Agreement has a term of October 1, 2017, to December 31, 2035, subject to early termination by either party with a three-year advance notice. Charges for energy and scheduling services are on a per megawatt-hour basis, with all members paying the same unit cost per megawatt-hour. The services provided to Metropolitan under the agreement include the following: (1) AEPCO registration as Metropolitan's Scheduling Coordinator with the California Independent System Operator (CAISO) and the scheduling of Metropolitan's CRA energy and transmission; (2) procurement of supplemental energy; (3) AEPCO monitoring of CRA electrical load and energy resources to assure balanced and cost-effective operations; and (4) AEPCO accounting, invoicing, and tagging of all CRA energy transactions. The STS Agreement also established an initial $1 million interest-bearing deposit account to ensure that AEPCO has sufficient liquidity to enter into transactions on Metropolitan's behalf.

Under the PSOS Agreement, which has the same term and early termination provisions as the STS Agreement, AEPCO provides Metropolitan a variety of services to ensure that Metropolitan's facilities are operated in compliance with national electric reliability standards. AEPCO is registered with NERC as Metropolitan's Transmission Operator (TOP) and is responsible for complying with all applicable NERC TOP standards. Under the agreement, Metropolitan assumes responsibility for NERC penalties incurred by AEPCO in its role as Metropolitan's TOP, absent gross negligence or willful misconduct by AEPCO.

The combined annual cost of the services provided by AEPCO and ACES to Metropolitan is approximately $1.3 million. Approximately two-thirds of the annual cost is for energy scheduling services provided by ACES, with the remaining third for the various TOP functions provided by AEPCO. The overall cost of the TOP and STS services are within industry norms, and save Metropolitan significant costs for both staff and infrastructure.

Proposed Amendments to Termination Provisions in PSOS and STS Agreements

As noted, both agreements will remain in effect until December 31, 2035, unless either party chooses to terminate them earlier with a minimum advance notice of three years. In addition, the STS Agreement must remain in effect during the term of the PSOS Agreement. These provisions are reflective of Metropolitan's desire to maintain stable, long-term operating conditions for the CRATS. These termination provisions also reflect AEPCO's desire to preserve the STS Agreement in order to make its relationship with Metropolitan cost-effective.

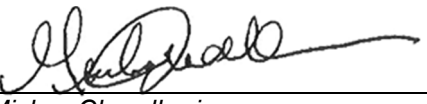
NERC classifies transmission facilities as low-, medium-, or high-impact, based on their potential to impact the Bulk Electric System (BES). AEPCO's provision of services under the PSOS Agreement is premised on NERC's current classification of the CRATS as a "low-impact" facility. Examples of medium- or high-impact systems would include those of SCE, Pacific Gas & Electric Co., and the Los Angeles Department of Water and Power. As Metropolitan's TOP, AEPCO must comply with all of the reliability standards applicable to the CRATS, and

higher impact levels result in a higher number of applicable standards and requirements, a greater expenditure of resources, and additional risk. In particular, AEPCO's existing control center would not be capable of performing the TOP function for the CRATS if it was reclassified as medium- or high-impact. Reclassification would require AEPCO to construct, staff, and operate a fully capable auxiliary control center. While there is no immediate likelihood of such a change in classification, electric upgrades of the CRATS or significant changes to the surrounding interconnected transmission grid could potentially result in such a change in the future.

Under the proposed amendment to the PSOS Agreement (see **Attachment 1**), any acquisition or modification of BES facilities by Metropolitan that elevate the impact rating of AEPCO's control centers to either medium- or high-impact facilities would trigger a consultation process. If the parties are unable to prevent the impact rating change through "commercially reasonable actions," AEPCO would "provide MWD with as much advance written notice of termination as possible, but in no event less than one (1) year." Also, due to the commercially interrelated nature of the PSOS and STS agreements, a proposed amendment to the STS Agreement (see **Attachment 2**) would permit Metropolitan to simultaneously terminate the STS Agreement if AEPCO exercises the one-year termination option in the PSOS Agreement.

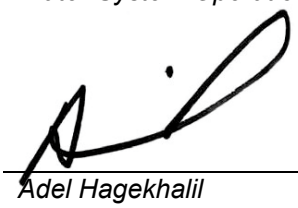
Proposed Amendment to Credit Services Provision in STS Agreement

Under Section 7.3 of the STS Agreement ("Credit Services"), AEPCO is required, in consideration of the $1 million deposit referenced above, to "use its creditworthiness and credit thresholds with its power supplying creditworthy counterparties" to make real-time, hour-ahead, and day-ahead purchases on Metropolitan's behalf. During the term of the STS Agreement, the CAISO has required AEPCO, as Metropolitan's Scheduling Coordinator, to post collateral on multiple occasions in order to facilitate Metropolitan's transactions. The proposed amendment to Section 7.3 (see **Attachment 2**) would clarify that (1) Metropolitan is responsible for any out-of-pocket costs or liability that AEPCO incurs in utilizing its creditworthiness or credit thresholds on Metropolitan's behalf and (2) AEPCO's Class A members have priority access to AEPCO's creditworthiness or credit thresholds. Staff is currently exploring mechanisms by which Metropolitan can establish creditworthiness directly with the CAISO for its transactions.



1/23/2024

Mickey Chaudhuri *Date*
Interim Group Manager,
Water System Operations



1/25/2024

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Proposed Amendment to PSOS Agreement

Attachment 2 – Proposed Amendment to STS Agreement

Ref# wso12693924

FIRST AMENDMENT TO THE POWER SYSTEM OPERATION SERVICES AGREEMENT

This First Amendment to the Power System Operation Services Agreement ("**Amendment**") is entered into this __ day of _____, 2023, by and between Metropolitan Water District of Southern California ("**MWD**"), a governmental utility operating under the laws of the State of California, and Arizona Electric Power Cooperative, Inc. ("**AEPCO**"), a non-profit cooperative corporation organized under the generation and transmission electric cooperative laws of the State of Arizona. MWD and AEPCO are also hereinafter referred to individually as a "Party" or collectively as the "Parties."

WHEREAS**,** the Parties entered into that certain Power System Operation Services Agreement dated August 28, 2017 ("**PSOS Agreement**"), whereby AEPCO provides certain power system operation services to MWD; and

WHEREAS, the Parties wish to amend the PSOS Agreement to add a new termination provision.

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

1. Section 5.4 of the PSOS Agreement is hereby amended to read in its entirety as follows:

   "Unless this Agreement is terminated pursuant to Section 5.5, 5.6, 5.7, 5.8 or 5.11, either Party may terminate this Agreement with or without cause by giving the other Party no less than three (3) years prior written notice of such termination. The Parties may terminate the Agreement by mutual agreement at any time."

2. The PSOS Agreement is hereby amended by adding a new Section 5.11, which shall read in its entirety as follows:

   "5.11 CIP Compliance. The Parties recognize that certain acquisitions of BES Facilities by MWD or modifications to the existing MWD BES Facilities, which result in an MWD Facility or BES Cyber System being classified as a medium-impact or high-impact facility under the criteria in the CIP-002 Reliability Standard, may have the effect of elevating the impact rating of AEPCO's control centers from medium-impact facilities to high-impact facilities under such criteria, rendering AEPCO's control centers subject to compliance with the NERC CIP Reliability Standards' high-impact requirements by virtue of AEPCO's designation as MWD's TOP. In the event that AEPCO reasonably and objectively determines, upon evaluating all relevant data and/or information available to the Parties, that a MWD BES Facility or BES Cyber System meets the definition of a medium-impact or high-impact facility under the criteria in the CIP-002 Reliability Standard, then AEPCO shall promptly notify MWD in writing, setting forth in detail the basis for AEPCO's determination. Upon such notice, the Parties shall meet and confer in good faith to (1) discuss whether MWD concurs with AEPCO's determination and (2) determine whether any commercially reasonable actions may be taken by the Parties to

prevent the MWD BES Facility or BES Cyber System from becoming a medium-impact or high-impact facility under the criteria in the CIP-002 Reliability Standard and AEPCO's control centers from becoming subject to compliance with the NERC CIP Reliability Standards' high-impact requirements. Notwithstanding anything to the contrary in this Agreement, if, at any time after the meet-and-confer, AEPCO determines in good faith that AEPCO must terminate this Agreement to prevent AEPCO's control centers from becoming subject to the NERC CIP Reliability Standards' high-impact requirements, then AEPCO shall have the option to terminate this Agreement upon written notice to MWD; provided, however, that AEPCO shall provide MWD with as much advance written notice of termination as possible, but in no event less than one (1) year."

3. This Amendment modifies the PSOS Agreement only as expressly provided herein. All other terms, conditions and provisions of the PSOS Agreement shall remain in full force and effect.

4. The Parties may execute this Amendment in multiple counterparts, each of which constitutes an original, and all of which, collectively, constitute only one Amendment.

5. This Amendment shall be effective and binding on each Party as of the date of the last Party to execute the Amendment.

[*Signature Page Follows*]

IN WITNESS WHEREOF, the Parties have caused this Amendment to be executed and delivered by their respective duly authorized officers as of the date set forth.

ARIZONA ELECTRIC POWER COMPANY, INC.

By: _____

Name: Patrick F. Ledger

Title: Executive Vice President and Chief Executive Officer

Date: _____

METROPOLITAN WATER DISTRICT

By: _____

Name: _____

Title: _____

Date: _____

FIRST AMENDMENT TO THE SCHEDULING AND TRADING SERVICES AGREEMENT

This First Amendment to the Scheduling and Trading Services Agreement ("**Amendment**") is entered into this __ day of _____, 2023, by and between Metropolitan Water District of Southern California ("**MWD**"), a governmental utility operating under the laws of the State of California, and Arizona Electric Power Cooperative, Inc. ("**AEPCO**"), a non-profit cooperative corporation organized under the generation and transmission electric cooperative laws of the State of Arizona. MWD and AEPCO are also hereinafter referred to individually as a "Party" or collectively as the "Parties."

WHEREAS**,** the Parties entered into that certain Scheduling and Trading Services Agreement dated August 28, 2017 ("**S&T Agreement**"), whereby AEPCO provides certain scheduling and trading services to MWD; and

WHEREAS, the Parties wish to amend the S&T Agreement to add a new termination provision and to modify the credit services provision.

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

1. Section 5.2 of the S&T Agreement is hereby amended to read in its entirety as follows:

   "Unless this Agreement is terminated pursuant to Section 5.3, 5.4 or 5.7, either Party may terminate this Agreement, with or without cause, by giving the other party no less than three years' prior written notice of such termination. The Parties may terminate the Agreement by mutual agreement at any time."

2. The S&T Agreement is hereby amended by adding a new Section 5.7, which shall read in its entirety as follows:

   "In the event that AEPCO elects to terminate the PSOS Agreement pursuant to Section 5.11 of that agreement, MWD may terminate this Agreement, with or without cause, by giving AEPCO no less than one (1) year prior written notice of such termination."

3. Section 7.3 of the S&T Agreement is hereby amended to read in its entirety as follows:

   "Section 7.3 Credit Services: In consideration of the Deposit Account provided for in Section 8.3 hereof, AEPCO shall use its creditworthiness and credit thresholds with its power supplying creditworthy counterparties for purposes of making MWD Real-time Purchases, MWD Day Ahead Purchases, and MWD Forward Purchases, and selling excess energy available to MWD to creditworthy on MWD's behalf. MWD shall seek to establish its own credit and credit thresholds with such Creditworthy counterparties sufficient in magnitude to replace AEPCO's use of its creditworthiness and credit thresholds on MWD's behalf for the purposes of MWD Forward Transactions. AEPCO shall assist MWD in its efforts to establish creditworthiness and credit thresholds with creditworthy counterparties.

In the event the monthly invoice to MWD rendered pursuant to Section 9 hereof exceeds and is expected to continue to exceed the amount retained in the Deposit Account pursuant to Section 8.3, AEPCO may provide MWD with evidence of such exceedance, and MWD shall increase the amount in the Deposit Account to an amount mutually agreeable to the Authorized Representatives. In connection with the foregoing, to the extent AEPCO uses its creditworthiness and credit thresholds on behalf of MWD, including any posting of collateral or draw on collateral by a counterparty, MWD shall (i) pay any out-of-pocket costs of AEPCO in using such creditworthiness and credit thresholds and (ii) indemnify, defend and hold harmless AEPCO for any liability, loss, damage, claim, cost or expense AEPCO incurs arising out of or resulting from its use of such creditworthiness and credit thresholds in connection with the transactions contemplated hereby (except to the extent such liabilities, losses, damages, claims, costs and or expenses occur as a result of AEPCO's failure to perform its obligations under this Agreement). MWD acknowledges that AEPCO may use its creditworthiness and credit thresholds on behalf of other members or third parties, and that AEPCO may utilize its credit thresholds on behalf of other members in priority to use of its credit thresholds on behalf of MWD."

4. This Amendment modifies the S&T Agreement only as expressly provided herein. All other terms, conditions and provisions of the S&T Agreement shall remain in full force and effect.

5. The Parties may execute this Amendment in multiple counterparts, each of which constitutes an original, and all of which, collectively, constitute only one Amendment.

6. This Amendment shall be effective and binding on each Party as of the date of the last Party to execute the Amendment.

[*Signature Page Follows*]

IN WITNESS WHEREOF, the Parties have caused this Amendment to be executed and delivered by their respective duly authorized officers as of the date set forth.

ARIZONA ELECTRIC POWER COMPANY, INC.

By: _____

Name: Patrick F. Ledger

Title: Executive Vice President and Chief Executive Officer

Date: _____

METROPOLITAN WATER DISTRICT

By: _____

Name: _____

Title: _____

Date: _____

Engineering, Operations, and Technology Committee

Authorize Amendments to the Agreements with the Arizona Electric Power Cooperative (AEPCO)

Item 7-6

February 12, 2024

Item 7-6

Authorize Amendments to the Agreements with the Arizona Electric Power Cooperative (AEPCO)

Subject

Authorize amendments to the Power System Operation Services (PSOS) Agreement and Scheduling and Trading Services (STS) Agreement, both with the Arizona Electric Power Cooperative, related to the termination and credit services provisions of those agreements

Purpose

Approve revisions to the PSOS and STS to reflect changes in the electric compliance environment and to mitigate perceived regulatory and financial risks

Recommendation and Fiscal Impact

Recommendation – Approve proposed amendments

Fiscal Impact – No immediate fiscal impact

CRA Transmission System

- 300+ Miles of 230 kV & 69 kV transmission
- 10 power transformer banks at 5 pumping plants
- 13 high-voltage breakers (plus 4 owned by Southern California Edison)
- 1 switching station (Camino)
- Interconnections with SCE & WAPA

Operating Agreements with AEPCO/ACES

Amendments to AEPCO Agreements

- Southern California Edison (SCE) previously operated the CRA transmission system for Metropolitan
- Replaced by AEPCO and ACES Power Marketing at the expiration of the 30-year agreement in 2017
- Two agreements cover the AEPCO and Metropolitan relationship
  - Power System Operation Services agreement (PSOS) covers the NERC(*) Transmission Operator (TOP) and related functions
  - Scheduling & Trading Services agreement (STS) covers Metropolitan's energy procurement and related market activities

(*) NERC – North American Electric Reliability Corporation

NERC Risk Categories

Reflects potential impact to the grid

High Impact

Medium Impact

Metropolitan's 230 kV transmission system classified as Low Impact

Amendments to AEPCO Agreements

AEPCO/ACES concerns

- Metropolitan is the largest single AEPCO member
- Reclassification of the 230 kV CRA system from low to medium impact would impose significant new obligations and costs on AEPCO
- Market volatility, declining USBR generation, and higher energy prices have caused the CAISO to request greater collateral deposits from market participants
- AEPCO has concerns that Metropolitan's membership may impose unmitigated risks on AEPCO's other members

Amendments to AEPCO Agreements

Proposed changes to the agreements

Modifications negotiated with AEPCO's senior management:

Power System Operation Services (PSOS)

- Reduces the termination notice from 3 years to 1 year if the 230 kV CRA transmission system's NERC reliability impact level is upgraded from low impact to medium/high

Scheduling & Trading Services (STS)

- Reduces termination notices & specifies how Metropolitan will indemnify AEPCO for credit risks

Amendments to AEPCO Agreements

Impact of changes to Metropolitan

- Minimal operational impact
  - The risk of a NERC impact classification upgrade is likely very small
- No immediate financial impact
  - Metropolitan already covers its portion of the increased CAISO collateral demands so this would formalize what is currently done in practice
- Provides excellent value to Metropolitan
  - AEPCO's combined costs for both TOP and STS functions are well within industry norms at $1.3 million/year

Amendments to AEPCO Agreements

Recommended next steps

- Seek approvals for PSOS & STS Agreement Modifications
  - Metropolitan Board on February 13, 2024
  - AEPCO Board in second half of February 2024
- Continued analysis to investigate future alternatives, if needed, for meeting Metropolitan's TOP and STS functions

Board Options

- Option #1
  - Authorize amendments to the PSOS and STS Agreements, both with the Arizona Electric Power Cooperative, related to the termination and credit services provisions of those agreements
- Option #2
  - Do not authorize amendments to the PSOS and STS Agreements

Board Options

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

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

2/13/2024 Board Meeting

8-1

Subject

Authorize increase in change order authority for three contracts to conduct urgent rehabilitation of prestressed concrete cylinder pipe on the Allen-McColloch Pipeline: (1) a $12 million increase for Contract 2002 with Northwest Pipe Company, (2) a $10.5 million increase for Contract 2026 with J.F. Shea Construction Inc., and (3) a $2 million increase for Contract 2088 with Structural Preservation Systems; the General Manager has determined that the proposed actions are exempt or otherwise not subject to CEQA

Executive Summary

The Allen-McColloch Pipeline (AMP) is a 26-mile-long pipeline that delivers treated water from the Diemer plant to south Orange County. Constructed in the late 1970s, the AMP consists of 17 miles of welded steel pipe and nine miles of prestressed concrete cylinder pipe (PCCP). A recent electromagnetic inspection of the AMP identified 81 distressed pipe segments, 44 of which contain at least 20 broken prestressing wires, and one segment with approximately 130 wire breaks. Pipe segments with these levels of distress warrant prompt rehabilitation. Based on the locations of the distressed sections and their condition, staff recommends near-term rehabilitation of the most distressed pipe segments as soon as possible. As an interim mitigation measure, the operating pressures along the pipeline have been reduced to reduce the immediate risks to the pipeline.

To enhance Metropolitan's ability to promptly respond to these urgent conditions, staff recommends that this urgent rehabilitation work along portions of the AMP be conducted as change orders to three ongoing contracts. The three contracts are currently in place to provide steel pipe sections, install steel pipe sections, and install carbon fiber lining on other Metropolitan projects. Using existing contractors to perform the urgent work on the AMP represents the most cost-effective and expeditious means to complete the rehabilitation. The initial urgent rehabilitation work is expected to take place in April 2024. This action authorizes an increase in the General Manager's authority to execute change orders for three construction contracts currently underway to rehabilitate portions of the AMP. 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

Authorize increase in change order authority for three contracts to conduct urgent rehabilitation of prestressed concrete cylinder pipe on the Allen-McColloch Pipeline, as follows:

a. Authorize an increase in change order authority of $12 million to Contract 2002 with Northwest Pipe Company.
b. Authorize an increase in change order authority of $10.5 million to Contract 2026 with J.F. Shea Construction Inc.
c. Authorize an increase in change order authority of $2 million to Contract 2088 with Structural Preservation Systems.

Fiscal Impact: Expenditure of $31.546 million in capital funds. Approximately $6.0 million in capital funds will be incurred in the current biennium and have been previously authorized. The remaining funds for this

action will be accounted for in the Capital Investment Plan (CIP) budget for the next biennium following board approval of the budget.

Business Analysis: This option will protect Metropolitan's assets, enhance delivery reliability to member agencies, and complete rehabilitation of the most distressed PCCP pipe segments on the AMP in a timely manner.

Option #2

Do not authorize increases in change order authority to perform urgent rehabilitation of the AMP.

Fiscal Impact: None

Business Analysis: Under this option, staff would advertise the work for construction bids. The AMP would not return to normal operating pressures until Winter 2024/25, potentially limiting water deliveries to member agency service connections for a longer period.

Alternatives Considered

Staff evaluated two options to conduct urgent rehabilitation of the PCCP portions of the AMP. The first option would rehabilitate as many distressed pipe segments as possible within a three-week shutdown in April 2024. This approach would target the pipe segments with the highest number of wire breaks along the entire nine-mile PCCP portion of the AMP. However, this relatively short shutdown would not allow rehabilitation of all the pipe segments with an elevated number of wire breaks and would require reduced operating pressures for an extended period.

The second option would rehabilitate all the pipe segments north of the OC-88 Pump Station with an elevated number of wire breaks within a three-week shutdown in April 2024. This approach would allow the northern 23 miles of the AMP to be restored to normal operating pressures and service at the end of the three-week shutdown at the end of April 2024. The remaining portion of the AMP south of the OC-88 Pump Station, approximately 2.6 miles, would be isolated during the initial shutdown with a bulkhead at OC-88 Pump Station and rehabilitated during a lengthier shutdown immediately after the first shutdown is completed. This approach was chosen after consultation with the Municipal Water District of Orange County (MWDOC) and their member agencies. These discussions determined that the southern reach of the AMP could be shut down for a longer duration by utilizing alternative sources of water delivery during the extended shutdown. This alternative is a cost-effective approach that manages the risks associated with the AMP and minimizes the service interruption to member agencies.

Staff considered advertising the work on the AMP north of the OC-88 Pump Station as a separate stand-alone construction contract. The time required to implement this standard approach, including preparing detailed design drawings and specifications and soliciting and vetting bids, would delay the start of construction on the northern part of the AMP until May. Whereas under the recommended contracting approach, the planned construction would be complete and operating pressures and flows on the northern portion of the AMP could be returned to normal service in May.

Applicable Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations 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 52778, dated April 12, 2022, the Board appropriated a total of $600 million for projects identified in the CIP for Fiscal Years 2022/2023 and 2023/2024.

By Minute Item 53096, dated January 10, 2023, the Board awarded a $68,847,000 contract to J.F. Shea Construction Inc. to rehabilitate Reach 3B of the Second Lower Feeder.

By Minute Item 53347, dated August 15, 2023, the Board awarded a $1,962,691 contract to Structural Preservation Systems for urgent relining of the Sepulveda Feeder.

By Minute Item 53446, dated November 14, 2023, the Board awarded a $16,055,500 contract to Northwest Pipe Company to furnish steel pipe to rehabilitate a portion of the Lakeview Pipeline.

Future board actions are planned for the award of construction contracts for the Allen-McColloch Pipeline Rehabilitation.

Summary of Outreach Completed

Metropolitan staff has collaborated extensively with the member agencies to determine the timing and length of the AMP shutdowns. This collaboration successfully identified the recommended approach to implementing the rehabilitation work. In addition, a significant public outreach effort will be performed prior to construction to inform residents in the vicinity of construction activities.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed action involves the repair of an existing pipeline less than one mile in length to prevent or mitigate an emergency. Accordingly, the proposed action qualifies for statutory exemptions (Sections 21080(b) of the Public Resources Code and Sections 15269 of the State CEQA Guidelines.)

CEQA determination for Option #2:

None required

Details and Background

Background

The AMP is a 26-mile-long pipeline that was constructed in the 1970s and conveys treated water from the Diemer plant in Yorba Linda into Orange County. The northern 17-mile portion of the AMP consists of welded steel pipe. The southern 9-mile portion consists of PCCP that varies in diameter from 54 inches to 84 inches. Metropolitan acquired the AMP from the MWDOC in 1985. The AMP delivers water to the MWDOC and its retail agencies.

Over the last several decades, water agencies throughout the United States and several other countries have found that, under certain conditions, PCCP lines have a reduced service life and elevated risk of failure as compared with other types of pipes. PCCP failures can be catastrophic and can occur without forewarning, compromising system reliability and resulting in significant costs due to interruption of service, unplanned major repairs, and potential damages to third-party properties. In response to this risk, Metropolitan initiated a comprehensive program in September 2011 to inspect, manage, and rehabilitate its 163 miles of PCCP lines.

A strategic element of Metropolitan's PCCP Rehabilitation Program is to aggressively inspect all 27 PCCP lines. In November 2023, an electromagnetic inspection was conducted on the nine miles of the PCCP section of the AMP; this is the fifth inspection within 23 years. In December 2023, Metropolitan received an inspection report, which identified 81 new distressed pipe segments; 44 pipe segments had 20 or more wire breaks, with one pipe segment having 130 wire breaks. Staff evaluated the potential risks due to the prestressing wire breaks and concluded that the distressed PCCP segments need to be rehabilitated as soon as possible. To mitigate the immediate risks, the operating pressure along the pipeline was immediately lowered. The reduced operating criteria will be in effect until the distressed portions of pipeline are rehabilitated.

Staff recommends that the rehabilitation of the AMP proceed expeditiously in two stages. The primary goal of Stage 1 is to make sufficient rehabilitations to this portion of the pipeline so that the northernmost 23 miles of the AMP can be returned to full-service conditions upon completion of the initial shutdown. Stage 1 scope of work will: (1) steel line all critical distressed PCCP pipe segments upstream of the OC-88 Pump Station with approximately 2,120 feet of welded steel liner pipe; (2) carbon fiber reinforced polymer (CFRP) line approximately 38 feet (three pipe segments) of PCCP; (3) install a temporary bulkhead just downstream of the pump station; and time permitting; and (4) steel line approximately 2,320 feet of PCCP with welded steel line pipe downstream of the OC-88 Pump Station. The work upstream of the OC-88 Pump Station will be completed

by May 2024, and this portion of the AMP will be returned to full operating pressures. Stage 2 work will reline all remaining PCCP pipe segments downstream of the OC-88 Pump Station with approximately 2.6 miles of welded steel liner pipe during a July through December 2024 shutdown. At the completion of Stage 2, all PCCP pipe south of OC-88 Pump Station will be relined. The temporary bulkhead will be removed at the conclusion of the Stage 2 work.

To accomplish the urgent Stage 1 rehabilitations, staff recommends taking advantage of change order authority on three existing contracts. Two of these contracts already involve making rehabilitations to PCCP pipelines. The third contract is supplying steel pipe for a future pipeline rehabilitation project. In January 2023, a $68.85 million contract (Contract 2026) was awarded to J.F. Shea Construction Inc. to install approximately 19,500 feet of welded steel liner pipe within a PCCP portion of the Second Lower Feeder in the cities of Los Angeles, Torrance, and Lomita. The project, referred to as Second Lower Feeder Reach 3B, is approximately 30 percent complete and scheduled to be completed by November 2025. In August 2023, a $1.96 million contract (Contract 2088) was awarded to Structural Preservation Systems for urgent CRFP relining of three pipe segments on the Sepulveda Feeder. The project is five percent complete and is scheduled to be completed by May 2024. In November 2023, a $16.05 million procurement contract (Contract 2002) was awarded to Northwest Pipe Company for the fabrication of 12,500 feet of steel pipe to rehabilitate a portion of the Lakeview Pipeline. The project is 15 percent complete and is scheduled to be completed by December 2024. The project is scheduled to be completed by approximately December 2025. The use of these three existing contracts to conduct this urgent work will significantly enhance Metropolitan's ability to implement the required rehabilitations in a timely and cost-effective manner.

Metropolitan's Administrative Code authorizes the General Manager to execute change orders on construction contracts in an aggregate amount not to exceed five percent of the initial amount of the contract or $250,000, whichever is greater. If changes occur on a construction contract that will exceed this total, additional authorization from Metropolitan's Board is required. The proposed change orders to steel line a total of 4,400 feet of PCCP, install carbon fiber lining on three pipe segments of the AMP, and fabricate 3.45 miles of steel liner pipe will exceed the General Manager's Administrative Code authority. As a result, an increase in the maximum change order amount on the three existing contracts is requested at this time.

Lakeview Pipeline Relining, Stage 2 Pipe Procurement – Increase in Change Order Authority (Contract 2002)

The recommended additional work to be added to the existing contract will include furnishing approximately 3.45 miles of steel pipe sections in diameters that vary from 48 to 72 inches. This quantity of steel pipe represents all the pipe necessary for Stages 1 and 2 work described above. Procurement of the liner pipe is a critical path activity for the urgent AMP rehabilitation plan due to the long lead time necessary to fabricate pipe. Execution of a new contract to procure this lining pipe would not allow the work to be completed within the current shutdown windows.

The type of work to be conducted by the contractor, as part of the proposed change order, is identical to the type of work the contractor has been performing under Contract 2002 for the Lakeview Pipeline Relining project. Staff is negotiating a price for this work that is appropriate and cost-effective since the contractor is already mobilized and is performing the same type of work.

Per Metropolitan's Administrative Code, the General Manager has the authority to execute change orders for this contract in an aggregate amount not to exceed five percent of the initial amount of the contract. For this contract, the maximum change order authority is $802,775. To date, staff has not executed any change orders on this contract. To address the newly identified AMP relining, staff recommends that the change order authority be increased by $12 million for a new maximum change order authority of $12,802,775 for this contract.

This action authorizes an increase of $12 million in the General Manager's authority to execute change orders for urgent relining on Contract 2002.

Second Lower Feeder Reach 3B, PCCP Rehabilitation – Increase in Change Order Authority (Contract 2026)

The recommended additional work to be added to the existing contract will include relining approximately 4,400 feet of existing PCCP segments on the AMP with steel pipe liners designed to accommodate full internal and external pressures on the line. This is a similar approach to the work on other PCCP rehabilitation projects and is identical to the type of work the contractor has been performing under Contract 2026 for the Second Lower

Feeder PCCP Reach 3B Rehabilitation project. Staff is negotiating a price for this work that is appropriate and cost-effective since the contractor is already mobilized and is performing the same type of work. Execution of a new contract to reline the deteriorated portions of the AMP would not make the work possible within the current shutdown windows.

Per Metropolitan's Administrative Code, the General Manager has the authority to execute change orders for this contract in an aggregate amount not to exceed five percent of the initial amount of the contract. For this contract, the maximum change order authority is $3,442,350. To date, staff has not executed any change orders. To address the newly identified PCCP relining, staff recommends that the change order authority be increased by $10.5 million, for a new maximum change order authority of $13,942,350 for this contract.

This action authorizes an increase of $10.5 million in the General Manager's authority to execute change orders for needed PCCP rehabilitation.

Sepulveda Feeder PCCP, Urgent Carbon Fiber Lining – Increase in Change Order Authority (Contract 2088)

The recommended additional work to be added to the existing contract will include carbon fiber lining three PCCP segments on the AMP. The PCCP segments are 66, 69, and 78 inches in diameter, with lengths of 8 feet, 19 feet, and 11 feet, respectively. The type of work to be conducted by the contractor, as part of the proposed change order, is identical to the type of work the contractor has been performing under Contract 2088 for the Sepulveda Feeder Urgent CFRP Relining project. Execution of a new contract to procure this carbon fiber lining would not make the work possible within the current shutdown windows. Staff is negotiating a price for this work that is appropriate and cost-effective since the contractor is already mobilized and is performing the same type of work on the Sepulveda Feeder.

Per Metropolitan's Administrative Code, the General Manager has the authority to execute change orders for this contract in an aggregate amount not to exceed five percent of the initial amount of the contract. For this contract, the maximum change order authority is $250,000. To date, staff has not executed any change orders. To address the newly identified PCCP relining, staff recommends that the change order authority be increased by $2 million, for a new maximum change order authority of $2.25 million for this contract.

This action authorizes an increase of $2 million in the General Manager's authority to execute change orders for urgent PCCP carbon fiber lining.

Allen-McColloch Pipeline, Urgent PCCP Rehabilitation– Metropolitan Staff Activities

To address the urgent relining, additional Metropolitan staff activities will be required including: (1) obtaining permits; (2) shutdown of the feeder and establishment of clearances; (3) final disinfection and water quality testing; (4) return of the pipeline to service; and (5) construction inspection and technical support during construction.

A total of $31.546 million is required for this work. The total increase to the existing contract amounts for the work described above is $24.5 million, with other budgeted funds including the following: $1,490,000 for shutdown-related activities and materials by Metropolitan staff; $2,622,000 for fabrication and construction inspection; $960,000 for submittals review, technical support during construction, responding to requests for information, and preparation of record drawings; $774,000 for contract administration, outreach, permits, and project management; and $1,200,000 for remaining budget. The total estimated cost to complete the rehabilitation of all PCCP portions of the AMP, including the amount appropriated to date, this current board action, and all future design and construction costs, is anticipated to range from $230 million to $270 million.

Summary

This action authorizes an increase in the General Manager's authority to execute change orders for three construction contracts currently underway to rehabilitate portions of the AMP. The recommended change order increases are based on the original contract costs and are appropriate and cost-effective. However, Metropolitan staff has not completed negotiations with the contractors on the additional scope and price of the work and will return to the Board if additional change order authority is required.

The urgent work on the AMP, recommended in this action, which comprise Stage 1 and Stage 2 rehabilitations, will address the highest priority portions of the pipeline that need to be rehabilitated based on the results of the 2023 inspections. These newly recommended activities effectively accelerate Metropolitan's overall planned activities to rehabilitate the PCCP portions of the AMP ahead of the schedule that is currently shown in the current CIP Appendix. Planned CIP expenditures for Metropolitan's overall PCCP program for the upcoming biennium will be adjusted accordingly upon board approval of the recommended urgent relining work on the AMP.

Project Milestones

December 2023 – Began mitigation measures to reduce AMP operating pressures.

January 2024 – Began steel pipe fabrication under existing change order authority.

May 2024 – Return AMP north of OC-88 Pump Station to normal operating conditions.

December 2024 – Return AMP south of OC-88 Pump Station to normal operating conditions.

1/23/2024

John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

1/26/2024

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocations of Funds

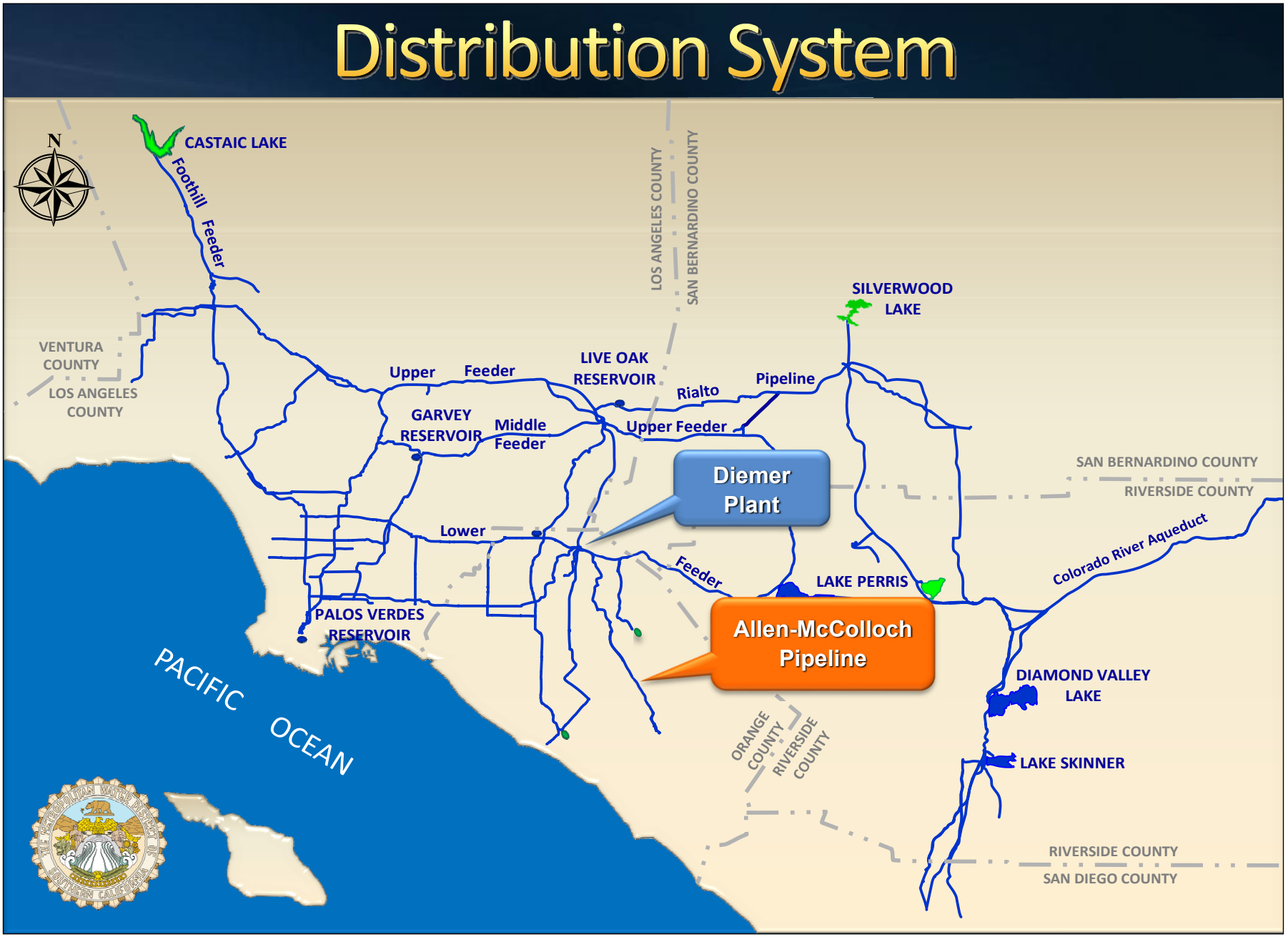
Attachment 2 – Location Map

Ref# es12692068

Allocation of Funds for Urgent PCCP Rehabilitation – Allen-McColloch Pipeline

	Current Board Action (Feb. 2024)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	674,000
Submittals Review & Record Drwgs.	460,000
Construction Inspection & Support	2,622,000
Metropolitan Force Construction	1,340,000
Materials & Supplies	100,000
Incidental Expenses	50,000
Professional/Technical Services	
Brown & Caldwell	500,000
Public Outreach	50,000
Enviromental Monitoring	50,000
Right-of-Way	-
Equipment Use	-
Contracts	-
Northwest Pipe Company	12,000,000
J.F. Shea Construction Inc.	10,500,000
Structural Preservation Systems	2,000,000
Remaining Budget	1,200,000
Total	**$ 31,546,000**

The amount expended to date to rehabilitate prestressed concrete cylinder pipe (PCCP) portions of the Allen-McColloch Pipeline is $3.36 million. The total estimated cost to complete all the PCCP Rehabilitation of the Allen-McColloch Pipeline, including the funds allocated for the work described in this action, and future actions is anticipated to range from $230 million to $270 million.


Distribution System
N
CASTAIC LAKE
Foothill Feeder
VENTURA COUNTY
LOS ANGELES COUNTY
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
SILVERWOOD LAKE
Upper Feeder
LIVE OAK RESERVOIR
Rialto Pipeline
GARVEY RESERVOIR
Middle Feeder
Upper Feeder
Diemer Plant
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
Lower Feeder
Colorado River Aqueduct
LAKE PERRIS
PALOS VERDES RESERVOIR
Allen-McColloch Pipeline
PACIFIC OCEAN
DIAMOND VALLEY LAKE
ORANGE COUNTY
RIVERSIDE COUNTY
LAKE SKINNER
RIVERSIDE COUNTY
SAN DIEGO COUNTY

Engineering, Operations, & Technology Committee

Allen-McColloch Pipeline Urgent PCCP Rehabilitation

Item 8-1

February 12, 2024

Item 8-1
Allen-McColloch Pipeline Stage 1

Subject

Authorize increases in change order authority for three contracts to conduct urgent rehabilitation of prestressed concrete cylinder pipe on the Allen-McColloch Pipeline: (1) a $12 million increase for a Northwest Pipe Company contract, (2) a $10.5 million increase for a J.F. Shea Construction Inc. contract, and (3) a $2 million increase for a Structural Preservation Systems

Purpose

This action promptly responds to urgent rehabilitation work required along portions of the Allen-McColloch Pipeline

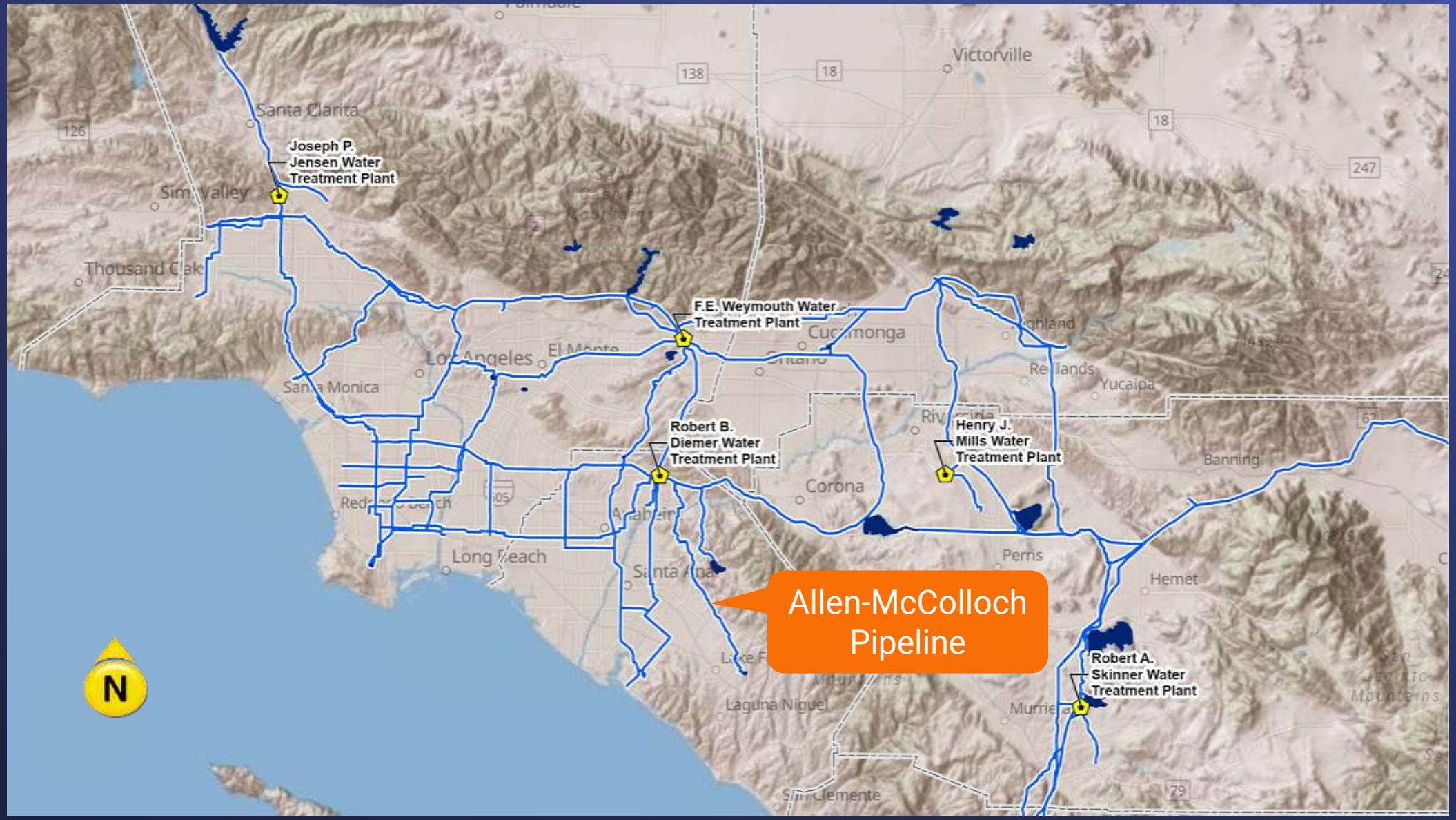
Recommendation and Fiscal Impact

Authorize increase in change order authority for three contracts

Fiscal Impact of $31.546 M

Budgeted

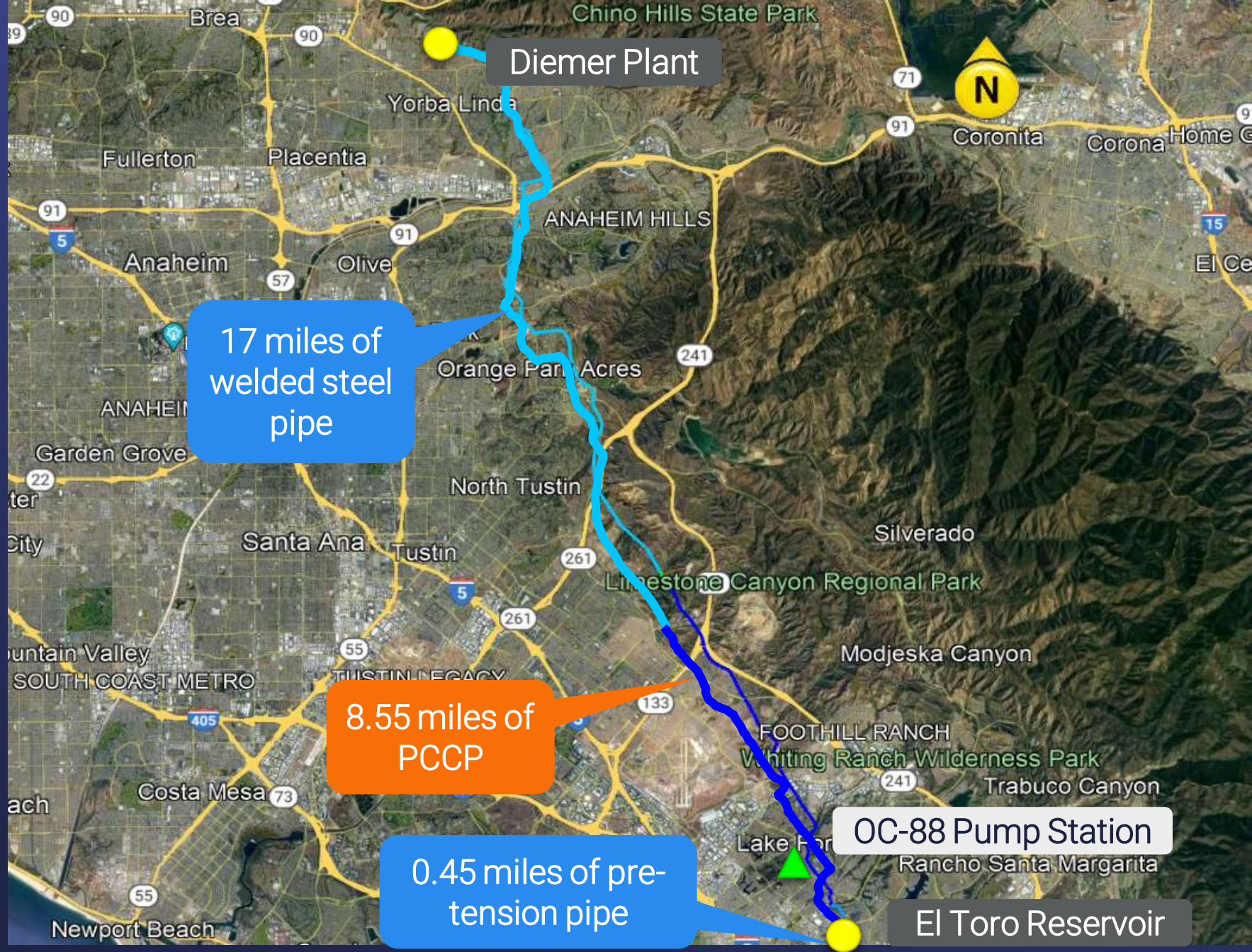
Distribution System



Allen-McColloch Pipeline (AMP)

From Diemer Plant to El Toro Reservoir

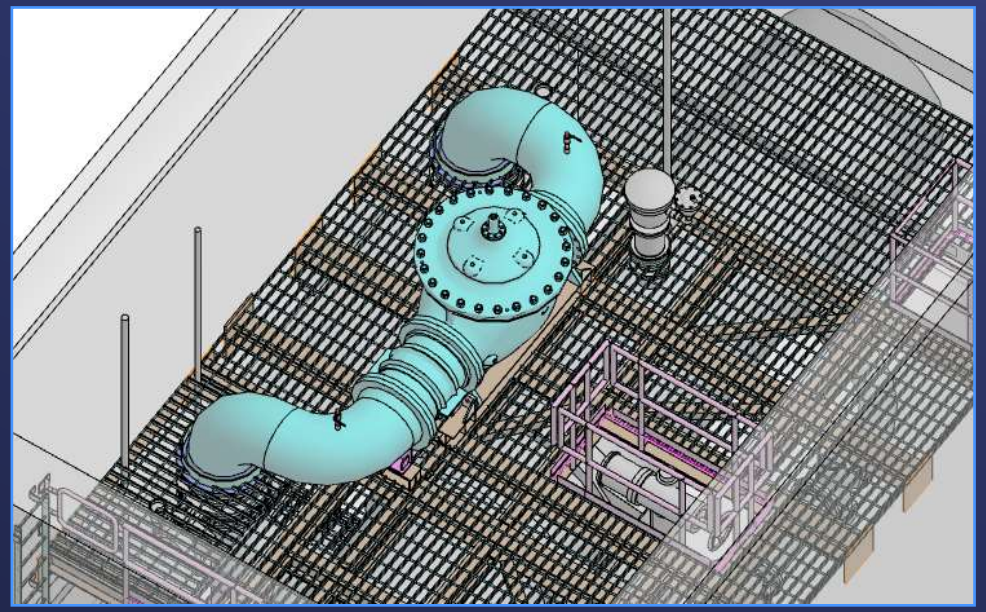
- Completed: 1981
- Acquired: 1995
- Length: 26 miles
- PCCP diameters from 54” to 78”



2023 PCCP Inspections and Immediate Actions

- Nov 2023 – Conducted electromagnetic inspections
  - 81 new distressed pipe segments
    - 44 critical (20 to 130 wire breaks each)
  - Requires urgent rehabilitation
- AMP pressure reductions
  - In coordination with Municipal Water District of Orange County
  - Dec 2023 – Adjusted gates Diemer
  - Jan 2024 – Began OC-88 sectionalizing valve bypass line replacement

Bypass line replacement as of Jan 2024 (top), 3D rendering of completed line (bottom)



Alternatives Considered

Initial Option

Rehabilitate as many pipe segments as possible within 3-week shutdown in April 2024

- Target pipe segments with highest number of wire breaks
- Unable to reline most pipe segments with elevated wire breaks
- Requires continued pressure reductions/hydraulic restrictions

Selected Option

Stage 1:

- April 2024: Install bulkhead downstream of OC-88, reline all critical segments upstream of OC-88 in 3-week shutdown
- May 2024: Continue relining small portion downstream of OC-88

Stage 2:

- June-Dec 2024: Complete relining all PCCP downstream of OC-88

Selected Option

Selected Approach – Use of Existing Contracts

Existing Contract	Board Date	Contract Amount	Original Change Order Authority	Contract Scope of Work
Contract No. 2002 Northwest Pipe	Nov. 2023	$16,050,000	$802,775	Lakeview Pipeline – furnish steel pipe
Contract No. 2026 J.F. Shea Construction Inc.	Jan. 2023	$68,850,000	$3,442,350	Second Lower Feeder PCCP rehabilitation – steel liner
Contract No. 2088 Structural Preservation Systems	Aug. 2023	$1,960,000	$250,000	Sepulveda Feeder PCCP rehabilitation – carbon fiber

Change Order Authority Increases to Existing Contracts

- Contract 2002 – Northwest Pipe Company
  - Fabricate 3.45 miles of 48-inch to 72-inch diameter steel liner
    - Includes straight pipe, specials, & transition pieces
    - Sufficient pipe for both Stage 1 and 2 relining work
  - Change order authority increase: $12 M

Pipe Fabrication
Lakeview Pipeline

- Contract 2026 – J.F. Shea Construction Inc.
  - Line approx. 4,400 ft. of existing PCCP with steel liner in Stage 1
  - Traffic control
  - Access pit excavation, backfill & site restoration
  - Change order authority increase: $10.5 M

SLF Rehabilitation

Change Order Authority Increases to Existing Contracts

- Contract 2088 – Structural Preservation Systems
  - Line three PCCP segments with carbon fiber in Stage 1
    - 66, 69 & 78 inches in diameter
  - Change order authority increase: $2 M
- Summary
  - Recommended change order prices are appropriate & cost effective

Carbon Fiber Rehabilitation
Second Lower Feeder

Change Order Authority Increase for AMP Urgent PCCP Rehabilitation

Metropolitan Scope of Work

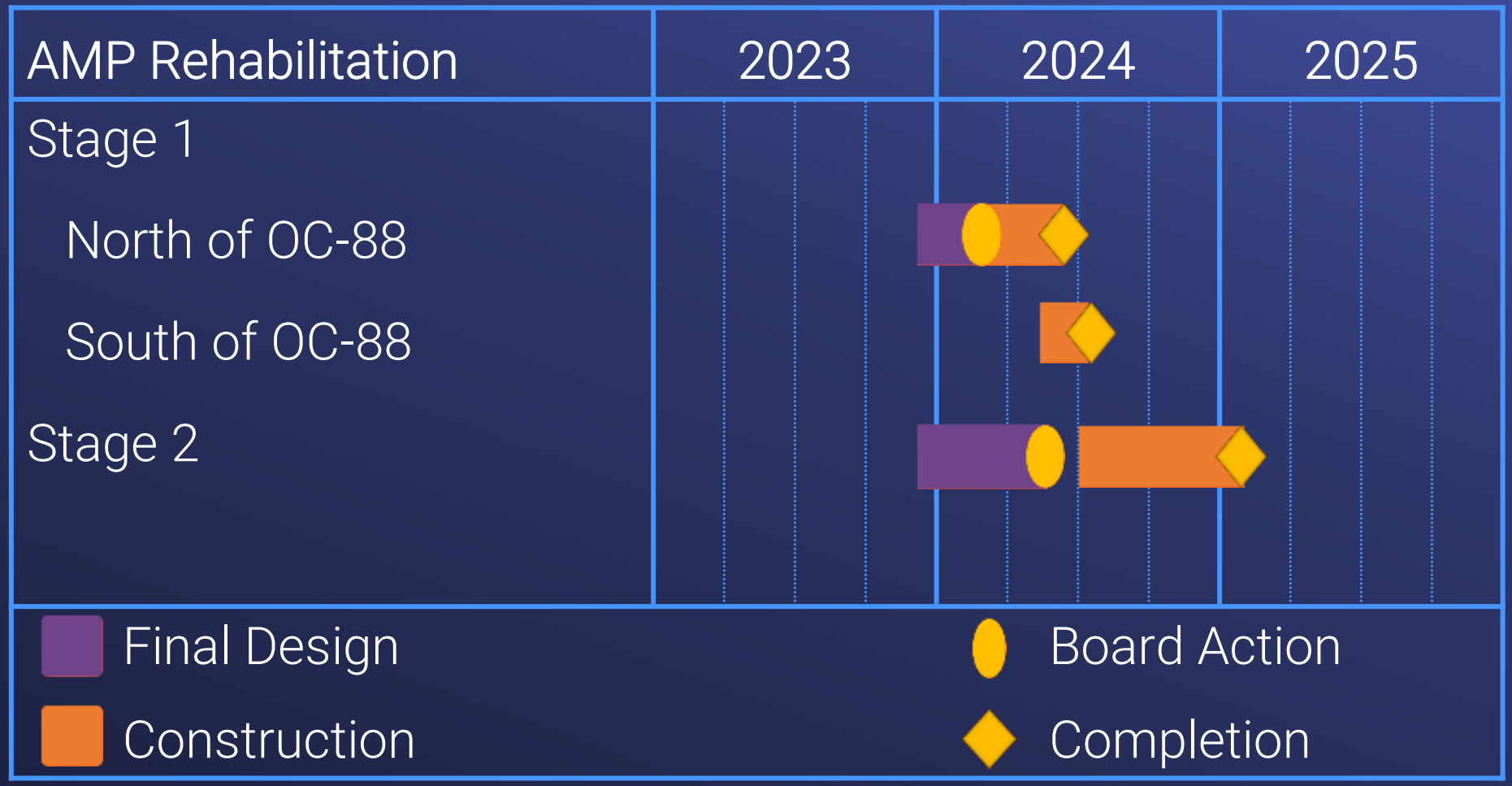
- Shutdown of feeder, disinfection & return to service
- Construction management, fabrication inspection
- Contract administration, technical support during construction, submittal review & preparation of record drawings
- Coordination with member agencies, permitting, environmental monitoring, public outreach & project management

Allocation of Funds

AMP Urgent PCCP Rehabilitation

Metropolitan Labor	
Owner Costs (Proj. Mgmt., Contract Admin., Envir. Support)	$ 674,000
Construction Inspection & Support	2,622,000
Force Construction	1,490,000
Submittals Review, Tech. Support, Record Dwgs.	460,000
Professional/Technical Services	600,000
Contracts	
Northwest Pipe Company	12,000,000
J.F. Shea Construction Inc.	10,500,000
Structural Preservation Systems	2,000,000
Remaining Budget	1,200,000
Total	$ 31,546,000

Project Schedule



Board Options

- Option #1

  Authorize increase in change order authority for three contracts to conduct urgent rehabilitation of prestressed concrete cylinder pipe on the Allen-McColloch Pipeline, as follows:

  a. Authorize increase in change order authority of $12 million to Contract 2002 with Northwest Pipe Company.
  b. Authorize increase in change order authority of $10.5 million to Contract 2026 with J.F. Shea Construction Inc.
  c. Authorize increase in change order authority of $2 million to Contract 2088 with Structural Preservation Systems.

Board Options

- Option #2

  Do not authorize increases in change order authority to perform urgent rehabilitation of the AMP.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

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

2/13/2024 Board Meeting

9-2

Subject

Strategy for Implementation of Drought Mitigation Actions in Response to the August 2022 Board Resolution

Executive Summary

Extreme drought in Northern California and the Sierra Mountains between 2020 and 2022 resulted in consecutive low allocations from the State Water Project (SWP). Metropolitan addressed the supply shortage through storage withdrawals in 2020 and 2021 and had largely depleted those reserves by the end of 2021. A third consecutive extreme dry year in 2022 severely impacted Metropolitan's ability to deliver water to parts of the service area that are highly dependent on SWP supplies and resulted in having to impose area-specific mandatory conservation in the SWP-dependent areas for the first time in Metropolitan's history. In response to the impacts, Metropolitan's Board directed staff to investigate and develop a portfolio of projects and programs that will provide the agencies in the SWP-dependent areas with equitable access to water supplies and storage assets. Staff conducted a comprehensive process over the past 18 months that included facilitated workshops with the member agencies and comprehensive updates to the Board. A recommended Drought Mitigation Action Portfolio has been developed that will help provide timely relief to the SWP-dependent areas while also allowing for a comprehensive and fiscally responsible approach to achieve long-term supply reliability.

Fiscal Impact

None

Applicable Policy

Not applicable

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

By Minute Item 52481, dated August 17, 2021, the Board adopted a resolution which declared a "Condition 2 – Water Supply Alert."

By Minute Item 52581, dated November 9, 2021, the Board adopted a resolution which declared specified emergency conditions within the Metropolitan service area.

By Minute Item 52626, dated December 14, 2021, the Board amended the Capital Investment Plan to include water supply reliability improvements in the Rialto Pipeline service area.

By Minute Item 52703, dated February 8, 2022, the Board amended the CIP to include water supply reliability for the western service area.

By Minute Item 52802, dated April 12, 2022, the Board declared a Water Shortage Emergency Condition, adopted an Emergency Water Conservation Program, and expressed support for the Governor's Executive Order N-7-22.

By Minute Item 52946, dated August 16, 2022, the Board adopted a resolution affirming Metropolitan's call to action and commitment to regional reliability for all member agencies.

By Minute Item 53377, dated September 12, 2023, the Board awarded an agreement for Phase 1 design-build services for the Sepulveda Feeder Pump Stations Project.

Details and Background

Background

Extreme drought between 2020 and 2022 resulted in the lowest cumulative 3-year total water supply allocation from the SWP. The low allocations required that Metropolitan and member agencies adjust operations and implement measures developed during the previous drought on the SWP, including start-up of the Greg Avenue Pump Station, Diamond Valley Lake deliveries to the Mills Water Treatment Plant, and the implementation of the Operational Shift Cost Offset Program. These actions allowed Metropolitan to preserve water for areas in the system that were solely dependent on SWP supplies. Despite the efforts to conserve SWP supplies, in April 2022, Metropolitan's Board approved a resolution declaring a water shortage emergency within the SWP-dependent areas and mandated an emergency water conservation program within those areas. Member agencies within the SWP-dependent areas include the Inland Empire Utilities Agency, Three Valleys Municipal Water District, and Upper San Gabriel Water District, which are supplied from the California Aqueduct East Branch; and the City of Los Angeles, Calleguas Municipal Water District, and Las Virgenes Municipal Water District, which are supplied from of the California Aqueduct West Branch.

Before implementing the mandatory conservation, in November 2021, the Board adopted a resolution declaring a regional drought emergency and directing staff to implement measures to "ensure all portions of the service area attain a high level of reliability against multi-year, severe droughts, such as system improvements, local water supply development, new water storage opportunities, and water efficiency gains." This commitment was reaffirmed in August 2022 with a second resolution and call to action. This resolution noted that with its existing infrastructure, Metropolitan cannot provide member agencies in the SWP-dependent area with equitable access to water supply and storage assets during severe droughts. To address this problem, the Board committed to the following actions:

- Metropolitan will reconfigure and expand: (1) its existing infrastructure portfolio to provide sufficient access to the integrated system of water sources, conveyance and distribution, and storage; and (2) programs to achieve equivalent levels of reliability to all member agencies.
- In coordination with the member agencies, identify a portfolio of projects and programs to address the problem statement in the resolution. The selected portfolio must include infrastructure improvements to deliver available water supplies to the SWP-dependent areas. The portfolio must also be balanced through new storage and supply programs and local supply development and management.

Following the Board's direction, staff has developed a Drought Mitigation Action Portfolio. The portfolio includes infrastructure improvements to provide the SWP-dependent areas greater access to existing Colorado River and stored Diamond Valley Lake supplies, new supply opportunities, and options for increased storage.

Drought Mitigation Action Portfolio

The Drought Mitigation Action Portfolio was developed through 11 workshops held between April 2022 and December 2023. Analysis conducted during the workshop process found that enhanced system flexibility can improve supply reliability in the near term; however, long-term reliability will require the development of additional infrastructure, supplies, and storage to meet increased demand and offset deterioration of existing supplies due to climate change. The portfolio recommends projects for implementation to provide greater reliability to the SWP-dependent areas in the near term that can be completed within the constraints of the existing system and identifies potential mid-term projects that can be implemented after the removal of system constraints through projects currently in development. The portfolio also provides alternative pathways to achieve long-term equitable reliability for the region through a balanced approach of infrastructure improvements, new storage and supply programs, and local supply development and management as directed by the Board. The

recommended drought portfolio is divided into two categories: Category 1 – Cost-Effective Projects for Timely Relief and Category 2 – Projects for Further Consideration.

Category 1 projects provide a baseline of improved reliability for the SWP-dependent areas via improved access to existing storage and Colorado River supplies. Category 1 projects are further divided into two subcategories: Projects Under Implementation and Projects Prepared for Implementation. Projects Under Implementation are those projects that have been previously approved by the Board and are in design or construction. Projects Prepared for Implementation are proposed for inclusion in the CIP so that more detailed studies or design work can commence.

Category 2, Projects for Further Consideration, have the potential to provide broader drought relief and greater region-wide benefits but would require larger investments, longer implementation periods, and higher implementation risk. These potential projects include options for new conveyance in Metropolitan's system to deliver existing and potential new supplies to the western SWP-dependent area, in-region and out-of-region storage, and opportunities for groundwater storage. Staff plans to continue to develop these concepts and identify critical attributes for evaluation under the Climate Adaptation Master Plan for Water (CAMP4W) process.

The Drought Mitigation Action Portfolio helps provide timely drought relief to the SWP-dependent areas while also allowing for a comprehensive and fiscally responsible approach to achieve long-term supply reliability. A description of each project included in the portfolio is listed below.

Cost-Effective Projects Providing Timely Relief – Category 1

Eastern State Water Project Dependent Area

Diamond Valley Lake (DVL) to Rialto Pipeline Interconnection – This series of projects was first added to the CIP by the Board in December 2021 and consists of four projects that will enable Metropolitan to deliver up to 120 cfs of previously stored SWP from DVL to the Rialto Pipeline utilizing the existing Wadsworth Pump Station and San Bernardino Valley Municipal Water District's Foothill Pump Station. The projects would also enable Metropolitan to deliver Colorado River supplies to the area if necessary. The projects include a new bypass pipeline at DVL's Wadsworth Facility, a surge protection system on the Inland Feeder, a new intertie between the Inland Feeder and the Rialto Pipeline, and a new connection between the Foothill Pump Station and the Inland Feeder. The Board has awarded construction contracts for the first three project components. The last component is currently in design.

Three Valleys Municipal Water District (TVMWD) Miramar Pumpback System Upgrades – The TVMWD Miramar system normally takes water from the Rialto Pipeline and treats it at its Miramar Water Treatment Plant before delivery into its distribution system. The Miramar Pumpback System can take treated water from the F.E. Weymouth Water Treatment Plant (Weymouth plant) and deliver those supplies to the Miramar system through a series of pumps, offsetting the need for SWP deliveries from the Rialto Pipeline. The Miramar Pumpback System Upgrades project would increase the capacity of the existing system from 15 cfs to 30 cfs. Under this project, TVMWD would shift the operation to the Miramar Pumpback System when supplies are constrained on the SWP.

Western State Water Project Dependent Area

Sepulveda Feeder Pumping Project, Stage 1 – This project was added to the CIP by the Board in February 2022 and installs two pump stations on the Sepulveda Feeder to allow for delivery of water from the Common Pool into the western SWP-dependent area. The pump stations would be sized to deliver 30 cubic feet per second (cfs) of water; however, the actual state project water savings would be approximately 60 cfs due to the savings of normal operational flows into the Common Pool from the Sepulveda Feeder to maintain water quality. A progressive design-build process is being used to construct the project, which is expected to shorten the project implementation time. The design-build contract was awarded in September 2023, and the estimated online date for the facilities is in 2026.

Service Connection B-5 to Service Connection B-5A Shift Project – During normal operation, Burbank Water and Power (Burbank) receives SWP supplies from the Joseph Jensen Water Treatment Plant. The water is then delivered to Burbank's Valley Blending Facility to mix with local groundwater. When SWP supplies are

constrained, Burbank takes water that is treated at the Weymouth plant through the B-5 service connection located on the discharge side of the Greg Avenue Pump Station. This project would construct a pump station at the Valley Blending Facility to enable Burbank to blend water from the supply side of the Greg Avenue Pump Station called the B-5A connection. The shift from the B-5 to B-5A connection would (1) enable Metropolitan to deliver additional water from the Colorado River that is treated at the Weymouth plant to the western SWP-dependent area from Greg Ave Pump Station; and (2) alleviate the need for Burbank to take water from SWP-dependent only areas. Burbank could rely on Colorado River water year-round without the operation of Greg Ave Pump Station if SWP supplies were constrained. This modification will allow delivery of up to 12 cfs to Burbank through the B-5A service connection and is anticipated to provide approximately 5 TAFY of additional supplies to the western SWP-dependent area.

Sepulveda Feeder Pumping Project, Stage 2 – This project would expand the Sepulveda Feeder Pumping Project to an ultimate capacity of 160 cfs. Stage 1 of the project is being designed to accommodate a future expansion under Stage 2. The estimated online date for Stage 2 is 2032, coinciding with the completion of the Sepulveda Feeder PCCP Rehabilitation Project and the proposed Inglewood Lateral Improvement Project, which would allow a high pumped flow through the Sepulveda Feeder.

Projects for Further Consideration – Category 2

Antelope Valley East Kern (AVEK) High Desert Water Bank to West Branch – The AVEK High Desert Water Bank (HDWB) is a Metropolitan-funded project that allows for the storage and recovery of up to 70 thousand acre-feet (TAF) of water in a single year with a maximum storage capacity of up to 280 TAF in the Antelope Valley Groundwater Basin. The HDWB is under construction and is expected to be completed in 2025. As currently designed, the HDWB would recover stored SWP supplies from the Antelope Valley Groundwater Basin and return those supplies to the California Aqueduct East Branch, which can serve the eastern portion of the SWP-dependent areas on the Rialto Pipeline. Importantly, the HDWB was included in the 2020 Integrated Resource Plan (IRP) modeling and the recent simulations. With the planned ability to move stored supplies from DVL to the Rialto Pipeline, the HDWB stored water would provide additional benefit if it can be conveyed to the western SWP-dependent areas. Options to deliver HDWB supplies to the West Branch are currently being evaluated, along with options to increase the amount of storage beyond 280 TAF and the recovery beyond 70 TAF per year. Deliveries of this water to the West Branch would have direct and immediate benefits to the west side SWP-dependent agencies.

East Valley Feeder Parallel Pipeline – This project would increase the conveyance capacity of treated water from the Weymouth plant to the western SWP-dependent area. The project would also require increasing the capacity of the Greg Avenue Pump Station and building a second in-line pump station to convey up to an additional 135 cfs.

East-West Raw Water Conveyance – This project would construct a new pipeline to convey up to 300 cfs of raw water upstream of the Jensen plant to the western SWP-dependent area. The project would also require the construction of multiple pump stations along the pipeline to move the water from east to west. The pipeline would be able to convey untreated Colorado River water; stored water from DVL, AVEK, or Lake Mathews; and future Pure Water Southern California (PWSC) supplies.

New Surface Storage – An initial study identifying potential locations for new surface storage has been completed. The study identified locations that are in-region and can provide a direct benefit to the western SWP-dependent area, as well as locations within the west San Joaquin Valley that can provide a benefit to the whole service area. A second phase of the analysis is currently ongoing. The study will refine the evaluation criteria and create a short list of sites for a more detailed evaluation.

Flexible Storage – The study would identify opportunities to increase Metropolitan's storage capacity within existing SWP reservoirs.

Groundwater Storage – Groundwater storage opportunities include new or expanded groundwater banking programs, programs to augment local groundwater basins, and exchange of banked groundwater supplies that can provide additional SWP supplies to the SWP-dependent areas. Staff has held a series of workshops with member agencies to identify groundwater storage project opportunities within the region.

Recycled Water – Opportunities exist to enhance the potential for the PWSC program to benefit SWP-dependent areas with infrastructure improvement projects identified in the Drought Mitigation Action Portfolio. Staff is actively working with the Los Angeles Department of Water and Power to explore opportunities to integrate their reuse program, Operation NEXT, with Metropolitan's PWSC program. Such integration has the potential to expand the availability of purified water from these two sources benefitting the entire region.

Desalination – The desalination study will identify the potential for the development of additional potable water supplies through both brackish and seawater desalination. The study will also assess the opportunity for integration in adjacent water distribution systems and regional water systems. Project implementation options, including alternative project delivery methods and partnerships for design, construction, and operation, will be reviewed as part of the study and will be consistent with the State Water Resources Control Board's Draft Siting Report. Staff has collaborated with member agencies to develop the scope and approach of this study.

Portfolio Implementation Strategy

Implementation of the Drought Mitigation Action Portfolio is designed to achieve timely gains toward improved reliability for the SWP-dependent areas while allowing for a balanced and thorough analysis of potential pathways to achieve long-term equitable reliability. Specifically, the Category 1 projects identified in this letter will provide significant near- and mid-term benefits. However, additional supplies from one or more Category 2 projects will be required to achieve long-term equitable reliability for all member agencies and the SWP-dependent areas.

The near-term projects in the portfolio take advantage of existing system capacity and provide timely relief to the SWP-dependent areas by adding pumping facilities and interconnectivity. The next group of projects takes advantage of the planned upgrade of the existing system to expand the system capacity and deliver additional flow to the SWP-dependent areas by adding companion conveyance components. These projects can provide enhanced drought resilience in the mid-term to the SWP-dependent areas before long-term projects are in place to achieve overall supply reliability. As stated above, the Projects for Further Consideration group will be analyzed as part of the CAMP4W process. Certain potential projects within the group have been defined to the point that inclusion in Metropolitan's Capital Improvement Plan is warranted. Still, other potential projects lack the required definition to allow for inclusion in the CIP. In both cases, staff will continue to evaluate the potential projects to provide necessary information for the CAMP4W evaluative process. The strategy for implementation and continued evaluation of projects is described below.

2022/23 to 2023/24 Capital Improvement Plan – The Board previously approved the DVL to Rialto projects, currently in construction, and the Sepulveda Feeder Pump Project Stage 1, currently in design. These two groups of projects will significantly improve Metropolitan's ability to deliver CRW or DVL water into the SWP-dependent areas. Staff intends to bring to the Board for inclusion in the current CIP the Sepulveda Feeder Stage 2 Project and a second project to increase the capacity of the existing Inglewood Lateral. The Sepulveda Feeder Pump Project Stage 1 is being constructed with consideration of future expansion, which will allow for increased capacity with smaller future investment. Expansion of the pump station is reliant on the completion of the Sepulveda Feeder PCCP Rehabilitation Project, which is already in the CIP. Maximizing capacity of the pump station also requires increasing the capacity of the Inglewood Lateral, which acts as a bottleneck in the system, constricting flow in and out of the Common Pool. If the two projects are approved for inclusion in the CIP, along with the Sepulveda Feeder PCCP rehabilitation Project, additional reliability can be provided to the western SWP-dependent area in the mid-term. Accelerated design development of the Sepulveda Pumping Stage 2 will ensure an effective and efficient Stage 1 design and minimize the cost of future expansion, while allowing its evaluation under the CAPM4W process.

2024/25 to 2025/26 Capital Improvement Plan – Beginning with the next CIP Biennium, staff intends to create a new major CIP program for drought mitigation projects. Creation of the program will also allow for improved tracking and forecast spending on drought resilience relative to other major programs and ensure adequate oversight of the execution of the set policies. Creation of the program also provides Metropolitan greater transparency in its commitment to improving the region's drought resilience. Drought projects currently included in the 2022/23 to 2023/24 CIP Biennium will be moved into the new program at the start of the next biennium. Additional portfolio projects proposed for inclusion in the next biennium include TVMWD Miramar Pumpback

System Upgrades, Burbank B-5 to B-5A Shift Project, and a series of East-West Conveyance improvement projects (East/West Raw Water Conveyance Line, AVEK to West Branch Conveyance Line, and East Valley Feeder Parallel Pipeline).

Projects not currently recommended for inclusion in the CIP will be studied utilizing Operations and Maintenance funding. Based on the findings of the studies and the recommendations of the CAMP4W analysis, those projects may be recommended for inclusion in the CIP at a later date when their feasibility is verified, and the scope better defined.

Drought Portfolio Implementation and Nexus to CAMP4W

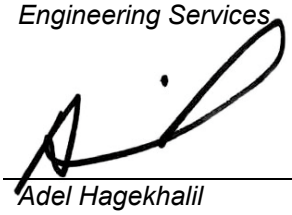
The increasing climatic variability and water supply uncertainty have prompted Metropolitan's Board to pursue the integration of climate and water resource planning with its financial plans. The Board charged the leadership and staff of Metropolitan to expand the focus of water resource and financial planning to include climate adaptation strategies and to develop a Climate Adaptation Master Plan for Water (CAMP4W). The effort focuses on strengthening the resilience and reliability of Metropolitan and its individual member agencies in the face of a changing climate and the associated risks to our economic and environmental stability. As such, the information developed in the 2020 IRP Needs Assessment will be a key input to the CAMP4W, as will the ongoing vulnerability assessments and drought portfolio-related studies. The outcome of this process will be a collaborative decision-making process for setting investment plans to ensure the continued ability to fulfill Metropolitan's mission to provide the service area with an adequate and reliable supply of high-quality water.

The IRP identified the risk to the SWP-dependent agencies from extended drought on the SWP system. The Drought Mitigation Action Portfolio provides the CAMP4W with the building blocks to develop solutions to mitigate that risk. The Category 1 projects will inform the CAMP4W process by applying them as existing system components in simulation models to quantify the demand/supply gaps under the different IRP scenarios.

The Category 2 projects require greater time and investment for implementation and demand a thorough and collaborative assessment of their effectiveness, benefits, and risks. It is not expected that all projects identified within the Drought Mitigation Action Portfolio will be included in the recommended CAMP4W strategy. However, the recommended CAMP4W strategy is expected to meet the supply reliability needs of the SWP-dependent areas. Implementation of different Category 2 projects will be simulated within the IRP analysis so that the CAMP4W team can assess the effectiveness of the different projects in mitigating the long-term supply and demand gaps. This process will allow for a thorough evaluation considering both the risks and rewards of future investments and apply the adaptive management framework to adjust the implementation plan of drought mitigation actions based on changing conditions.

2/7/2024

John V. Bednarski *Date*
Manager/ Chief Engineer
Engineering Services



2/7/2024

Adel Hagekhalil *Date*
General Manager

Ref# es12700284

Engineering, Operations, and Technology Committee

Strategy for Implementation of Drought Mitigation Actions in Response to the August 2022 Board Resolution

Item 9-2

February 12, 2024

Item 9-2
Strategy for Implementation of Drought Mitigation Actions

Subject

Strategy for implementing recommended drought mitigation actions

Purpose

Report development of implementation plan for drought mitigation actions portfolio in response to the August 2022 resolution

Next Steps

Board actions to implement initial steps of the plan:

- Create a new CIP program
  - Include selected drought mitigation projects
- Amend current CIP to include:
  - Sepulveda Feeder Pumping Stage 2
  - Removing network constraints

August 2022 Board Resolution – Call to Action

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

BOARD ACTION

- **Board of Directors**
  Water Planning and Stewardship Committee

8/16/2022 Board Meeting

7-13

Subject

Adopt resolution affirming Metropolitan's call to action and commitment to regional reliability for all member agencies; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

The Metropolitan Water District of Southern California endeavors to provide an adequate and reliable supply of high-quality water to meet the region's present and future needs in an environmentally and economically responsible way. As an example from 1930, Metropolitan's first Board Chair, W.P. Whitsett, provided a guiding principle for developing regional water supply reliability: "Whatever is done should be done for the benefit of the whole, and whatever is done for the benefit of the whole should be shared by all the parts."

Nearly a century after those aspirational words, a record-breaking drought has descended on the Southwest, and Southern California's water reliability is in crisis. This year, supply from the State Water Project (SWP) was cut to 5 percent of Metropolitan's total allocation for the second consecutive year—resulting in a 3-year water supply substantially below the California Department of Water Resources' worst-case projection. These conditions starkly highlight an infrastructure and water supply vulnerability that must now be addressed. Simply put, there is not enough pipeline connectivity or operational flexibility for imported supply and existing regional storage to meet the needs of six member agencies with a combined population greater than six million.

Because of this supply shortage and limits to its infrastructure, Metropolitan cannot provide equivalent supply reliability from one corner of the service area to another. In response, Metropolitan's Board declared a water shortage emergency and imposed a water conservation program in April of this year for the six SWP-dependent agencies. The impacted agencies include Calleguas Municipal Water District, Inland Empire Utilities Agency (IEUA), Las Virgenes Municipal Water District, the City of Los Angeles, Three Valleys Municipal Water District, and Upper San Gabriel Valley Municipal Water District.

These six SWP-dependent agencies have limited connection to Metropolitan's existing infrastructure, storage, and supplies. This constraint forced them to take mandatory and painful water supply cuts from their expected SWP use by an average of 35 percent—with some facing reductions up to 73 percent. If these agencies cannot limit their use of Metropolitan's supply from the SWP, then they face stiff volumetric penalties of $2,000 per acre-foot (AF) or the first-ever total ban on outdoor irrigation. Meanwhile, under statewide regulation, the 20 member agencies outside of this area must implement demand-reduction actions under Level 2 of their Water Shortage Contingency Plans. These actions are locally determined to achieve only a 10 to 20 percent water reduction (without volumetric penalties).

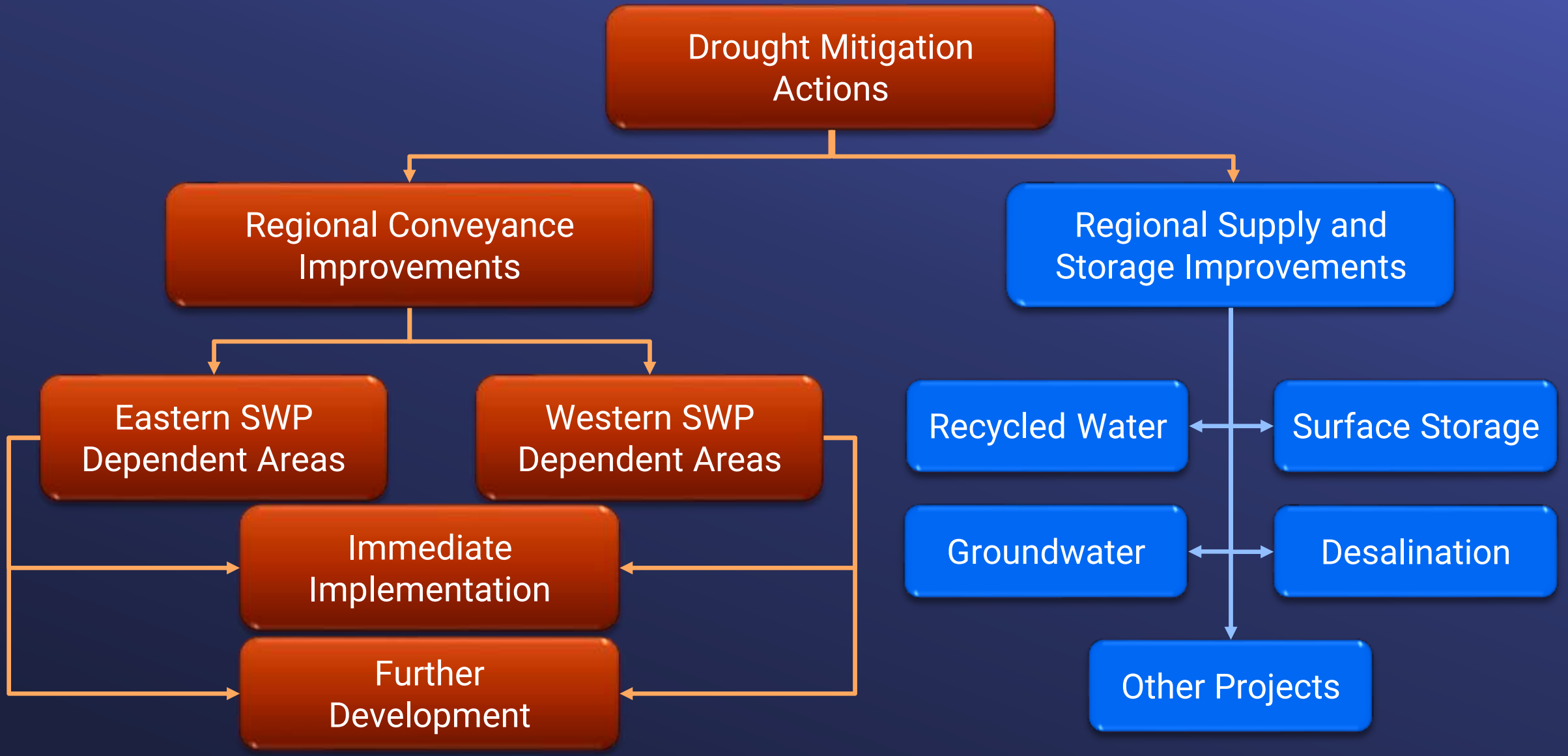
This disparity is unacceptable to Metropolitan and its member agencies. By adopting the proposed Resolution in Attachment 1, the Board would prioritize a policy to provide 100 percent and equitable reliability to all member agencies. Metropolitan would thus commit to taking all necessary actions to give the SWP-dependent member agencies a level of infrastructure and water supply reliability equivalent to that of Metropolitan's other member agencies. Equitable access will be achieved through the expedited and prioritized implementation of a balanced set of projects and programs that improve existing infrastructure, imported and local supplies, and demand management.

Call to Action

Metropolitan commits to ensuring equitable access to supply and storage assets by building infrastructure, increasing local supply availability, expanding partnerships, and advancing water use efficiency.

- ***All member agencies must receive equivalent water supply reliability through an interconnected and robust system of supplies, storage, and programs.***
- ***Metropolitan will reconfigure and expand its existing portfolio and infrastructure to provide sufficient access to the integrated system of water sources, conveyance and distribution, storage, and programs to achieve equivalent levels of reliability to all member agencies.***
- ***Metropolitan will eliminate disparate water supply reliability through a One Water integrated planning and implementation approach to manage finite water resources for long-term resilience and reliability, meeting both community and ecosystem needs.***[23]

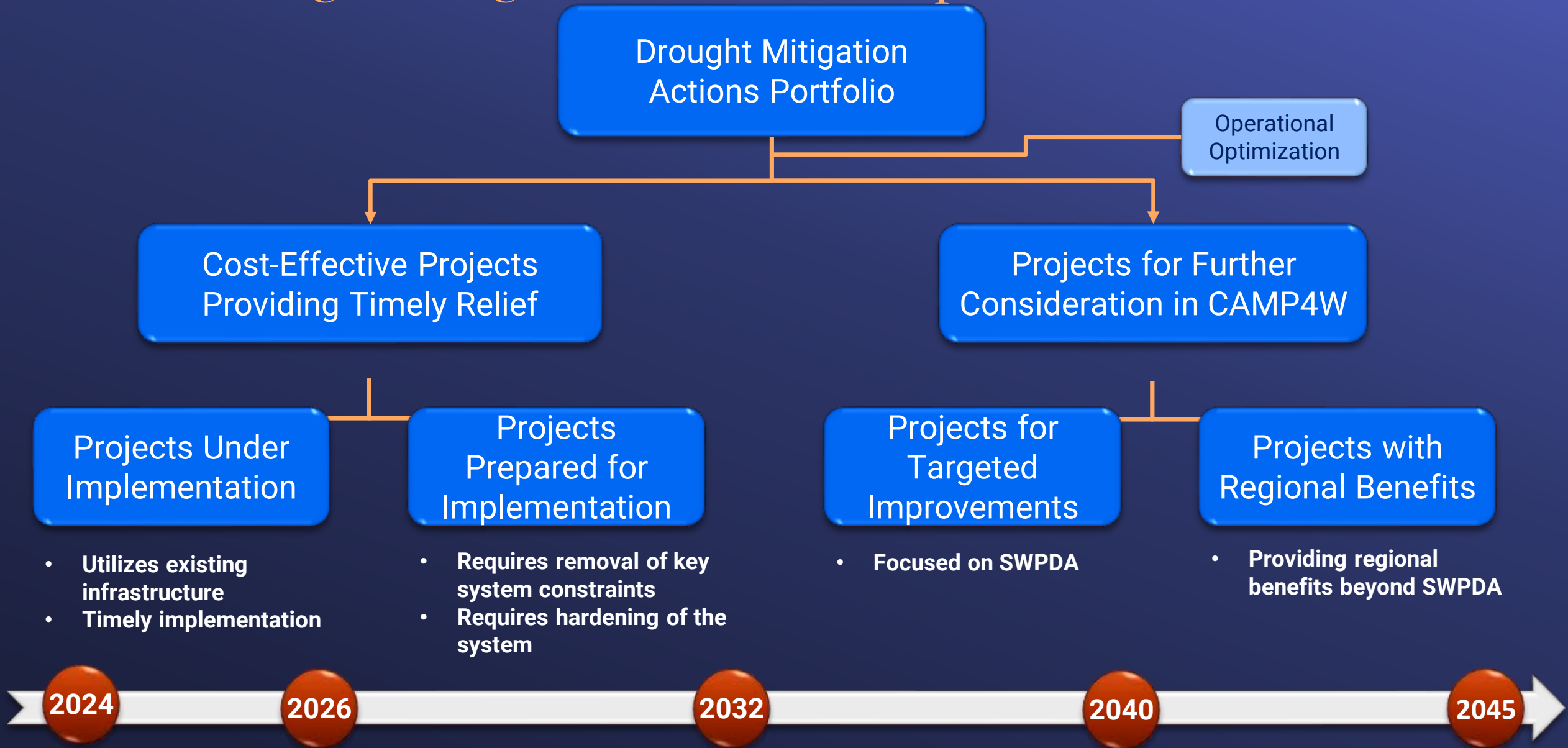
Proposed Drought Mitigation Actions Portfolio



Strategy for Implementing Proposed Portfolio

- Near-Term: Provide timely relief to State Water Project Dependent Area (SWPDA) agencies against future droughts – applying actions w/o upgrading existing infrastructure
- Mid-Term: Enhance SWPDA drought resilience – applying actions after removal of system constraints
  - Proceed with planning and early design efforts but pending on CAMP4W evaluation to determine final implementation
- Long-Term: Achieve supply reliability with a mix of conveyance, supply, and storage projects and programs
  - Some actions focus on enhancing supply reliability for SWPDA
  - Some actions also enhance supply reliability and resilience for the region
  - Integration into CAMP4W process to adapt to future changes in supply/demand conditions

Drought Mitigation Portfolio Implementation Plan



Drought Mitigation Actions Portfolio
Cost-Effective Projects Providing Timely Relief (for Implementation)

Projects Under Implementation

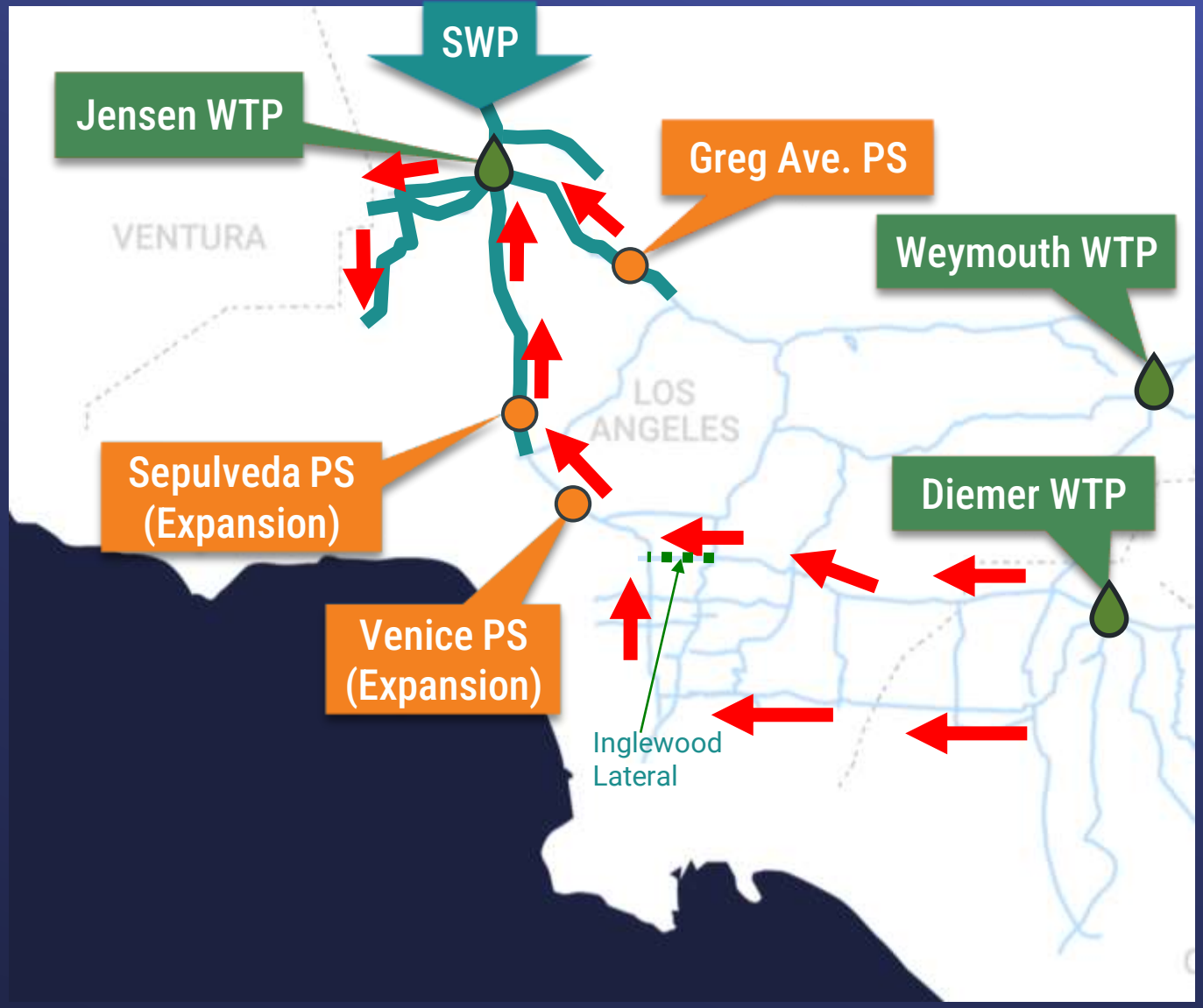
Project Title	Completion
DVL to Rialto Delivery (4 projects)	2026/2027
Sepulveda Feeder Pumping Stage 1	2026

Projects Prepared for Implementation

Project Title	Completion
Burbank B-5 to B-5A Shift	2026
TVMWD Miramar Pumpback Upgrades	2027/2028
Sepulveda Feeder Pumping Stage 2	2032

Sepulveda Feeder Pumping Stage 2

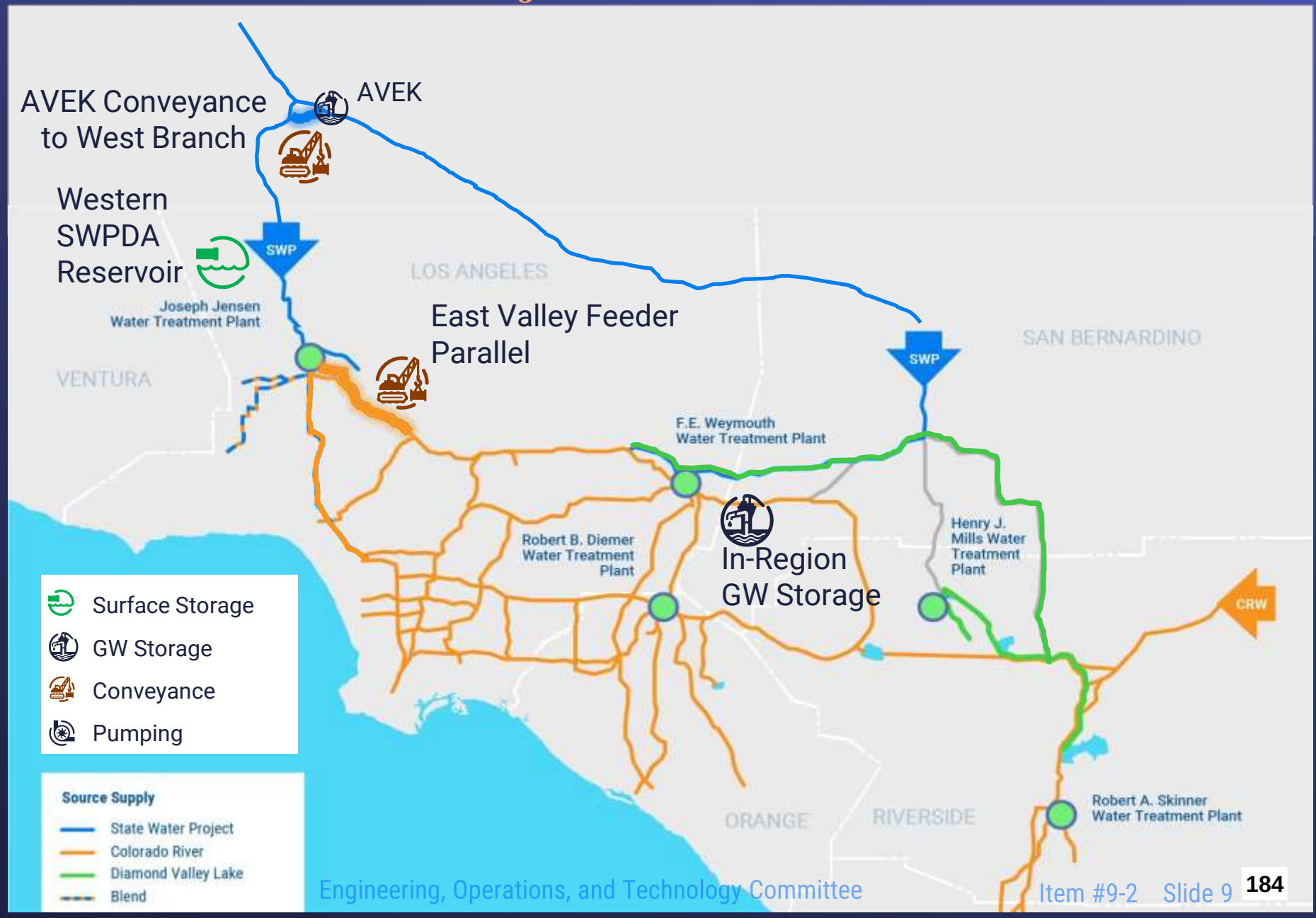
- Enhance SWPDA drought resilience
- Prerequisites
  - Complete Stage 1 (30 cfs)
  - Complete PCCP relining of North Sepulveda Feeder
  - Upgrade Inglewood Lateral
- Urgency to start conceptual design to sync with Stage 1 final design process
  - Future implementation pending on CAMP4W evaluation



Drought Mitigation Actions Portfolio Projects for Further Consideration

Projects for Targeted Improvements

Project Title	Category
AVEK to West Branch	Conveyance
East Valley Feeder Parallel Pipeline	Conveyance
Western SWPDA Reservoir	Surface Storage
In-Region Groundwater Storage	Groundwater Storage

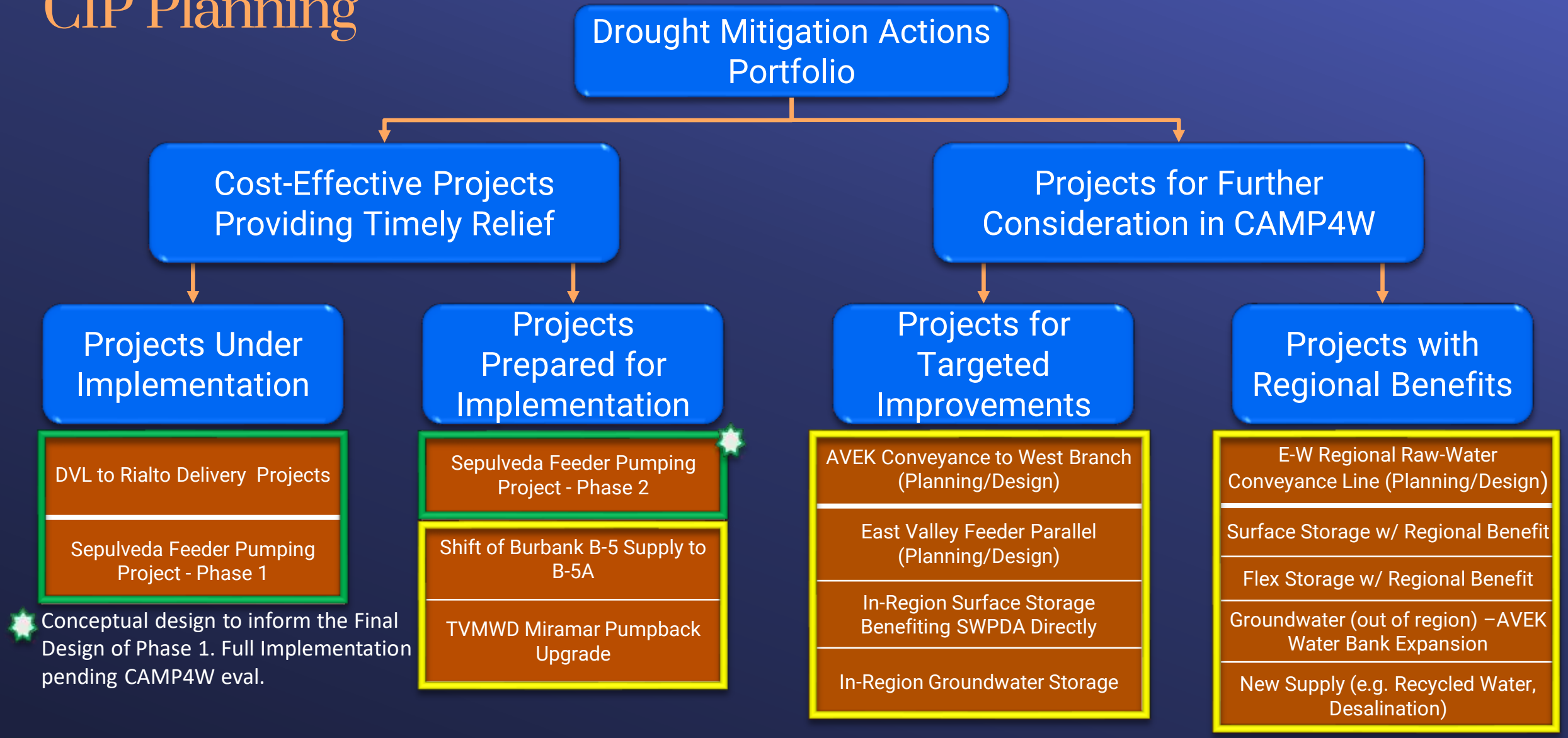


Drought Mitigation Actions Portfolio Projects for Further Consideration

Projects with Regional Benefits

Project Title	Category
E-W Regional Raw-Water Conveyance Line	Conveyance
SWP Storage - East San Joaquin Valley	Surface Storage
Flexible Storage (State & Federal Programs)	Surface Storage
AVEK Water Bank Expansion	Groundwater Storage
Recycled Water, Desalination	Local Supply

CIP Planning



Conceptual design to inform the Final Design of Phase 1. Full Implementation pending CAMP4W eval.

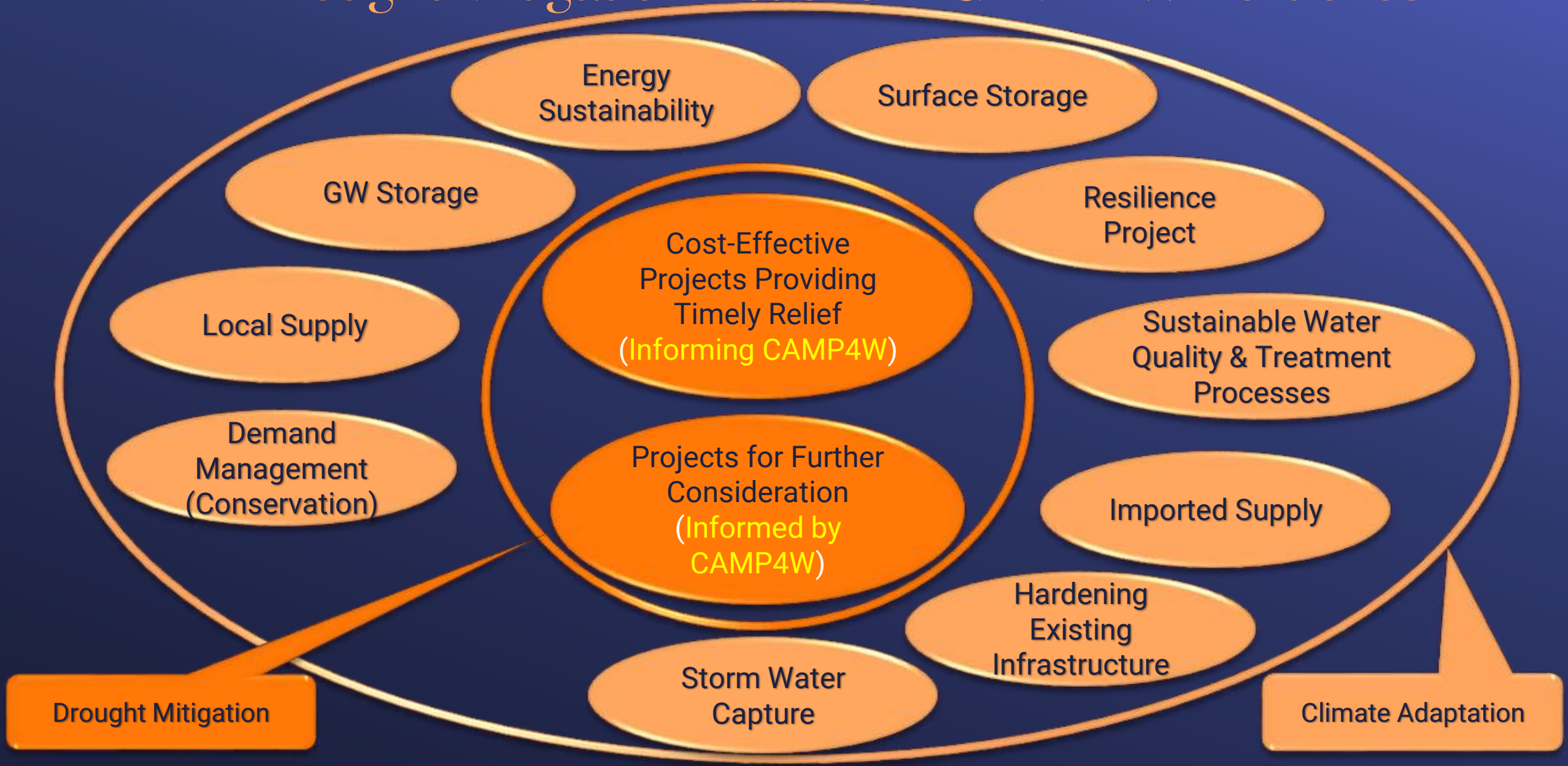
Proposed for current CIP as these projects are well defined

Proposed for Future CIPs as projects become more defined and geographical locations identified. Alternative analyses are not capitalized.

Integration with CAMP4W Process

- Time-bound targets from CAMP4W will guide future implementation of proposed actions
  - Equitable Supply Reliability (Near-, Mid- and Long-Term)
- Adaptive management strategy of CAMP4W allows for adjustments to the implementation plan
- Projects for further consideration will apply CAMP4W criteria to compare with other investments to meet resource-based targets
  - Need for core supplies
  - Need for flexible supplies
  - Need for storage capacity
  - Conveyance improvements to deliver new supplies & storage

Drought Mitigation Actions in CAMP4W Portfolios



Next Steps

- Action Item to the Engineering, Operations, and Technology Committee (March 2024)
  - Create a new CIP program for selected drought mitigation projects
  - Amend current CIP to include:
    - Sepulveda Feeder Pumping Stage 2 (planning for 160 cfs ultimate capacity build-out)
    - Removing network hydraulic constraints (e.g., Inglewood Lateral upgrade)
- New CIP Program: Drought Mitigation – SWP Dependent Areas
  - Move projects under implementation to the program for better tracking of efforts and progress
  - Allocate funding in future CIP expenditure plans for continued development of regional conveyance and storage projects
    - Pending CAM4W evaluation and recommendation for implementation
- Continue developing projects within the portfolio to provide information for CAMP4W evaluation and potential inclusion in future CIP


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

Engineering, Operations, & Technology Committee

Strategic Infrastructure Resilience Plan Development

Item 6b

February 12, 2024

Item 6b
Infrastructure Resilience Update

Subject

Infrastructure resilience update

Purpose

- Provide updates on:
  - The Strategic Infrastructure Resilience Plan (SIRP)
  - Annual seismic resilience activities

Next Steps

- Continue development of the SIRP and inform CAMP4W
- Continue improvement of infrastructure seismic resilience

Presentation Outline

- Strategic Infrastructure Resilience Plan (SIRP)
  - Purpose
  - Development Roadmap
  - Assessment of Resilient Infrastructure
  - Maturity Level Survey
  - Next Steps
- Seismic Resilience Annual Update

Purpose of Strategic Infrastructure Resilience Plan (SIRP)

- Establish a framework to enhance and expand Metropolitan's long-term organization-wide infrastructure resilience program for its water and electric power systems
- The SIRP will:
  - Assess the maturity level of Metropolitan's current resilience
  - Develop goals and objectives to achieve the desired level of resilience maturity
  - Develop metrics to measure improvement over time
  - Establish a flexible process to adapt to changing conditions

SIRP Development Road Map

Phase 1 Tasks

- Initiate SIRP Development
- Identify Characteristics of Resilient Infrastructure Systems
- Resilient to which Hazards
- Develop Maturity Scale
- Survey: Resilience Maturity, Hazards, and Priorities

Phase 2 Tasks

- Establish Target Maturity Levels
- Assess Resilience Gaps
- Strategies to Close the Gaps

Phase 3 Tasks

- Develop Implementation Plan
- FINAL DRAFT Strategic Infrastructure Resilience Plan

Assessment of Resilient Infrastructure – Characteristics

- The characteristics serve as objectives to improve infrastructure resilience

  Redundancy
  Robustness
  Rapidity
  Resourcefulness

  Planning
  Preparedness
  Mitigation
  Response & Recovery

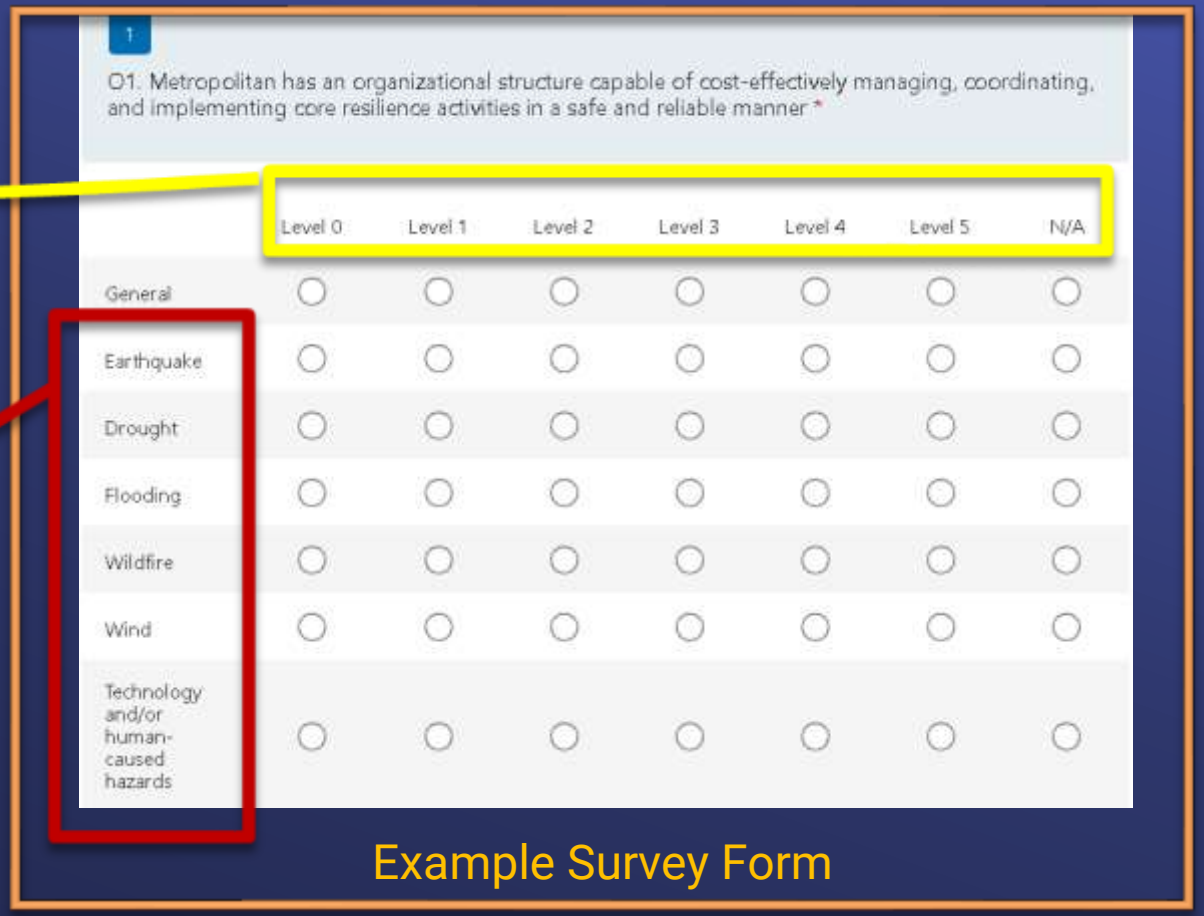
- The characteristics are divided into four categories:
  - Organizational
  - Technical
  - Social
  - Economic

Assessment of Resilient Infrastructure - Maturity Level

- The proposed methodology defines maturity levels on a scale from 0 to 5, with each level representing a different stage of the organizational process
  - Level 0: No intent to develop processes for resilience
  - Level 1: No formalized processes for resilience but with intent to develop
  - Level 2: Some basic processes in place for some resilience aspects
  - Level 3: Process are defined and documented
  - Level 4: Resilience is measurable and managed
  - Level 5: A culture of continuous improvement exists

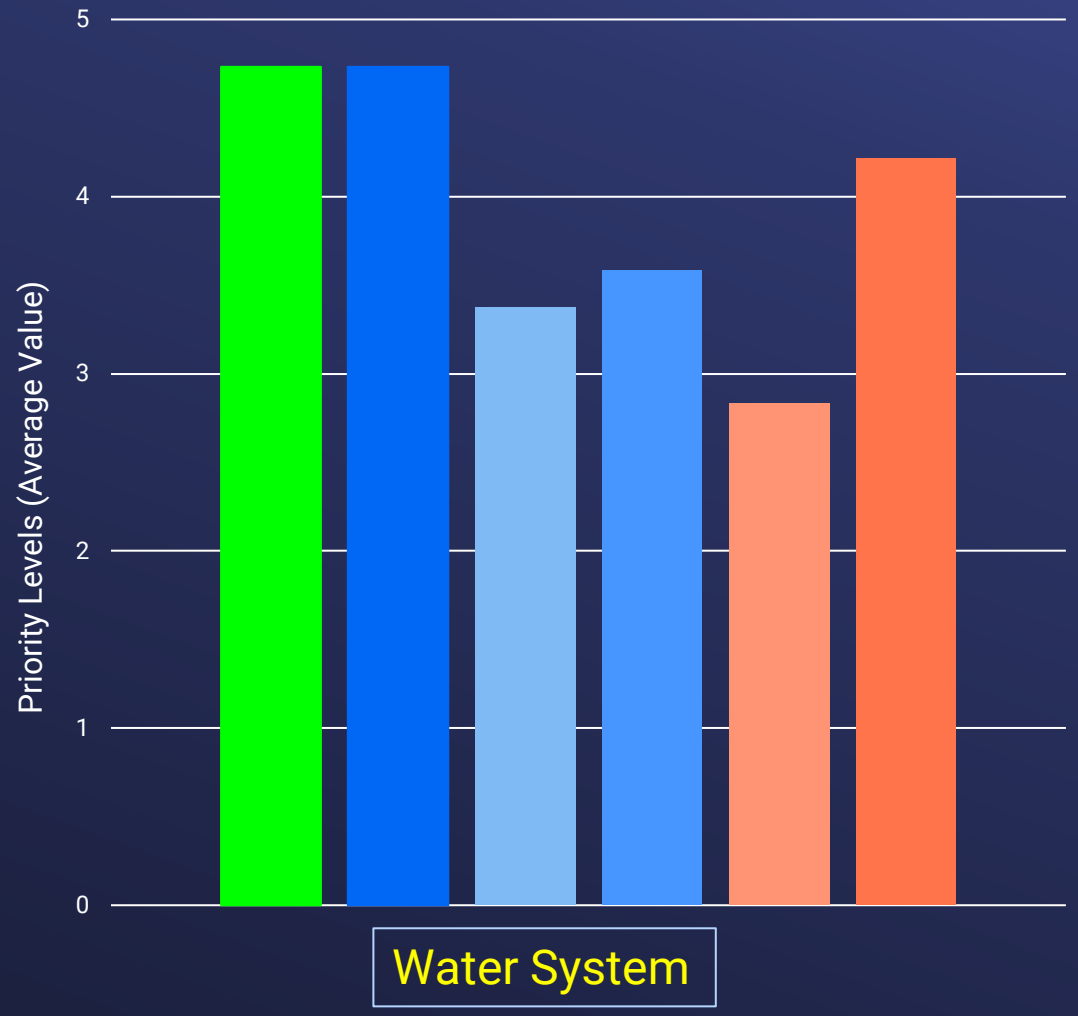
Maturity Level Survey

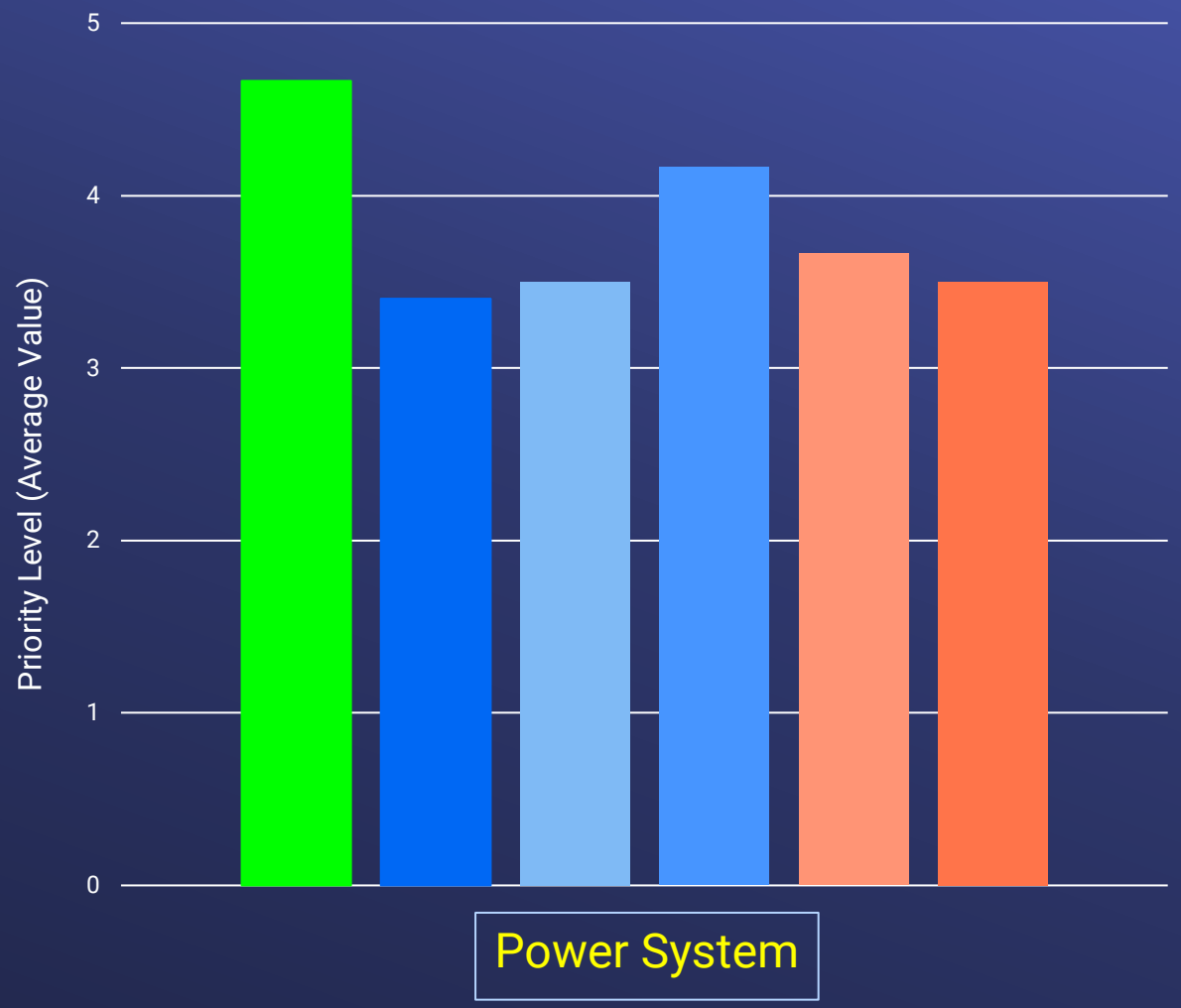
- A survey was conducted to gather information on the infrastructure resilience maturity level and priorities (self assessment)
- The Survey included
  - 18 characteristics
  - General system resilience
  - 6 hazard types
- Participants/Respondents:
  - Metropolitan staff
  - 28 for Water/6 for Electric Power



Example Survey Form

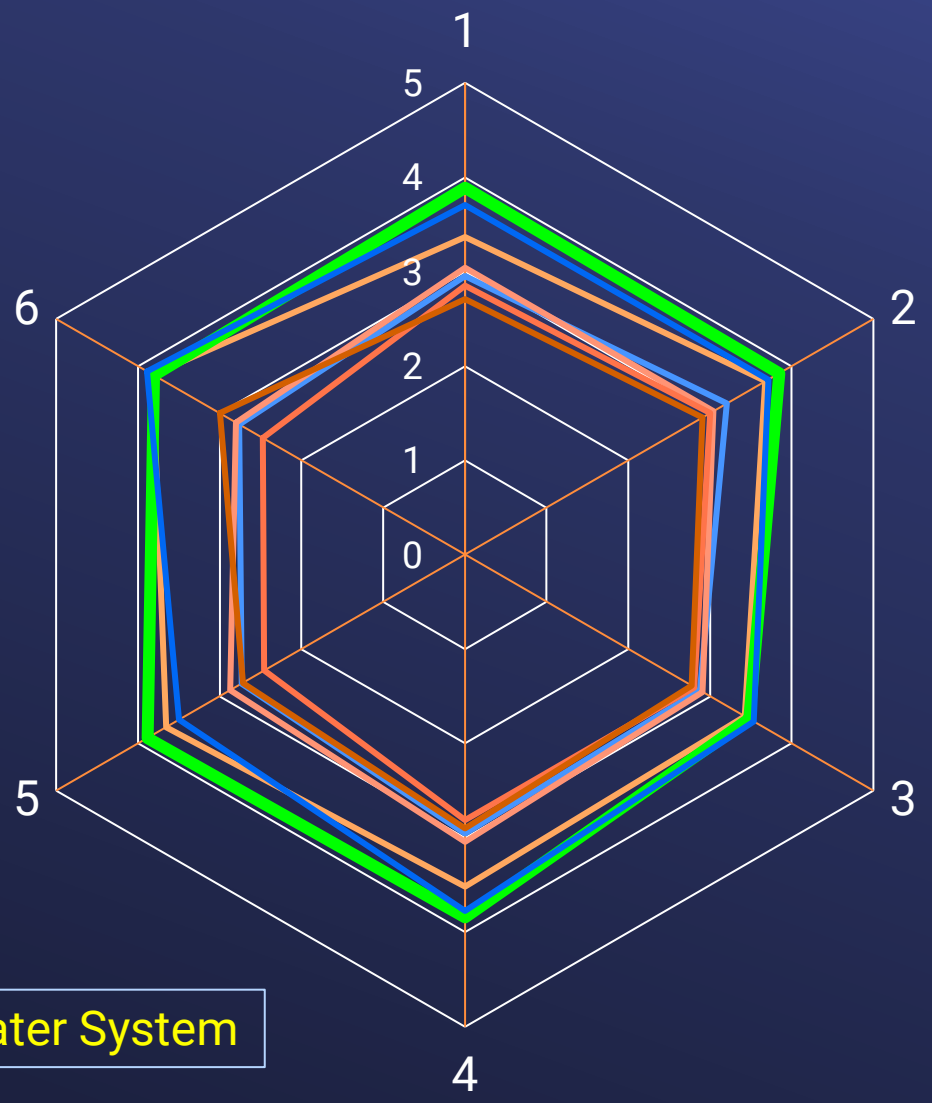
Priority Level of Hazards





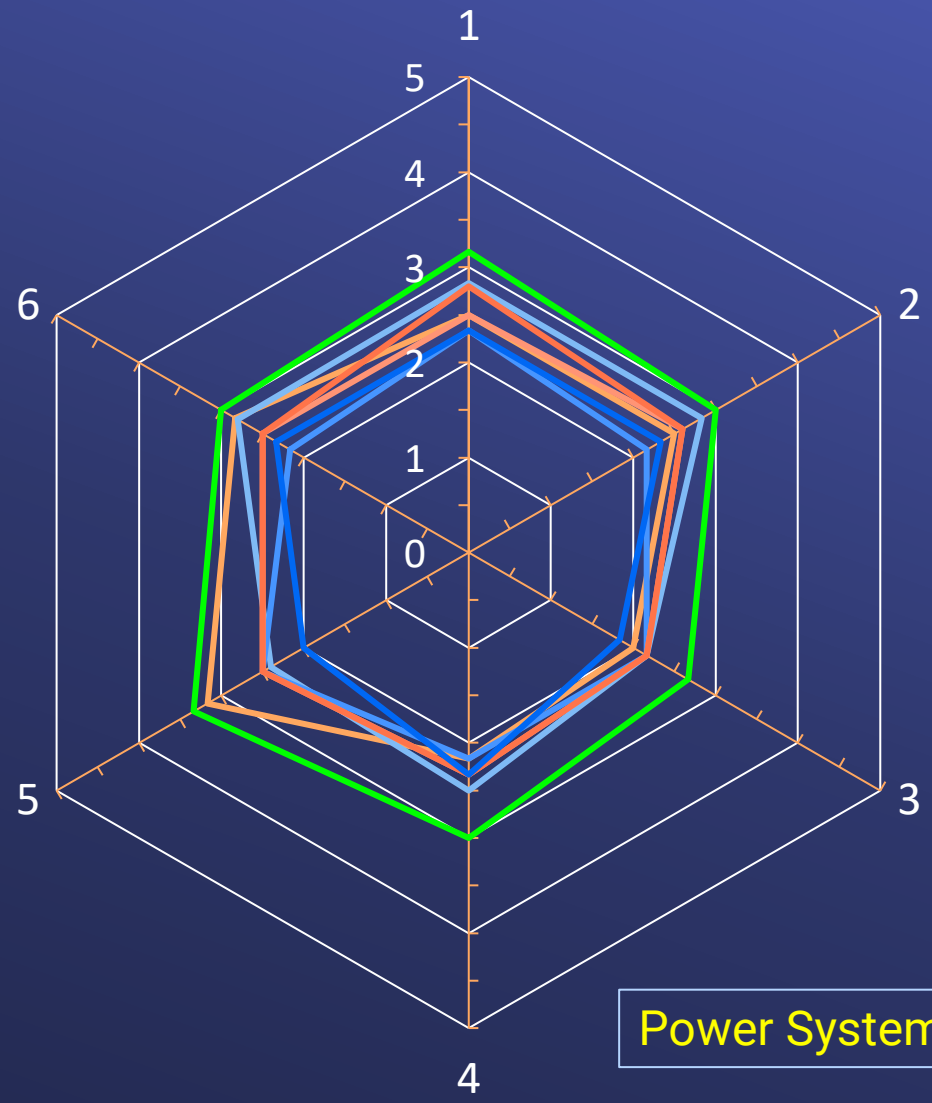
Series1 Series2 Series3 Series4 Series5 Series6

Maturity Level for Organizational Characteristics (O1 through O6)



Water System

Org. Characteristics
O1
Org. Structure
O2
Stability & Capacity
O3
Adequate Resources
O4
Advanced Planning
O5
Response Protocols
O6
Continuity



Power System

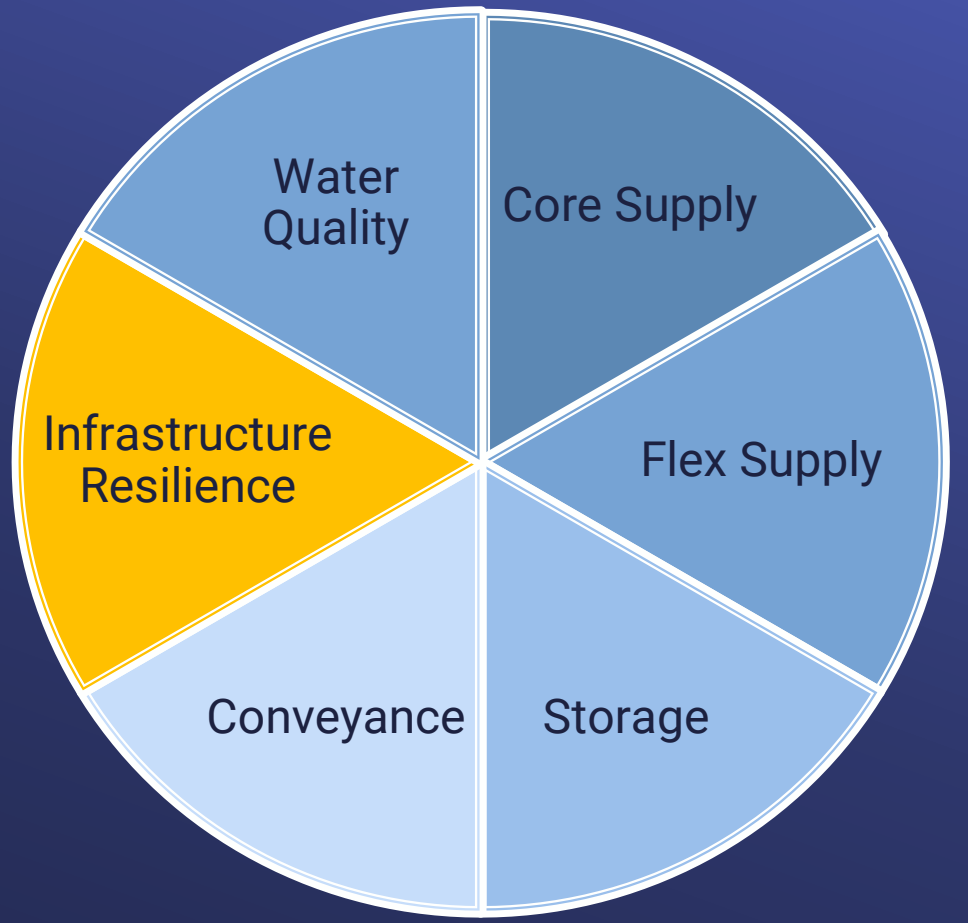
SERIES1 SERIES2 SERIES3 SERIES4 SERIES5 SERIES6 SERIES7

Summary of Maturity and Priority Survey Results

- Survey consisted of a self-assessment conducted by staff with knowledge of Metropolitan's water and power infrastructure
- The survey results provide a perceived baseline of where we are now and serve us in informing the organization as we move forward
- Earthquake, drought, and wildfire are perceived as having higher priority than other hazards
- Higher maturity level on the water system than the power system
- Seismic resilience is perceived to be more mature than other hazards

Next Steps on SIRP Development

- Establish target maturity levels
- Determine maturity gaps
- Develop strategies to narrow identified gaps in priority order
- Ensure strategies are consistent with CAMP4W criteria and targets
- Prepare draft SIRP
- Plan to complete the draft by December 2025 for review



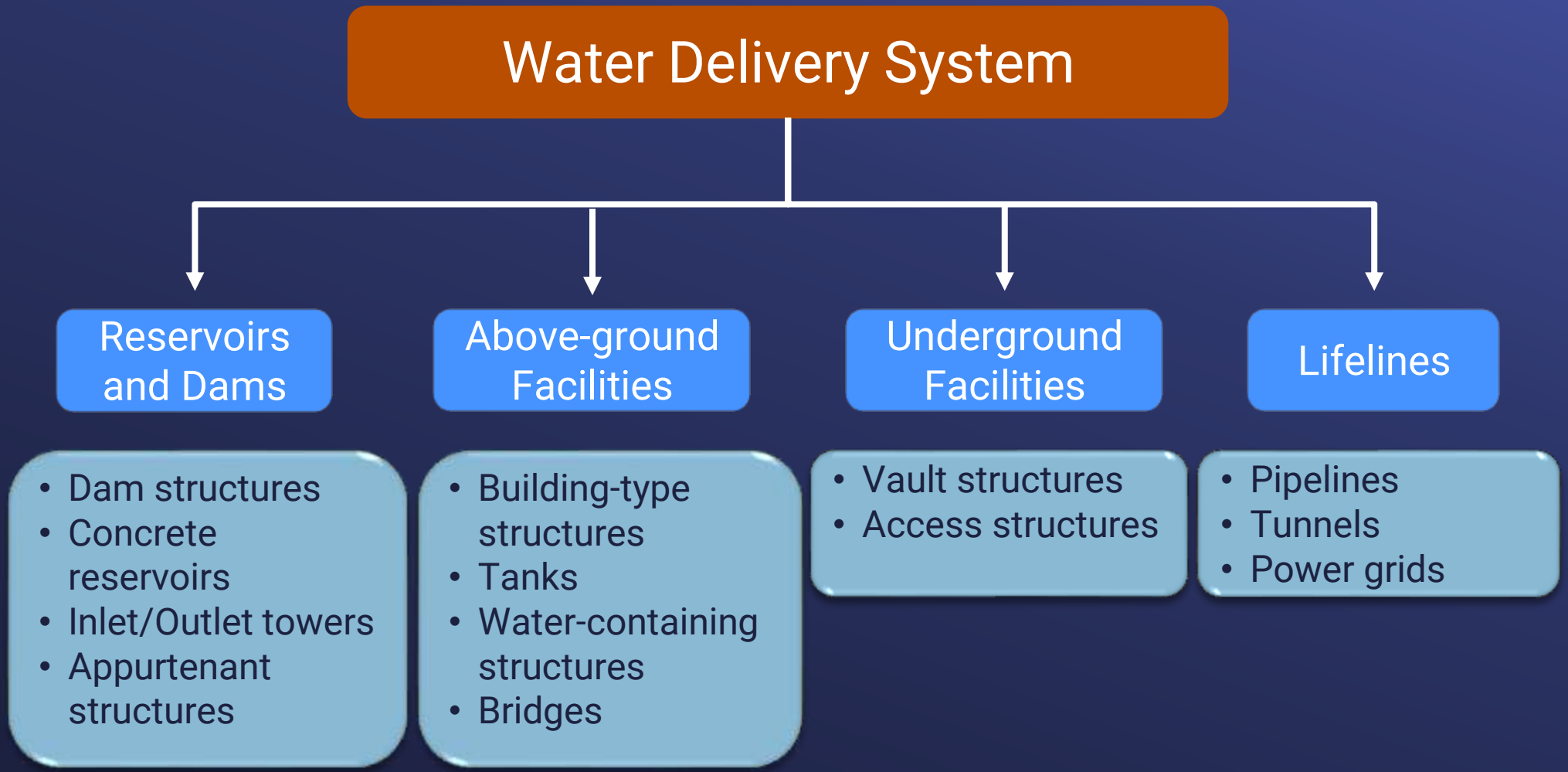
Climate Decision-Making Framework

CAMP4W
Climate Adaptation Master Plan for Water

Infrastructure Resilience Update – Seismic Resilience

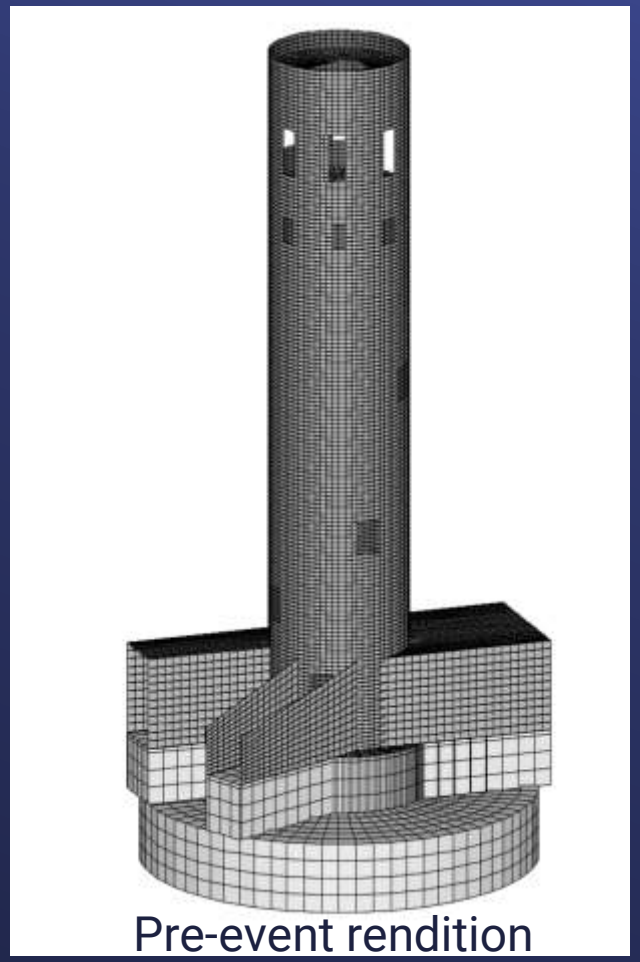
- Definition
  - The ability to maintain, or quickly restore, water deliveries after a seismic event (2018 Seismic Resilience Report)
- Approach to enhance resilience
  - Pre-event mitigation
    - Minimize impacts of seismic events on water delivery
  - Post-event restoration
    - Quickly restore system capacity to prevent lasting adverse effects

Infrastructure Inventory

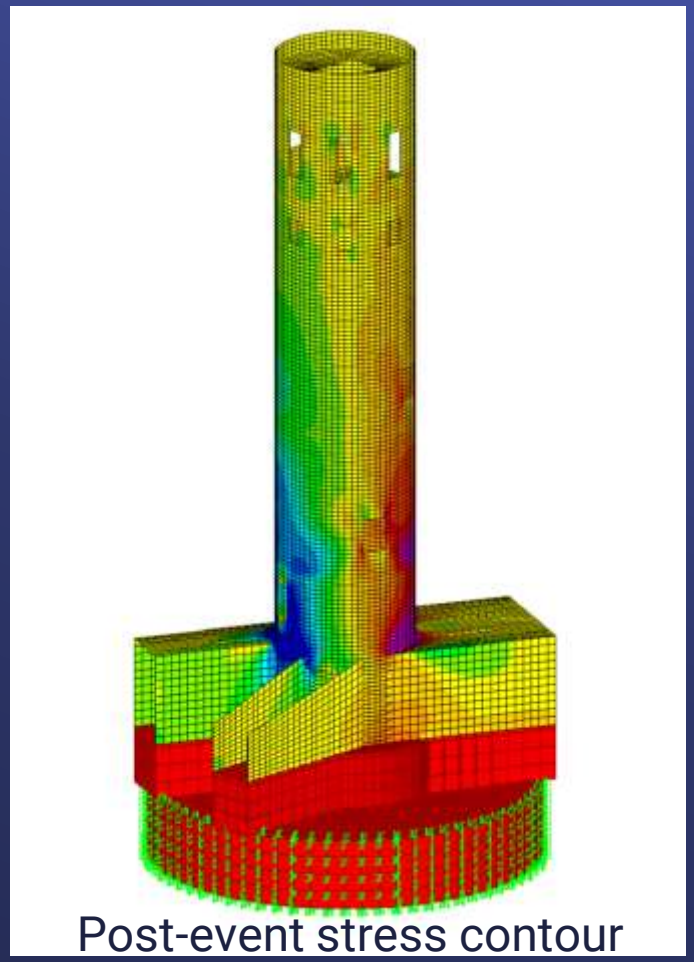


Seismic Risk Mitigation Update

- Reservoirs and Dams
  - Advanced analysis for Lake Skinner Outlet Tower
  - Final design for Garvey Reservoir Outlet Tower seismic upgrade
  - Final design of real-time monitoring system at Diamond Valley Lake and Garvey Reservoir



Pre-event rendition



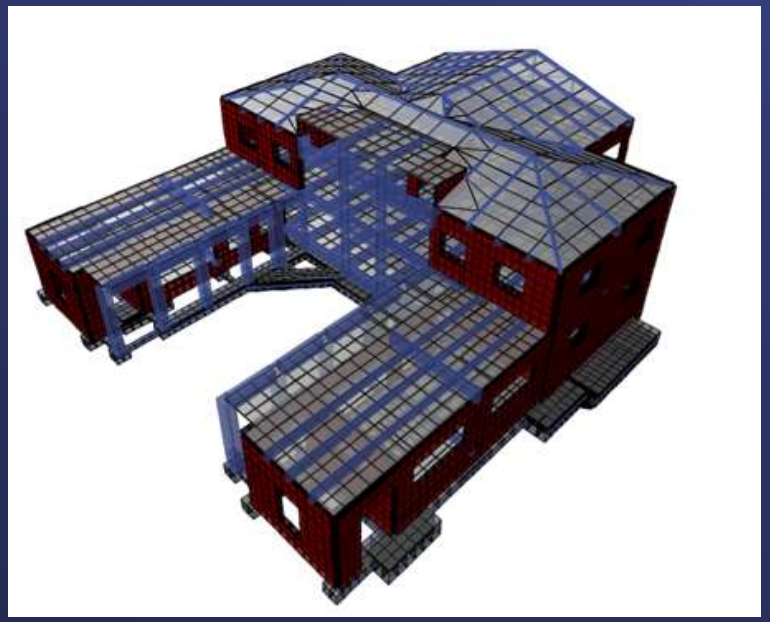
Post-event stress contour

Garvey Reservoir Outlet Tower 3-D Structural Model

Seismic Risk Mitigation Update

- Above-ground Facilities – Activities Underway
  - Construction of Weymouth Basins 5~8 Rehab
  - Construction of Foothill HEP/PCS seismic upgrade
  - Final retrofit design for Weymouth Admin & Control Buildings
  - Preliminary design for La Verne Water Quality Lab Rehab
  - Preliminary design for Diemer Wash Water Reclamation Plant No. 2

Weymouth Basins 5-8 – Wall Strengthening

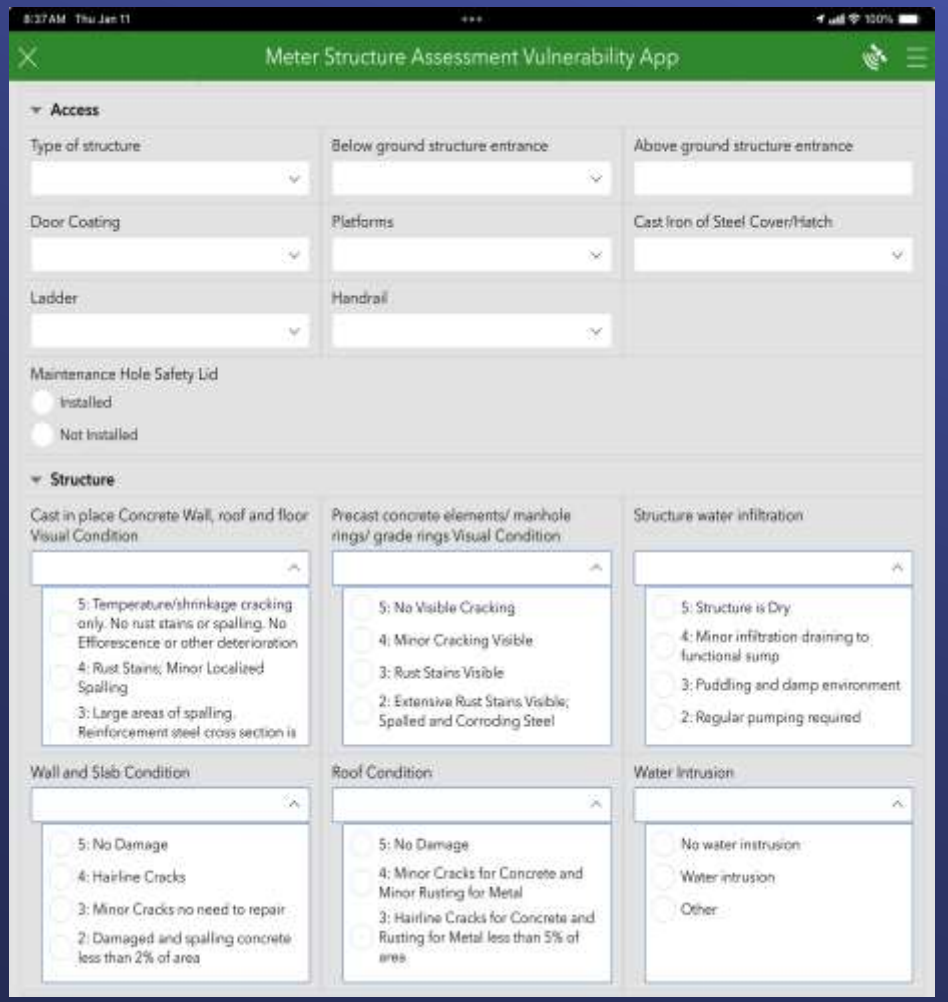


Weymouth Admin Building – 3-D Structural Model

Seismic Risk Mitigation Update

- Underground Facilities – Activities Completed
  - Condition assessment of meter structures in Orange County
  - Inspection of 94-meter structures in LA County
  - App to standardize data collection in the field to prepare for subsequent data analytics

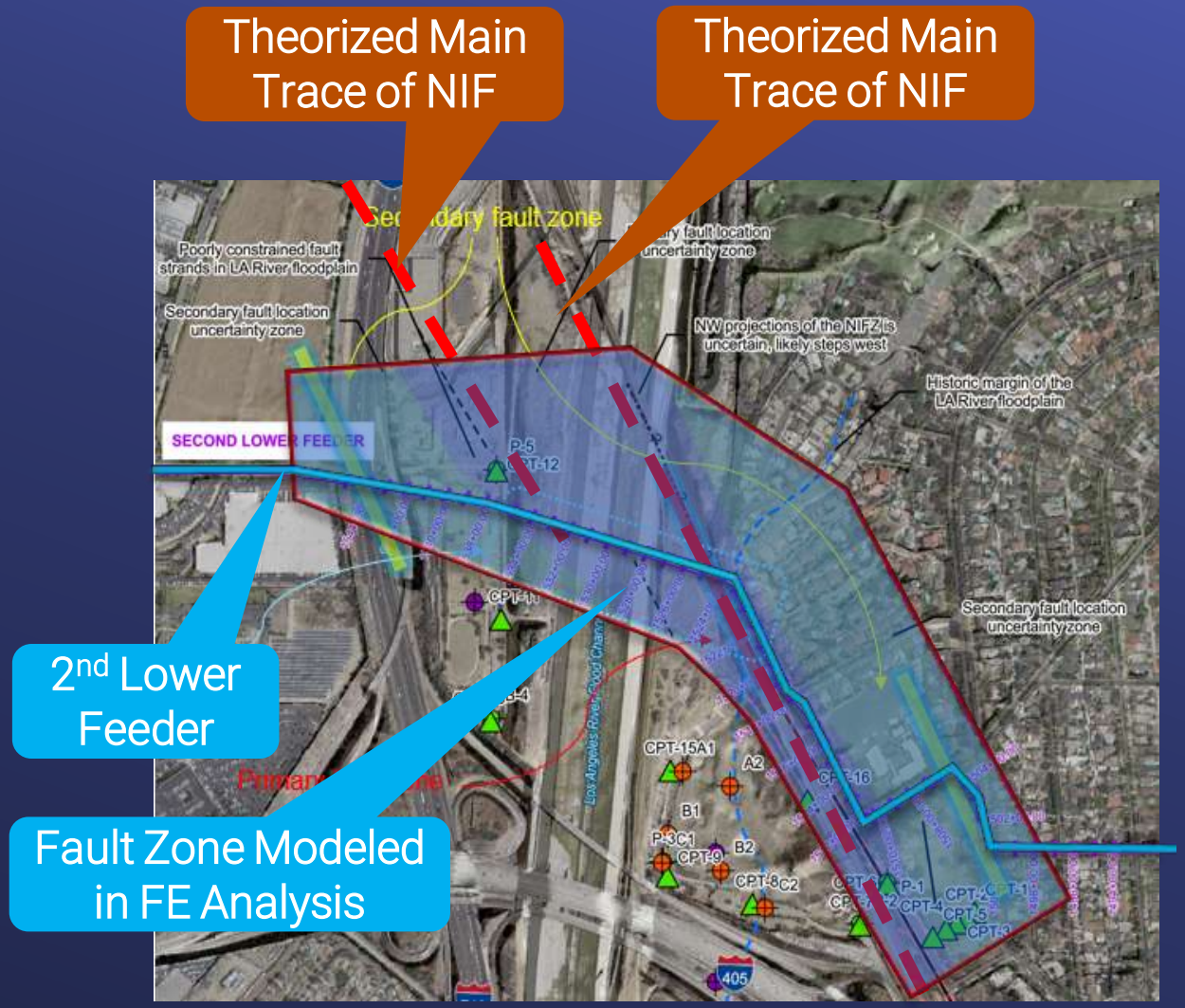
Meter Structure



Condition Assessment App

Seismic Risk Mitigation Update

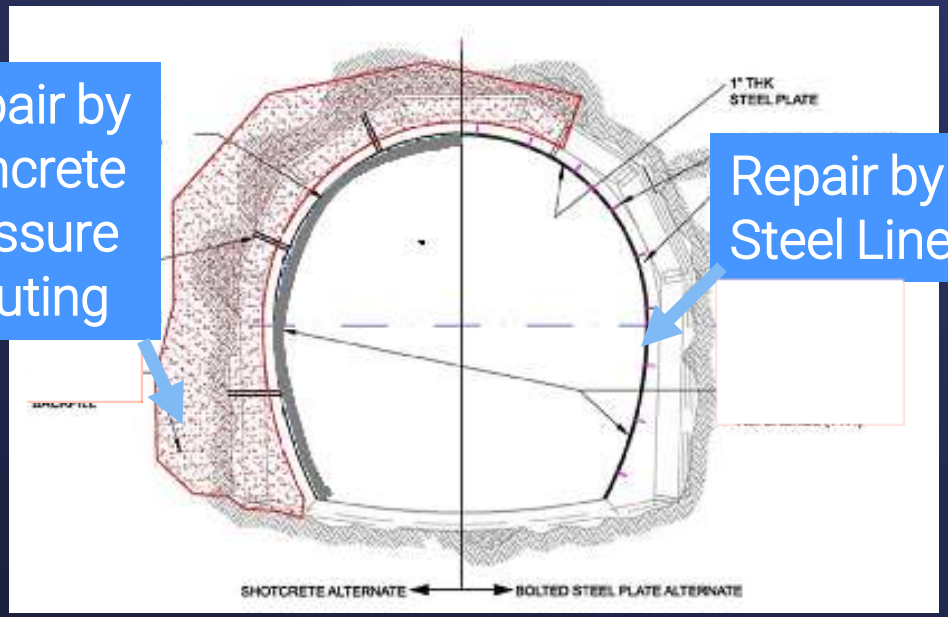
- Lifelines
  - Completed construction of Casa Loma Siphon No. 1 Fault-Crossing Mitigation
  - Performing preliminary design to mitigate seismic risk of Second Lower Feeder crossing Newport Inglewood Fault (NIF) Zone
  - Assessing seismic vulnerability of CRA tunnels
  - Updating pipeline seismic vulnerability study



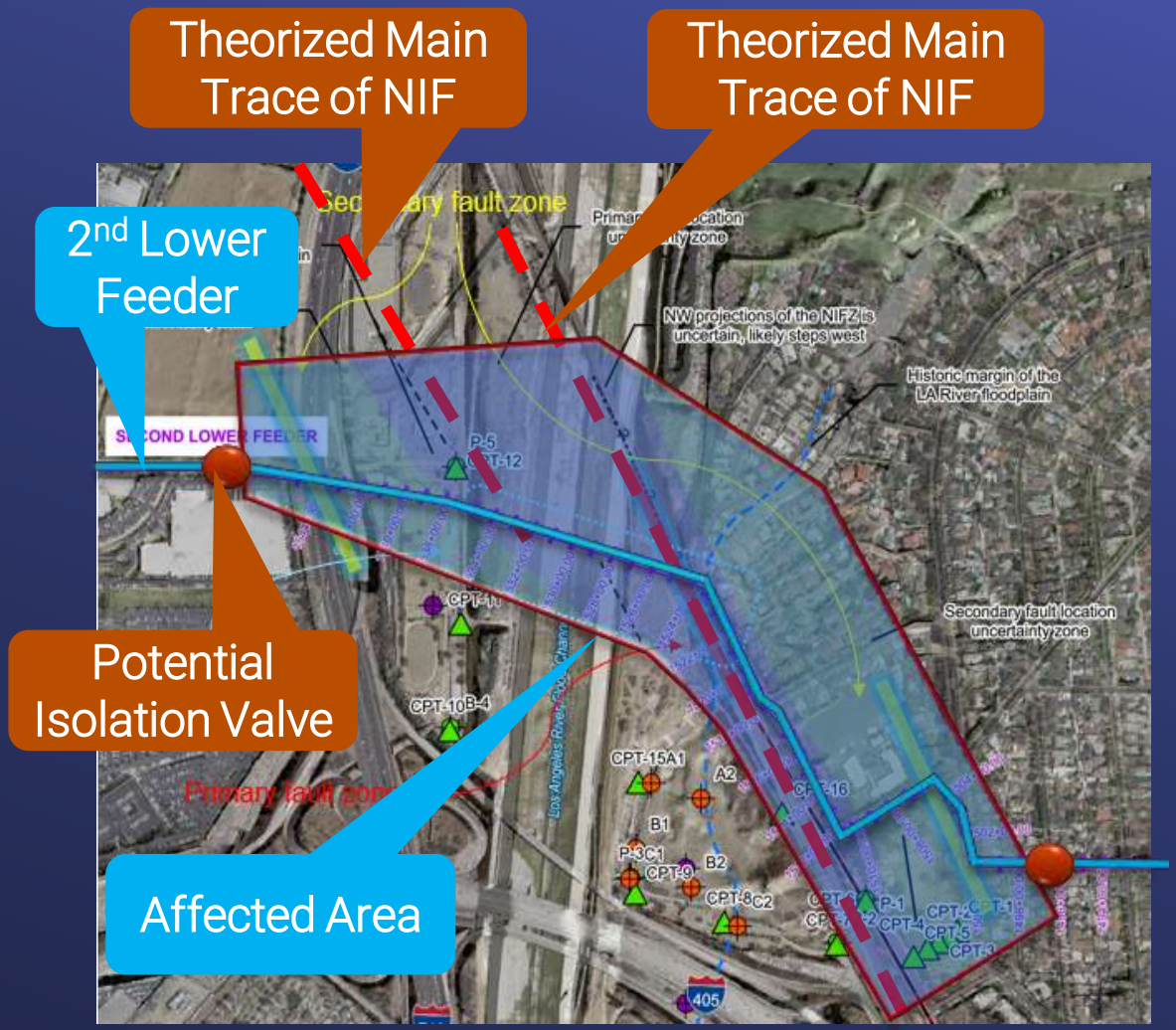
2nd Lower Feeder Fault Crossing Mitigation – Affected Area

Measures to Enhance Resilience against Extreme Events

- Advanced planning to facilitate recovery
  - Devise measures to isolate potential damage area
  - Pre-design construction documents
  - Pre-qualify emergency contractors



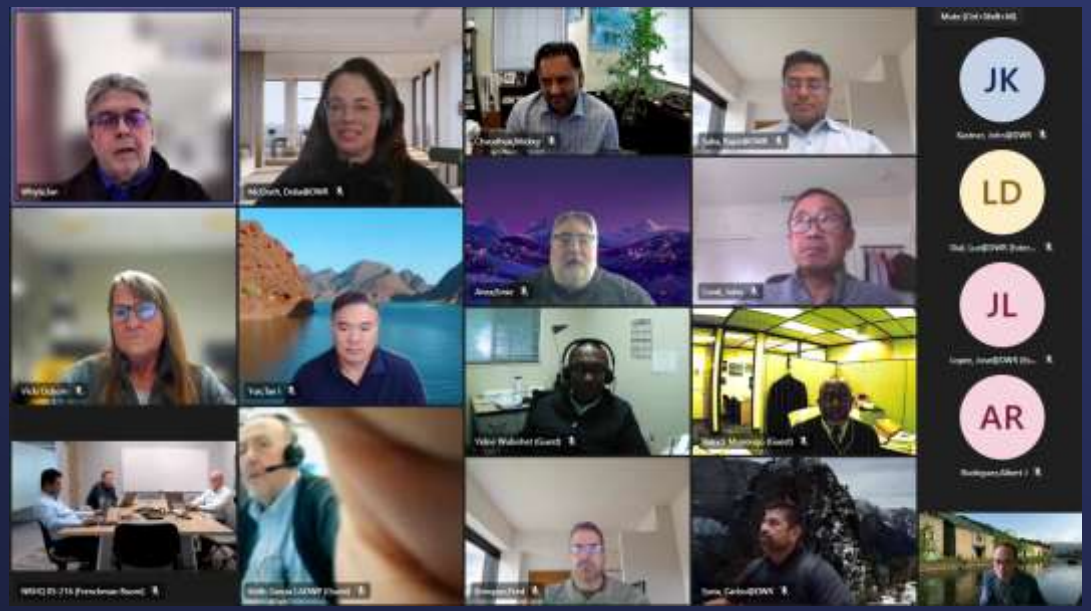
Pre-Designed Tunnel Repair Detail



2nd Lower Feeder Fault Crossing Mitigation – Affected Area

Measures to Enhance Resilience against Extreme Events

- Build up emergency response capability
  - Maintaining in-house resources & expertise
  - Upgrading La Verne shops to enhance capacity
  - Promoting inter-agency collaboration (Aqueduct Seismic Resilience Task Force)
  - Conducting emergency response exercises



Annual Task Force Meeting
(CalOES, CalWARN, DWR, LADWP, MWD)

Vertical Machine Center at La Verne Machine Shop

Next Steps

- Made significant progress in infrastructure reliability
- Maximizing benefits of limited resources with consideration of resilience measures to supplement retrofit/upgrade work
- Key initiatives in 2024
  - Working with research institutes to enhance seismic risk assessment tools
  - Quantifying seismic risk of CRA tunnels to develop mitigation strategies
  - Conducting tabletop exercise on proposed multi-agency emergency response plan to assess its effectiveness and identify gaps

Colorado River Aqueduct

California Aqueduct

Los Angeles Aqueduct


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA

Engineering, Operations, and Technology Committee

2023 System Operations
A Year in Review

Item 6c

February 12, 2024

Item 6b

2023 System Operations A Year in Review

Subject

Update on 2023 System Operations

Purpose

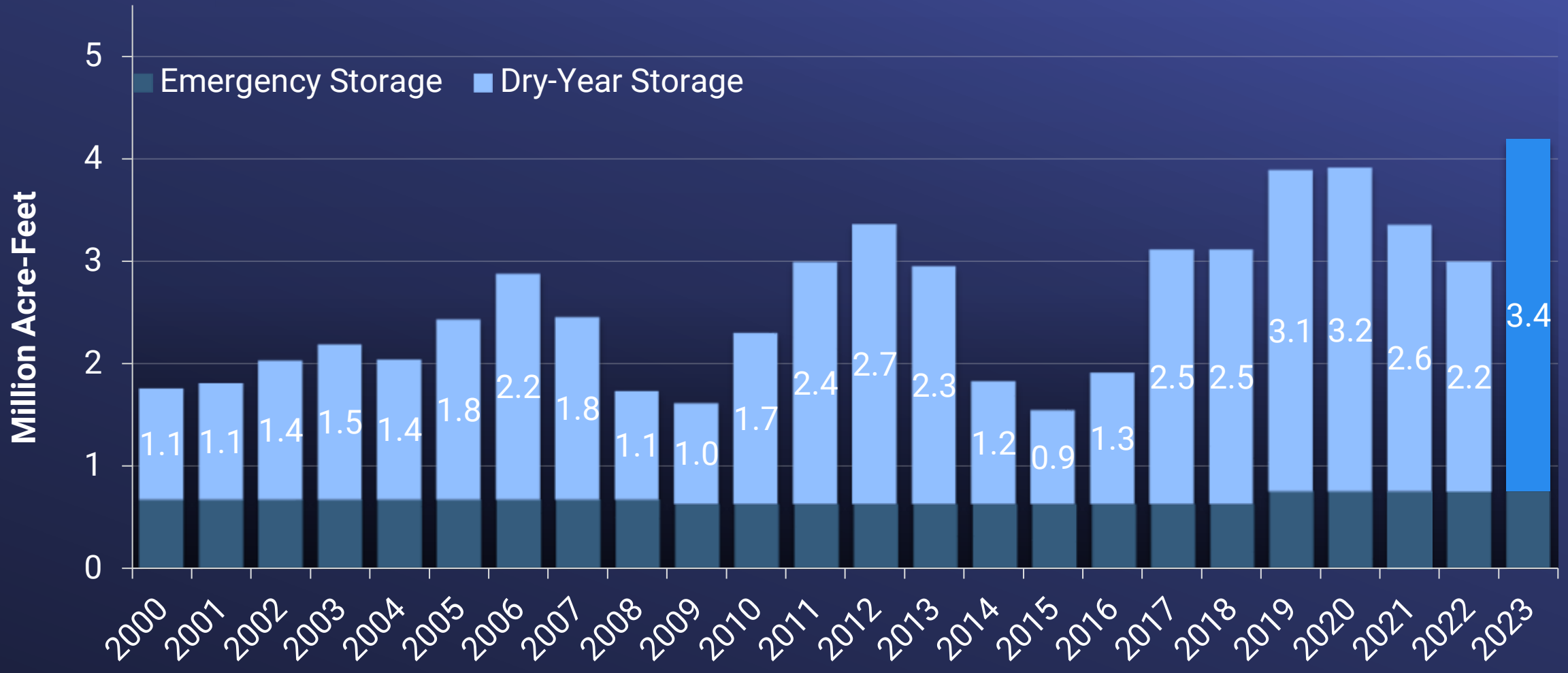
Provide recap of 2023 operations

Next Steps

Adapt operations to 2024 conditions and provide periodic updates to the Board

Record-High Storage Projection for Metropolitan

End-of-Year Balances



Note:
2023 end-of-year balance is preliminary as they are subject to DWR adjustments and USBR final accounting.

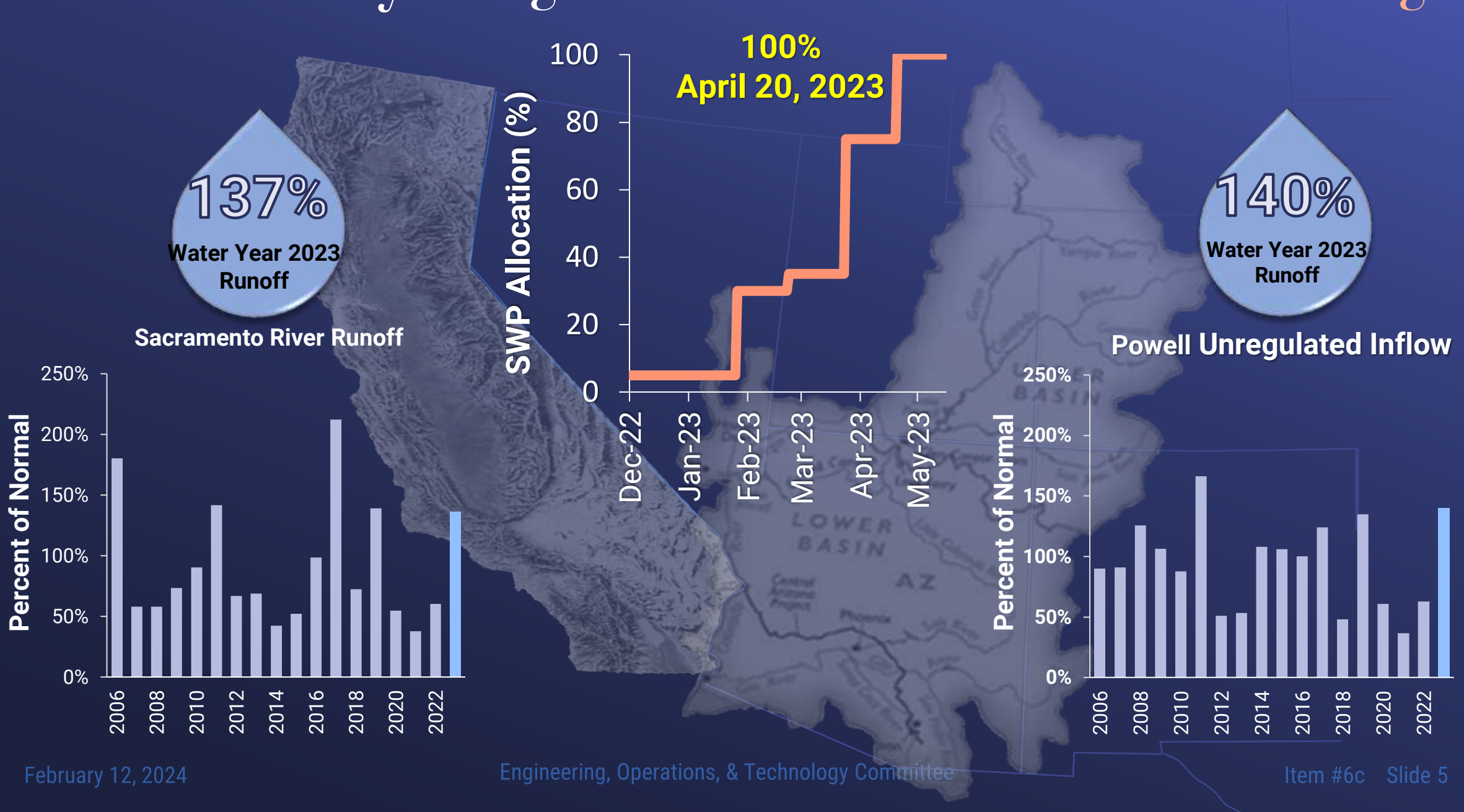
Minimizing SWP Use as Allocation Developed

5% SWP Allocation + Human Health and Safety Supply

End of 2022/ Early 2023 Operations

Castaic Lake (Jan 18, 2023)

Water Year Hydrologic Conditions: Near-Record Breaking



Maximizing SWP Use and Article 21 Supplies

100% SWP Allocation
First time since 2006

Received 134 TAF of Article 21 supplies

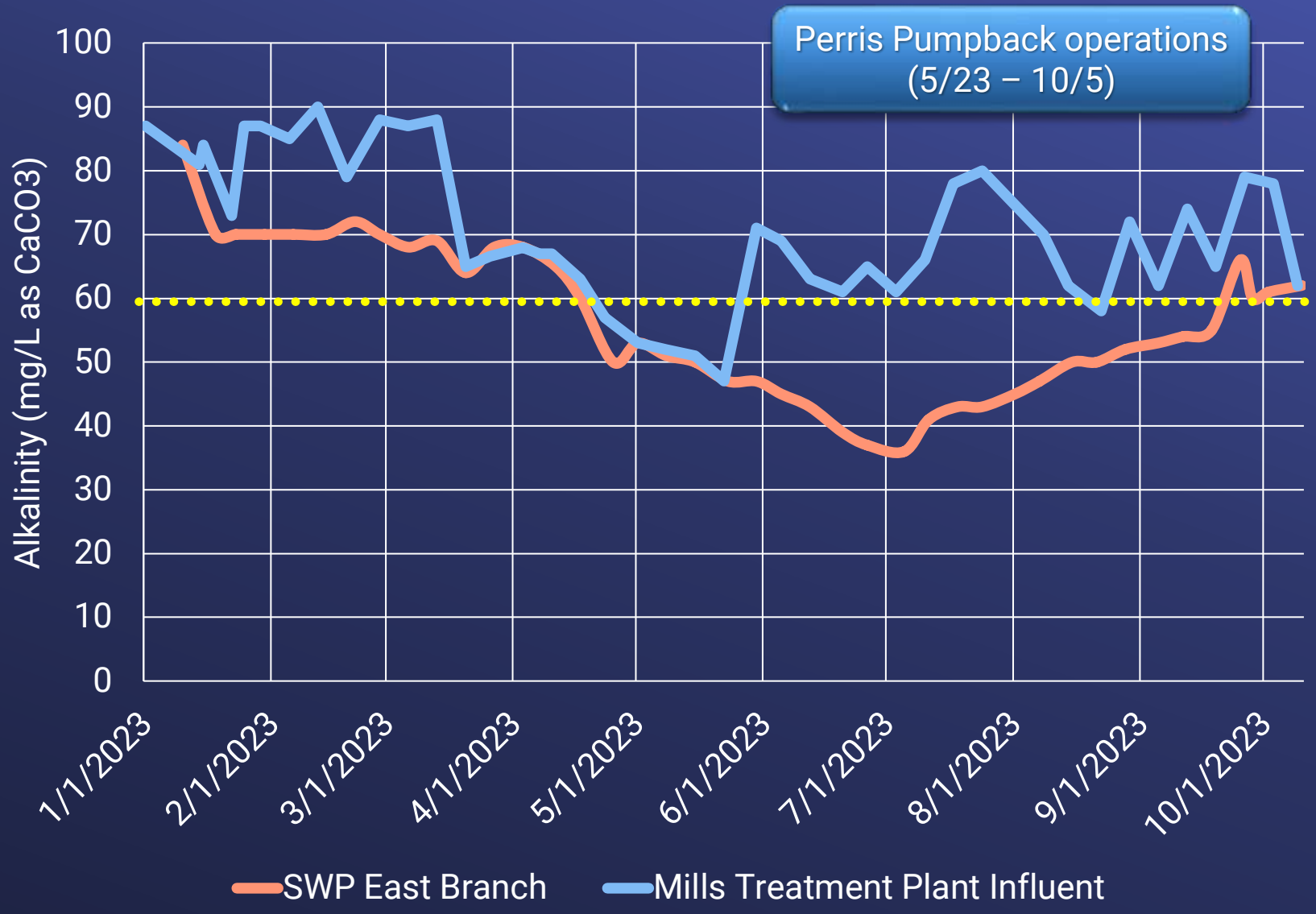
March-April Operations

Article 21 Deliveries to Diamond Valley Lake on March 27, 2023

Low Alkalinity Water from Snowmelt

Water Quality Challenges

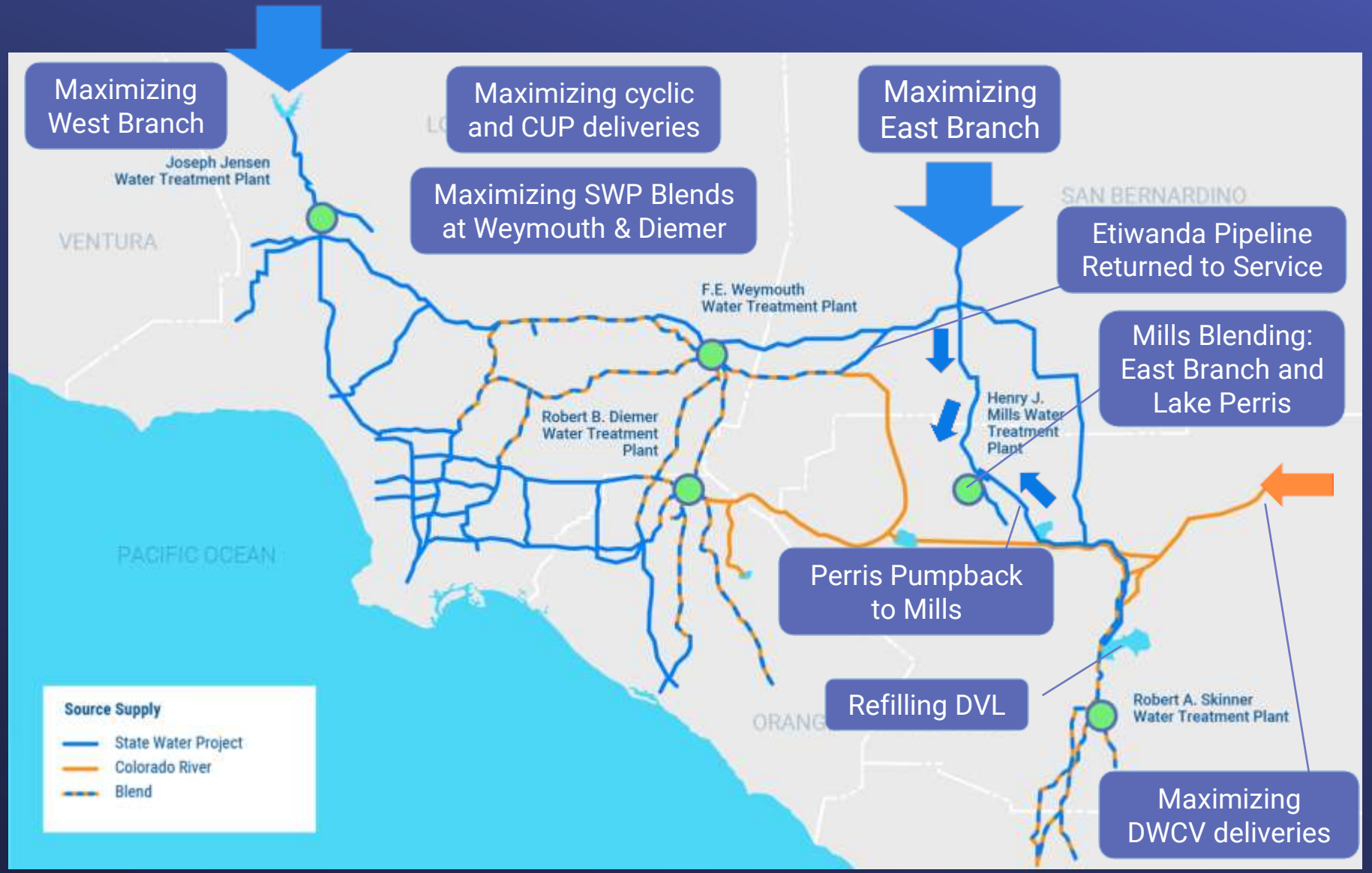
Reoperated system to help manage alkalinity levels and facilitate water treatment



Maximizing SWP Use with Low Alkalinity

May-August Operations

East Branch of California Aqueduct



Managing Multiple Blooms in Reservoirs

Cyanobacteria Blooms Summer 2023

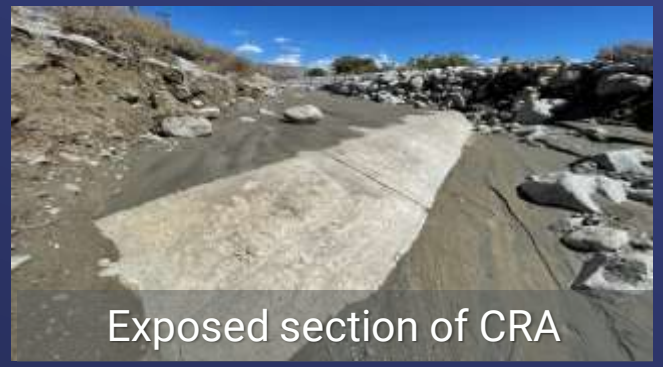
DVL Marina – July 3

Diamond Valley Lake

- Rapidly developed bloom producing cyanotoxins impacting recreational water use only
- Followed State voluntary guidance for monitoring and posted recreational advisory notices

Lake Skinner

- Managed taste & odor (geosmin) event


Exposed section of CRA

Tropical Storm Hilary
August 2023

Emergency Preparedness and Response

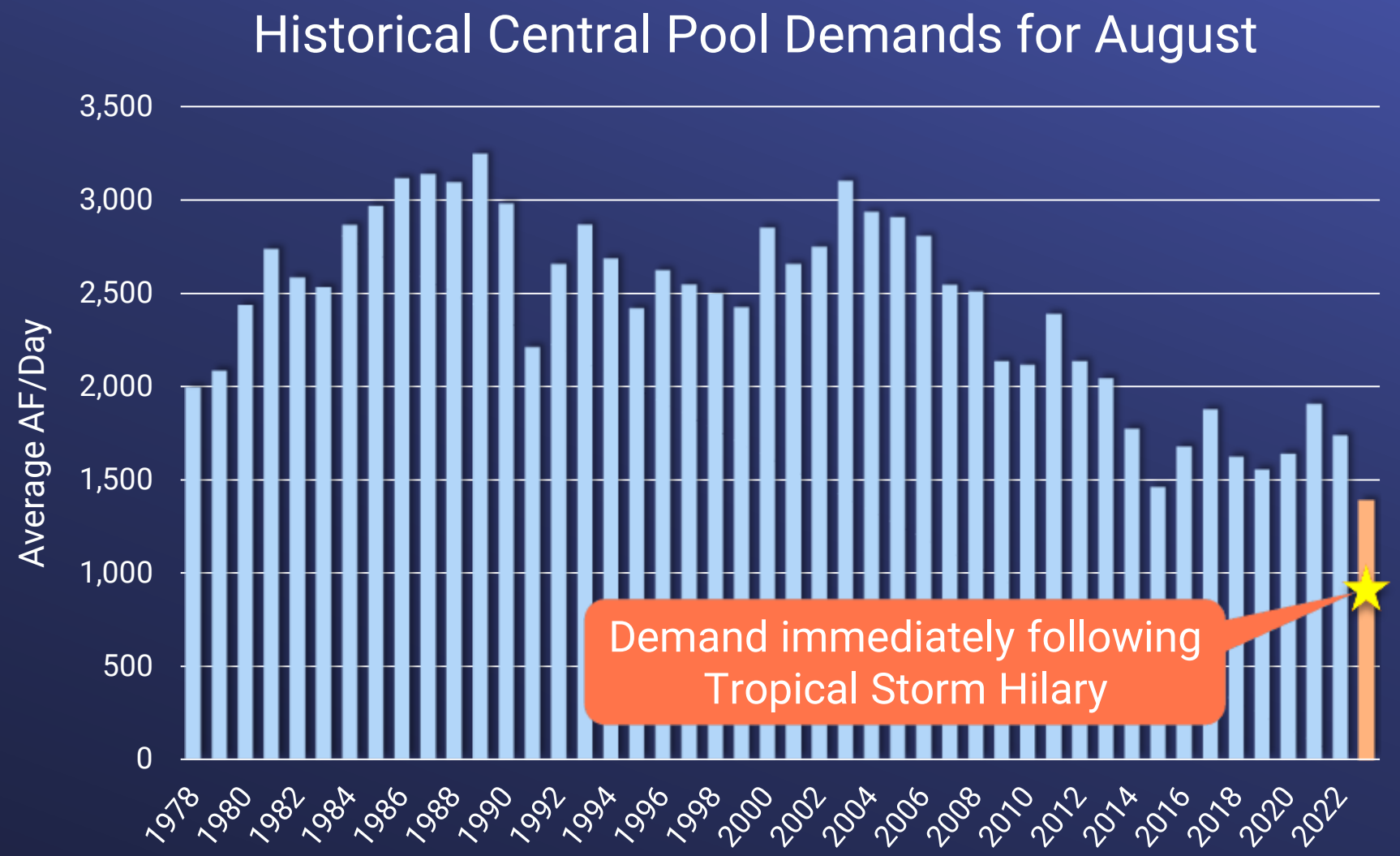
- Activated Emergency Operations Center at Level 3
  - Reduced Colorado River Aqueduct pump flow
  - Suspended deliveries to DWCV storage
- Across the system:
  - Assessed dams & reservoirs
  - Performed aerial & ground patrols following storm
- No major impact to Metropolitan's facilities

Photo by Nicholas Weiss
Equipment Operator on Aqueduct Maintenance Team

Record Low August Demands

Tropical Storm Impact

2023 August summer demand is lower than average February winter demands prior to 2014



Managing Nitrification Across Los Angeles and Orange Counties

Nitrification Event


Extensive coordination with member and retail agencies

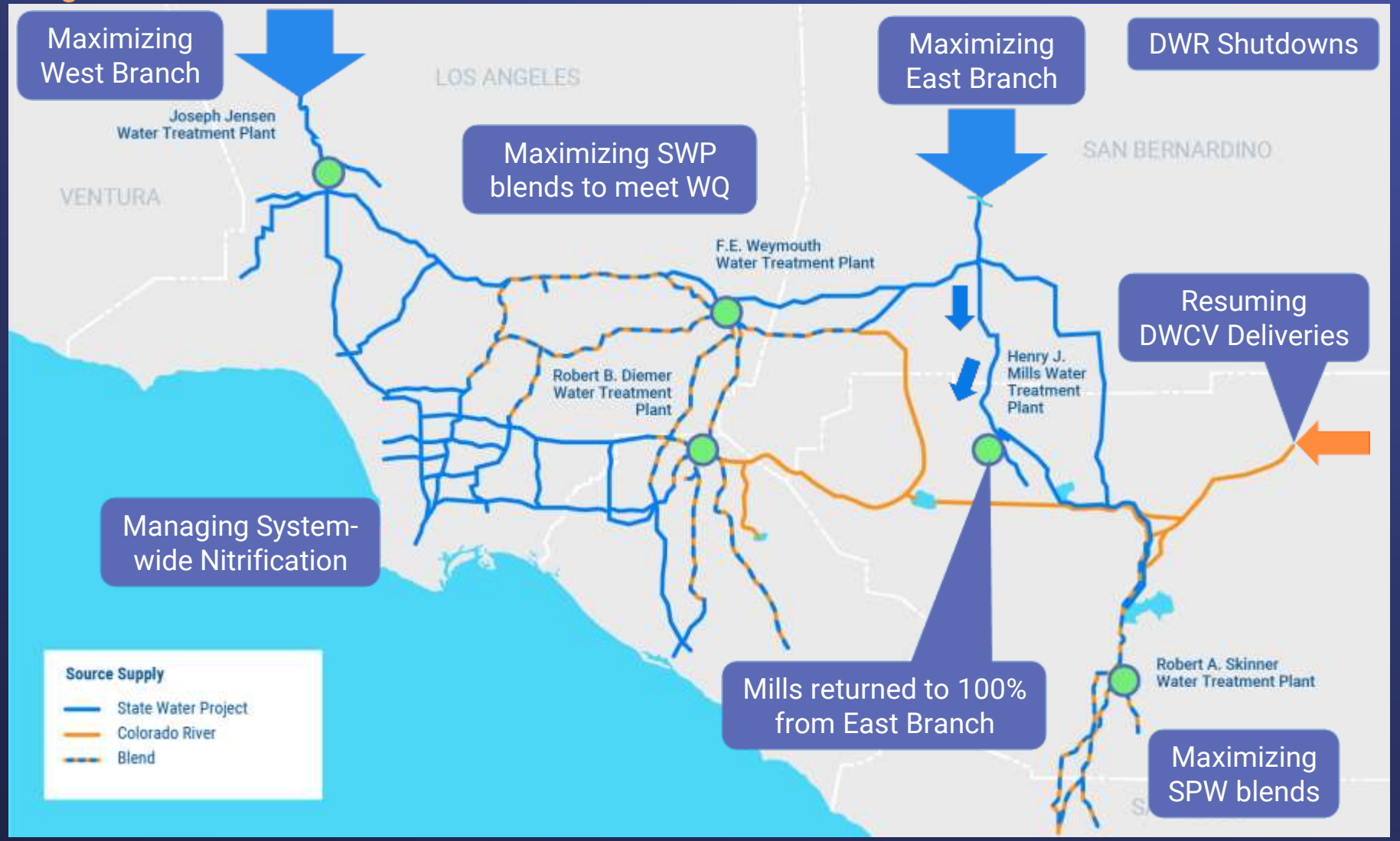
Water Quality Sampling

Significant Damage Sustained at Downstream Whitewater Groundwater Replenishment Facility

Maximizing SWP Supplies while Balancing System Constraints

September-December Operations

Colorado River Aqueduct



Ensuring Continued System Reliability


Middle Feeder


Lake Mathews Forebay Tower Gate


Sepulveda Feeder


Second Lower Feeder


Colorado River Aqueduct


Orange County Feeder

Key Shutdowns in 2023

Sepulveda Feeder
Inspect PCCP via PipeDiver
Feb. 6 – 12, 2023

Middle Feeder
Inspect pipeline and replace valves
Apr. 17-24, 2023

Etiwanda Pipeline
Repair lining
Sep. 26, 2022 – Jul. 29, 2023

Colorado River Aqueduct
Perform CIP and O&M activities
Jan. 31 – Feb. 24, 2023

Compton Lateral
Performed leak repair
Sep. 7 – 16, 2023

Second Lower Feeder
Rehabilitate PCCP
Jan. 10 – May 12, 2023

Orange County Feeder
Reline pipeline
Sep. 18, 2022 - Jul 12, 2023

Allen-McColloch Pipeline
PCCP Inspection
Oct. 29 – Nov. 4, 2023

Lake Mathews Facility, et al.
Replace damaged slide gate on forebay tower
Mar. 13 – 24, 2023

Lakeview Pipeline
Remove bulkheads at Perris Facility and inspect pipeline
Apr. 28 – May 5, 2023

For illustrative purposes only

Metropolitan's 2023 Storage Actions: ~ 1.2 MAF Increase

Notes:

1) *Dashed lines indicate 2023 starting storage balances.*
2) *Ending storage balances are projections (as of December 12, 2023) & will vary based on actual conditions.*
3) *In-region storage includes emergency storage.*
4) *Storage buckets are not drawn to scale.*

Preparing for Future Droughts

DVL to Rialto

AVEK
High Desert
Water Bank

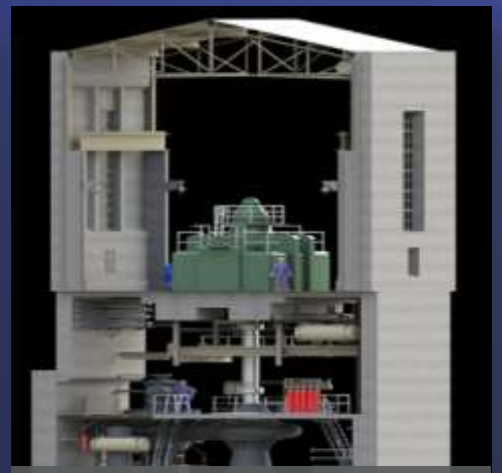
Regional Storage
Programs

PUREWATER
SOUTHERN CALIFORNIA

Success through Teamwork

Planning


Leading

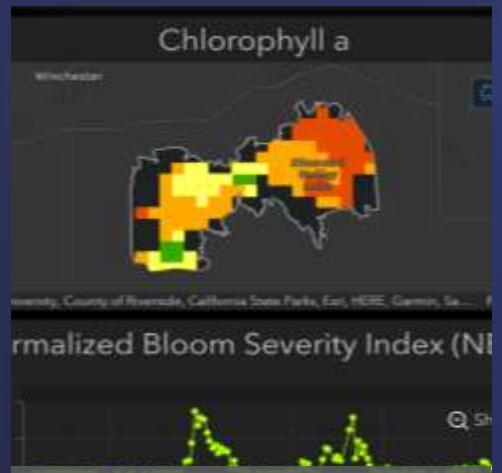

Engineering


Constructing


Operating


Maintaining

Partnering



Innovating

What will 2024 bring?

January 23, 2024

Metropolitan staff is prepared for drought to surplus conditions and will continue working to improve the reliability of the region today, tomorrow, and long into the future.


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

Engineering, Operations & Technology Committee

Source Water Protection Update

Item 6d

February 12, 2024

Item 6d

Source Water Protection Update

Subject

Update on efforts to protect the quality of Metropolitan's source waters

Purpose

Provide background information on the primary constituents of concern and water quality challenges that impact Metropolitan's source waters, control measures, and remediation actions to improve and protect source water quality

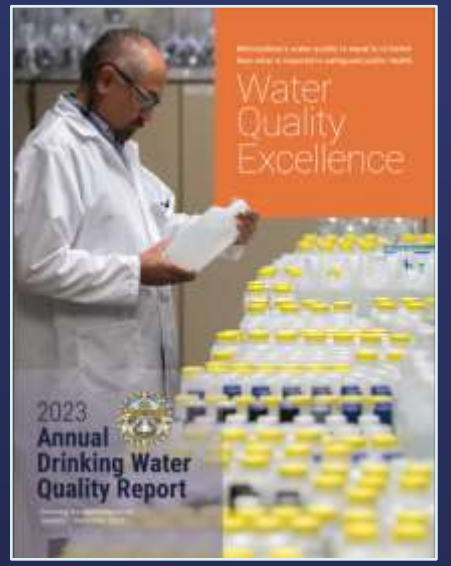
Next Steps

Continue advocating for protective and mitigation measures and participate in state and regional forums

Safeguard the Public's Drinking Water

Water Quality's Mission

- Multi-barrier approach to protecting public health
  - Source Water Protection
    - Watershed Sanitary Survey Updates
  - Water Treatment
  - Distribution System Integrity
  - Monitoring



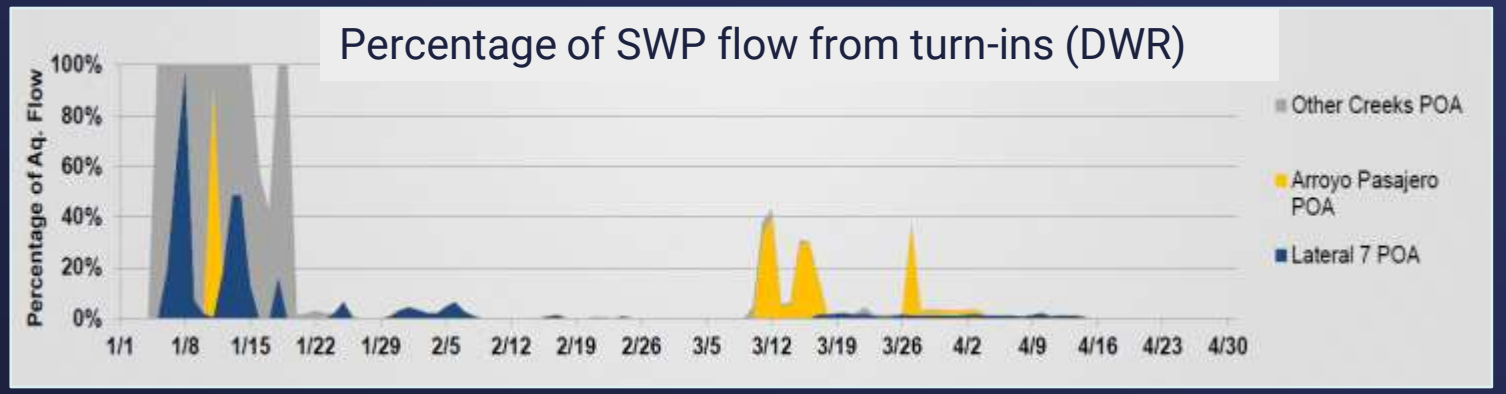
Water Quality Challenges in the State Water Project

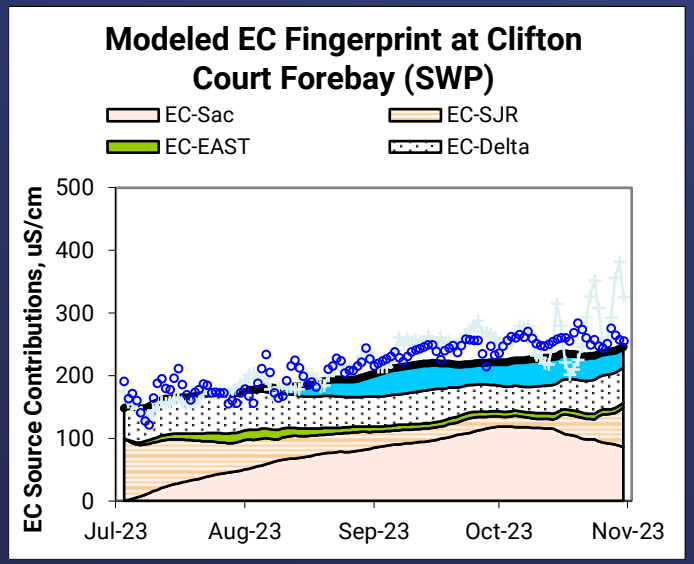
Banks Pumping Plant (DWR)

- Arsenic
- 1,2,3-Trichloropropane
- Nutrients
- Invasive Species
- Constituents of Emerging Concern
- Pharmaceuticals and Personal Care Products
- Total Organic Carbon
- Bromide
- Alkalinity
- Pathogens
- Pesticides and Herbicides

Municipal Water Quality Investigations Program

- Funded by participating State Water Contractors
- Benefits include
  - Monitoring and sampling
  - Water quality forecasting
  - Database management
  - Scientific studies
  - SWP Sanitary Survey





Cyanobacteria Blooms in Source Waters

Diamond Valley Lake Cyanotoxin Bloom

- Cyanobacterial blooms are driven by nutrients (phosphorus) in source waters
- Cyanotoxins persisted through latter half of 2023
- Drinking water not impacted
  - Recreational water issue
- Followed the state's voluntary guidance for monitoring and posting recreational advisories
  - No regulatory requirements
- Caution and warning signs posted July to December 2023

Quagga Mussel Monitoring

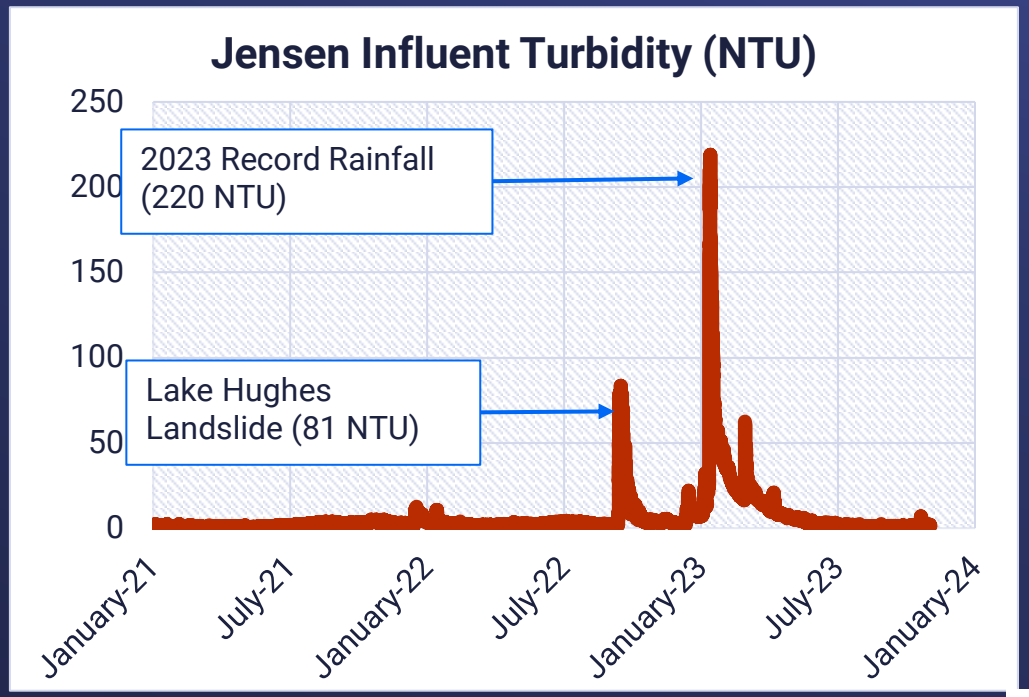
Quagga Mussels in West Branch State Water Project

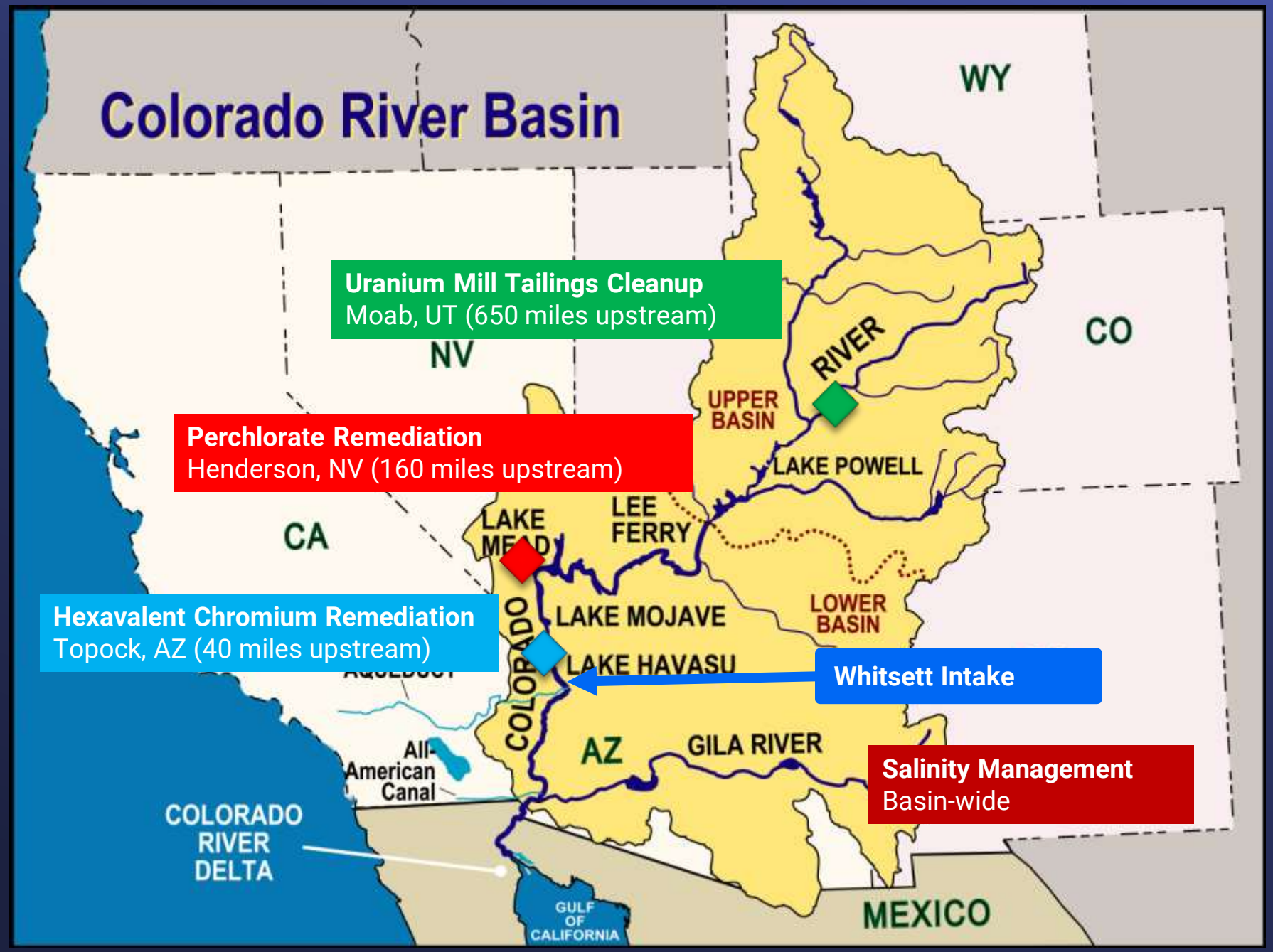
- Confirmed evidence of quagga mussel reproduction in SWP West Branch
  - Adult mussel discoveries in 2016, 2021, 2023
  - Veligers detected at multiple locations in 2023
  - Calcium in SWP lower than CRA so may not see same level of proliferation or impact
- Continued monitoring and assessing management and control options
- Ensuring raw water deliveries have no downstream impacts
- Coordinating with Member Agencies, LA County Public Works, DWR, and CDFW

Castaic Lake Turbidity Events (2022-2023) - Wildfire

Jensen Treatment Plant Influent Turbidity

- Lake Hughes Landslide – 0.5 inches of rain in 15 minutes
- 2023 Record Rainfall - 220 NTU reached during January 2023





Key Water Quality Activities

Other Colorado River Water Quality Issues

- Pathogens
- Constituents of Emerging Concern
- Pharmaceuticals and Personal Care Products
- Invasive Species

Uranium Mill Tailings Cleanup

- 16-million-ton pile of uranium mill tailings in Moab, UT near Colorado River
- Tailings removal and disposal began 2009
  - 14 million tons removed to date (88%)
  - Target completion in 2030s
- Metropolitan continues to advocate for funding for an expeditious cleanup

Mill Tailings Pile - Moab, UT (USDOE)

FY 2022 Enacted	FY 2023 Requested	FY 2023 Enacted	FY 2024 Requested
$67 million	$67 million	$67 million	$67 million

Mill Tailings Cleanup Funding Levels (USDOE)

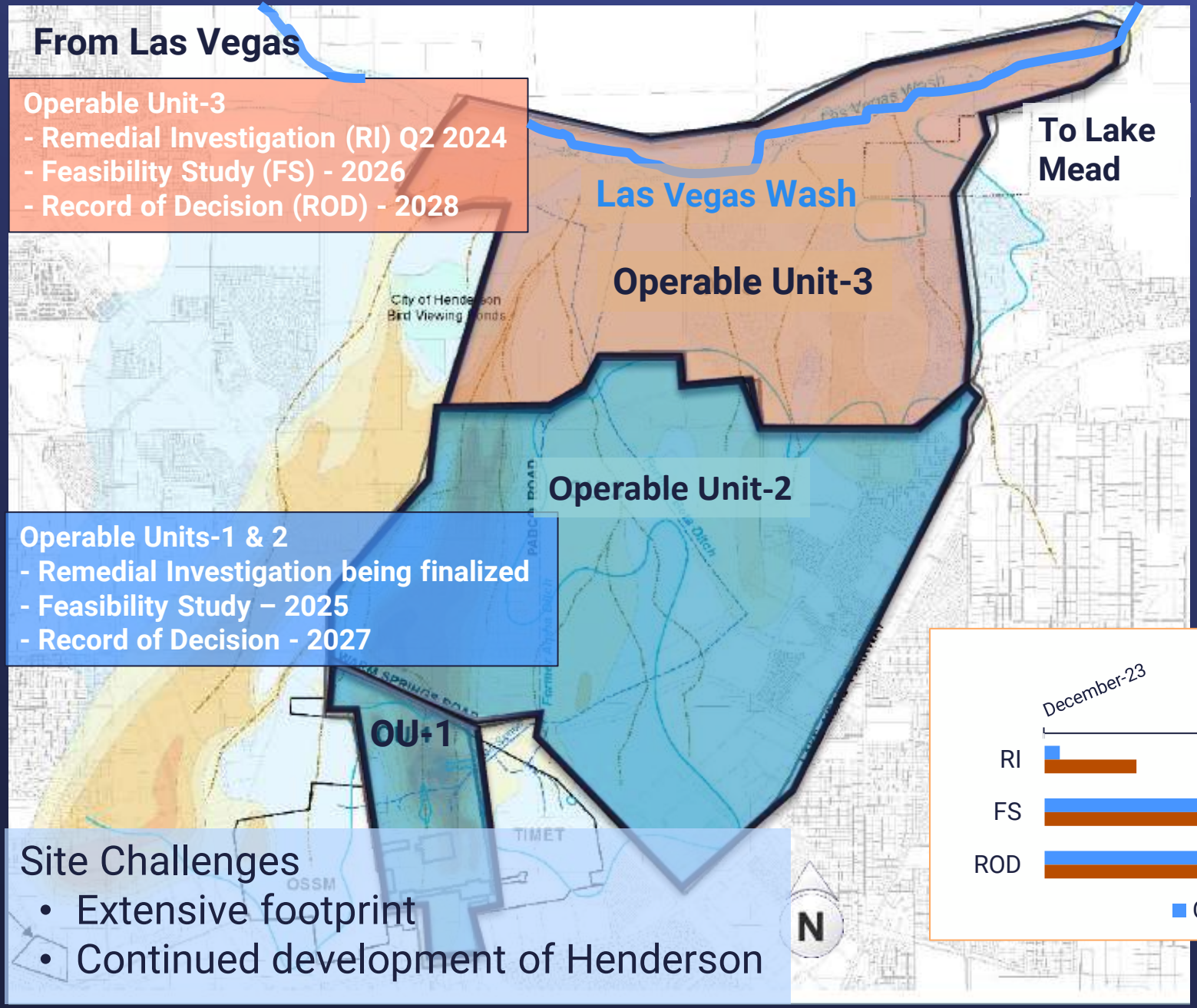
Railcars to Disposal Cell (USDOE)

Henderson, NV Perchlorate Plumes

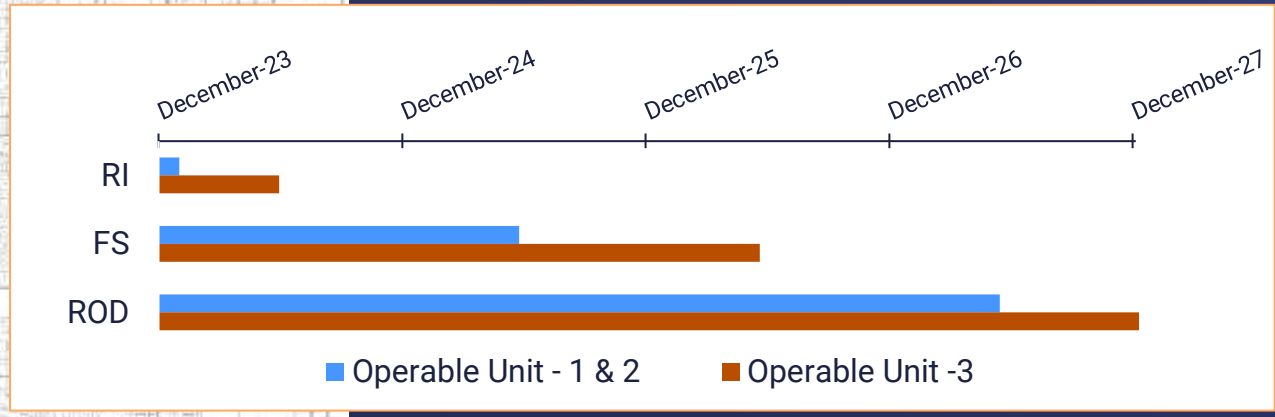

NERT Fluidized Bed Reactors (MWD)

- First detected in 1997
- CA MCL is 6 ppb
- Detection Limit for Reporting is 1 ppb
- EPA proposed MCL expected in 2025
- Over 8,200 tons removed by both parties
- Since 2013, average level in Colorado River is less than 2 ppb

NERT Remediation Progress




2023 Annual Stakeholders Meeting



Site Challenges

- Extensive footprint
- Continued development of Henderson

PG&E Topock Compressor Station

Topock, AZ Hexavalent Chromium

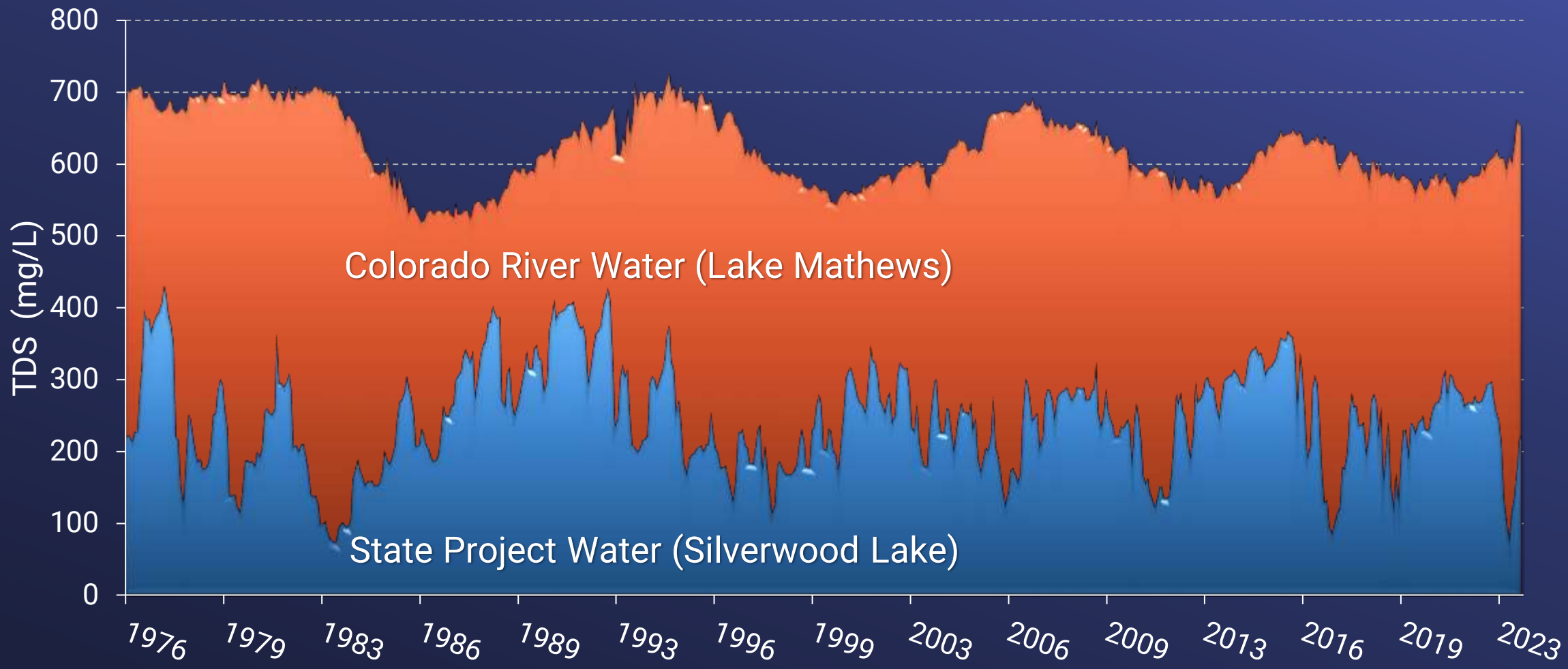
- Groundwater contamination at PG&E site next to Colorado River
- Total chromium CA MCL is 50 ppb
- Hexavalent chromium
  - CA proposed MCL of 10 ppb
  - Non-detect in the river
- Long-term remedy construction
  - Bio-remediation system
  - Phase 1 construction complete
  - Phase 2 under construction
    - Estimated completion in 2025
  - Full system startup in early 2027

2022 Hexavalent chromium plume >32 ppb (Jacobs)

Colorado River Salinity Management

- Salinity sources in basin
  - Prehistoric salt deposits
  - Human activity (irrigation/discharges)
  - 9 million tons of salt pass through Hoover Dam annually
- Colorado River Basin Salinity Control Program
  - Canal lining
  - Improved irrigation systems
  - Deep-well brine injection (Paradox Valley Unit)
- 1.3 million tons/year removed → 100 mg/L reduction

Salinity in Metropolitan Supplies
Historical Trends



Metropolitan's Continuing Actions to Protect Source Waters

- Understand watersheds and sources of contamination
- Monitor and track watershed changes
- Proactively monitor source water quality
- Assess impacts on treatment
- Collaborate with partners
- Engage in legislative and regulatory processes
- Advocate for protecting source waters
- Safeguard the public's drinking water


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Report

Engineering Services Group

- **Engineering Services Monthly Activities for January 2024**

Summary

This monthly report for the Engineering Services Group provides a summary of activities for January 2024 in the following key areas:

- Distribution System Reliability Program
- Prestressed Concrete Cylinder Pipe (PCCP) Reliability Program
- Colorado River Aqueduct (CRA) Reliability Program
- System Flexibility/Supply Reliability
- Treatment Plant Reliability Program
- System Reliability Program
- Value Engineering Program
- Pure Water Southern California Program
- Protecting the Public and Metropolitan's Assets

Purpose

Informational

Attachments

Attachment 1: Detailed Report - Engineering Services Group's Monthly Activities for January 2024

Date of Report: February 12, 2024

Engineering Services
Key Activities Report for January 2024

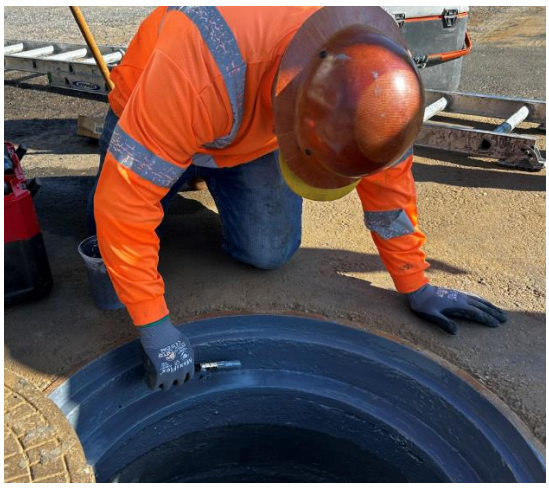
Core Business Function – Execute Capital Investment Plan projects

Engineering Services manages and executes projects within the Capital Investment Plan (CIP) to maintain infrastructure resiliency, ensure regulatory compliance, enhance sustainability, and provide flexibility in system operations to address uncertain water supply conditions.

Distribution System Reliability Program

This program maintains reliable water deliveries through specific rehabilitation and upgrade projects on Metropolitan's pipelines, reservoirs, and control structures. Recent activities include the following:

- **Lake Mathews Wastewater Replacement** – This project consists of replacing the existing septic tank system with a wastewater collection system at Lake Mathews. The new wastewater system connects to a nearby off-site Western Municipal Water District main wastewater line. The contractor is continuing to coat the accessway, inspect the sewer line, and restore the surface asphalt. Construction is approximately 97 percent complete and is scheduled to be complete in April 2024.
- **San Diego Canal Concrete Lining Rehabilitation** – This project will replace damaged concrete lining at three locations along the San Diego Canal. The contractor is currently transmitting submittals for review. Construction is approximately 10 percent complete and is scheduled to be completed in April 2024.
- **Rialto Pipeline Rehabilitation** – This project replaces a 35-foot-long, 121.5-inch-diameter section of welded steel pipe on the Rialto Pipeline in the city of Upland, where the mortar lining has failed. This project also replaces the failed pipe spool and isolation valve at the CB-11 service connection. Final design is complete and board award of a construction contract is planned for May 2024.
- **Garvey Reservoir Rehabilitation** – This project will replace the aging reservoir floating cover and liner, structurally strengthen the inlet/outlet tower, upgrade the on-site water quality laboratory building, rehabilitate the junction structure, and replace the existing standby generator and a portion of the security perimeter fence. Final design is approximately 15 percent complete and is scheduled to be complete in April 2025. A notice of preparation was issued in January 2024 for the environmental documentation for this rehabilitation effort.

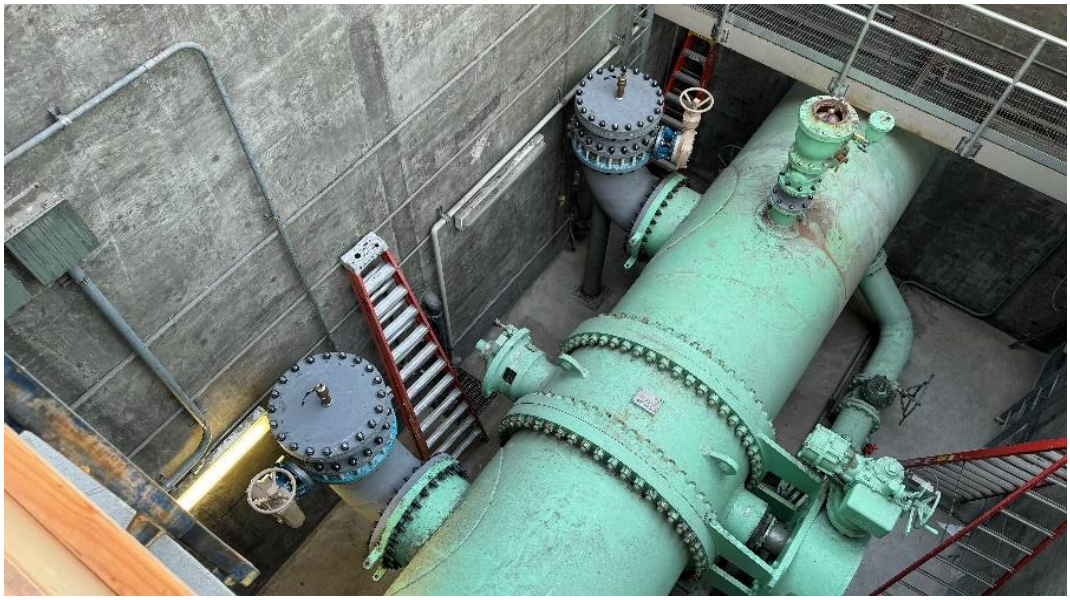


Lake Mathews Wastewater Replacement – Testing manhole ring coating

Prestressed Concrete Cylinder Pipe (PCCP) Reliability Program

This program was established to enhance the reliability of Metropolitan's water distribution system and to reduce the risk of costly emergency repairs of PCCP. The priority pipelines included in the program are the Second Lower Feeder, Sepulveda Feeder, Calabasas Feeder, Rialto Pipeline, and the Allen-McColloch Pipeline. A total of 100 miles of PCCP pipelines will be refurbished under this 20-year program. Recent activities include the following:

- **Sepulveda Feeder Reach 2** – This project installs steel lining along 3.9 miles through several cities including the cities of Torrance and Los Angeles. Final design is approximately 97 percent complete and is scheduled to be complete by February 2024.
- **Allen-McColloch Pipeline Urgent Relining** – This project will perform urgent relining of distressed PCCP segments of the Allen-McColloch Pipeline (AMP). A recent inspection on the AMP discovered several segments under distress. Staff completed design of a 24" bypass valve at OC-88 which will allow the operating pressure in the AMP south of OC-88 to be reduced. The bypass spool and isolation valves were fabricated in December and January and installed during a shutdown of the AMP in January. The remaining work on the bypass will be completed in February.
  Relining of the AMP will be performed in stages to minimize impacts to member agencies. The first stage will focus efforts on the northern portion and will be performed in April 2024. The second stage, performed from May to December 2024, will address the southern portion of the pipeline. A bulkhead will be utilized to provide flows to the northern portion of the line during an extended outage of the southern portion. A board action is scheduled for February 2024 to authorize change orders to three existing contracts to expedite the work.
- **Sepulveda Feeder Urgent Carbon Fiber Relining** – This project rehabilitates three deteriorated Sepulveda Feeder PCCP segments in the Van Nuys, Sherman Oaks, and Brentwood neighborhoods of the City of Los Angeles using carbon fiber reinforced polymer lining. The contractor is currently preparing submittals for Metropolitan staff review. The shutdown and pipeline construction work activities have been moved from the November/December timeframe to the March/April timeframe to accommodate the longer than expected timeline to acquire traffic control permits and other city approvals. Construction is 10 percent complete, representing the work on the submittals, and is scheduled to be completed in May 2024.
- **Foothill Feeder Acoustic Fiber Optic System** – This project will install an acoustic fiber optic monitoring system within the Foothill Feeder to allow continuous monitoring of the PCCP portions without the need for expensive prolonged shutdowns. Design has been completed, and a board action is scheduled for February 2024 to award an agreement to a specialty consultant to furnish the monitoring system.



Allen-McColloch Pipeline Urgent Relining – Left: New OC-88 bypass line isolation valves and fittings (in grey) ready to receive larger, 24-inch pressure reducing valve, which will help reduce pipe operating presssures.

Colorado River Aqueduct (CRA) Reliability Program

This program maintains the reliability of Metropolitan's CRA conveyance system. Recent activities include the following:

- **Conduit Structural Protection** – This project consists of installing new reinforced concrete slab protection crossings over portions of the cut-and-cover conduits on the Colorado River Aqueduct. Metropolitan's Board awarded a construction contract in April 2024. The contractor is currently performing grading and installation of form work for concrete pads at multiple sites. Construction is 36 percent complete and is scheduled to be completed in January 2025.
- **Freda Siphon Seals** – This project consists of installing internal seals at over 80 locations along the Freda Siphon to address existing cracks and leaks. Metropolitan's Board awarded a construction contract in September 2023. The Notice to Proceed was sent to the Contractor in October 2023. The contractor is preparing submittals for review. Construction is scheduled to be complete in May 2024.
- **Domestic Water Treatment System Upgrades** – This project upgrades the domestic water treatment systems at all five CRA pumping plants, including replacement of the water treatment units. Metropolitan's Board awarded a construction contract in December 2021. The contractor is excavating utilities at Gene and Iron as well as fabricating the temporary treatment skids. Construction is 35 percent complete and anticipated to be completed in 2026.
- **Main Transformer Replacement** – This project replaces the thirty-five 230 kV and 69 kV step-down transformers that are used to run the main pumps at the five Colorado River Aqueduct pumping plants. Preliminary design was completed in June 2023. The transformer procurement will be advertised as a best value procurement in early 2024. Award of a consulting agreement for final design is schedule for the June 2024 board meeting.
- **Gene Communication System Upgrade** – This project will construct a new fiber optic cable line from Parker Dam to Gene Pumping Plant. The new line is predominantly located within Metropolitan fee property on new power poles with a small underground portion of the alignment within the Bureau of Reclamation's property. Metropolitan's Board awarded a construction contract in November 2023. The Notice to Proceed

was issue in December 2023. Construction is approximately five percent complete and is scheduled to be complete in September 2024.

Domestic Water Treatment System Upgrades – Installing above ground conduit systems at Iron Mountain

System Flexibility/Supply Reliability

Projects under this program will enhance the flexibility and/or increase the capacity of Metropolitan's water supply and delivery infrastructure to meet current and projected service demands. Projects under this program address climate change affecting water supply, regional drought, and alternative water sources for areas dependent on State Project Water**.**

- **Wadsworth Pumping Plant Bypass** – This project installs a bypass pipeline and an isolation valve to interconnect the Wadsworth Pumping Plant with the Eastside Pipeline. This is one of several projects needed to deliver water from Diamond Valley Lake (DVL) to the Rialto Pipeline. Metropolitan's Board awarded a construction contract in January 2023. Construction of the valve structure and relocation of utilities in the area is underway. Construction is approximately 70 percent complete and is scheduled to be complete in August 2024.
- **Badlands Tunnel Surge Protection** – This project installs a new open-to-atmosphere surge tank at the south portal of the tunnel, which will protect the Inland Feeder from hydraulic transients when pumping water from DVL to the Rialto Pipeline through the Inland Feeder. Metropolitan's Board awarded a construction contract in November 2023. Construction is approximately five percent complete and is scheduled to be complete in March 2025.
- **Inland Feeder-Rialto Pipeline Intertie** – This project installs an interconnection pipeline and isolation valve structure between the Inland Feeder and Rialto Pipeline, so that water can be delivered from DVL to the Rialto Pipeline. Metropolitan's Board awarded a construction contract in September 2023. The contractor

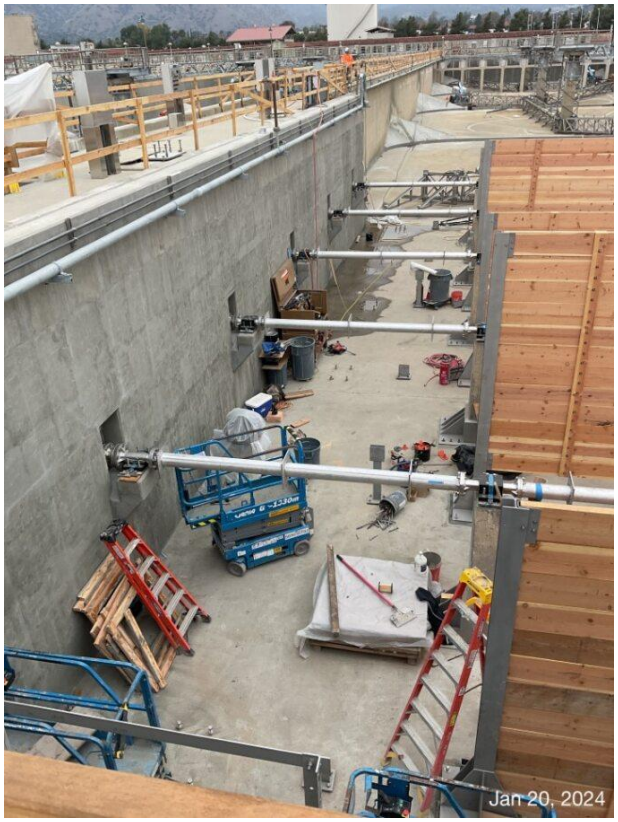
is currently transmitting submittals for Metropolitan's staff review. Construction is approximately 5 percent complete and is scheduled to be complete in March 2025.

- **Sepulveda Feeder Pumping Stations, Stage 1** – This project installs new pump stations at the existing Venice and Sepulveda Canyon pressure control facilities, providing the ability to reverse flow in the Sepulveda Feeder and deliver 30 cubic feet per second from the Central Pool to portions of the Jensen plant exclusive area. This project utilizes a progressive design-build (PDB) project delivery method. Engineering and Operations staff are reviewing initial submittals and collaborating through a series of design workshops, planned through the end of the year, to support upcoming design work. The contractor and Metropolitan are coordinating with both Southern California Edison and Los Angeles Department of Water and Power on upgrades to the incoming power service at both locations. Phase 1, which includes site investigation, design to the 70 percent level, environmental planning, and preparation of long-lead-item procurement documents, is scheduled to be complete in September 2024. Work progress is on track to complete the first major milestone, delivery of the 30 percent design package and the Basis of Design Report (BODR), in April 2024.

Treatment Plant Reliability Program

This program was initiated to maintain reliability and improve the operating efficiency of Metropolitan's water treatment plants through specific improvement projects. Recent activities include the following:

- **Weymouth Basins 5-8 and Filter Building No. 2 Rehabilitation** – This project rehabilitates major mechanical and structural components of Basins 5-8 and Filter Building No. 2 at the Weymouth plant, including the flocculation/sedimentation equipment, sludge pumps, baffle boards and walls, launders, inlet gates, and outlet drop gates. Rehabilitation work also includes seismic upgrades of basin walls and inlet channel, hazardous material abatement, and replacement of filter valves and actuators in Filter Building No. 2. The contractor completed construction of new clarifier and flocculator equipment in Basins 7 and 8, continued installation of baffle walls, handrails, piping and electrical conduits, and began startup testing of filter valves, piping, and electrical components in Filter Building No. 2. Construction is 60 percent complete and is scheduled to be complete in June 2025.
- **Mills Electrical Upgrades** – This project upgrades the electrical system with dual-power feeds to key process equipment to comply with current codes and industry practice, improve plant reliability, and enhance worker safety. Stage 1 construction is complete, and a construction contract for Stage 2 improvements was awarded in November 2021. Stage 2 improvements will add a second incoming 12 kV service from Riverside Public Utilities, reconfigure the existing 4160-volt switchgear, and replace the standby generator switchgear and the emergency generator programmable logic controller. The contractor completed installation of the roofing and HVAC systems and continued installation of the electrical conduits inside the ORP Switchgear Building. Construction is approximately 45 percent complete and is scheduled to be complete in August 2025.
- **Jensen Ozone PSUs Replacement** – This project rehabilitates the ozone generation system at the Jensen plant by replacing four existing ozone power supply units (PSUs) and four sets of generator dielectrics. The project also makes required modifications to the associated electrical, control, and cooling water systems. Metropolitan's Board awarded a construction contract in June 2022. All PSUs and dielectrics have been manufactured and delivered. Installation of two PSUs is complete and dielectrics for two ozone generators have been replaced. The cooling water system piping has been completed and hydrotested. The contractor is preparing for start-up testing of the newly installed PSUs. Construction is 75 percent complete and is scheduled to be complete in April 2024.



Weymouth Basin 8 – Flocculator Shaft Installation

System Reliability Program

The System Reliability Program consists of projects to improve or modify facilities located throughout Metropolitan's service area to utilize new processes and/or technologies and improve facility safety and overall reliability. Recent activities include the following:

- **Headquarters Physical Security Upgrades** – This project implements comprehensive security upgrades for Metropolitan's Union Station Headquarters. These upgrades are consistent with federally recommended best practices for government buildings. This work has been prioritized and staged to minimize rework and impacts on day-to-day operations within the building. Stage 1 work is complete and provides enhanced security related to perimeter windows and doors. Stage 2 work is complete and provides security system upgrades inside the building with a focus on the main entry rotunda area, boardroom, executive dining lounge, and security control room. Stage 3 improvements will provide security system upgrades around the perimeter of the building. Metropolitan's Board awarded the third and final contract in December 2022. The contractor began fabrication of the ornamental fence within the courtyard and began concrete placement for the fixed bollards. Construction is 55 percent complete and is scheduled to be complete in May 2024.
- **Headquarters Building Fire Alarm and Smoke Control System Upgrades** – This project upgrades Metropolitan's Union Station Headquarters fire life safety systems, which includes replacement of the fire detection and alarm system and HVAC system improvements for smoke control. The fire alarm and smoke control systems in Metropolitan's Headquarters Building provide detection, notification, and control of building functions so that occupants and visitors can safely exit in the event of a fire. The contractor continued final testing and sign-off of the fire alarm and smoke control systems by the LAFD and Los

Angeles Department of Building and Safety. Construction is 95 percent complete and is scheduled to be complete in February 2024.

- **SCADA System Upgrades** - This project will upgrade Metropolitan's entire control system in incremental stages, spanning the Colorado River Aqueduct, the five water treatment plants, and the conveyance and distribution system. The first stage of this project replaces the control system at the Mills plant, starting with a pilot effort on one of the plant's remote terminal units to demonstrate the proposed technology and the consultant's approach for the plant and the overall project. The consultant has installed the pilot equipment, and is now performing equipment verification, and developing control narratives and a training plan. The pilot phase is approximately 95 percent complete and is scheduled to be complete in April 2024. The system upgrades at the Mills plant are scheduled to be complete in October 2026.
- **Foothill Hydroelectric Plant and Control Building Seismic Upgrade** - This project strengthens the Foothill Hydroelectric Plant and Control Building to withstand a significant earthquake, by removing and replacing the roofing system; adding encasements to enlarge and strengthen concrete columns; and reinforcing shallow foundations. The contractor continued performing abatement activities on the building's roof, demolition of existing exhaust fans, and installation of structural steel roof plates. Construction is approximately 30 percent complete and is scheduled to be complete in December 2024.

Value Engineering Program

Cabazon Radial Gate Facility Improvements Constructability Review

In January, the Technical Control Team in Engineering Services Group conducted a constructability review workshop examining the final design drawings and specifications for the Cabazon Radial Gate Facility Improvements project. Metropolitan expects to advertise this project in the third quarter 2024. Once completed, this capital project will restore the original operational capability at this facility which was constructed in 1936 as part of the CRA. The purpose of the Cabazon facility is to provide a means to divert CRA flow to the San Gorgonio Wash under certain emergency conditions and protect the downstream San Jacinto Tunnel from over-pressurization. The scope of the project includes replacement of two 17-ft wide radial gates and making security and other operational improvements at the facility.

The constructability review focused on the planned work to ensure that the required activities could be safely accomplished during the scheduled shutdown of the CRA. The review team included Metropolitan staff from Engineering, Operations and other stakeholder groups, the consultant design staff, and subject matter experts with decades of experience in planning and accomplishing similar work.

The workshop recommendations will improve the bid documents and confirm that the necessary work will be completed in a safe and efficient manner within the available shutdown window.

Location of Cabazon Radial Gate Facility between Whitewater Tunnel and San Jacinto Tunnel

Digital design file of new Cabazon Wasteway Radial Gate and roof structure.

Foothill Feeder HEP Control System Upgrade Constructability Review

Also in January, TCT conducted a constructability review for the Foothill Feeder HEP Control System Upgrade project. The Foothill Pressure Control Structure was constructed to receive untreated State Water Project supplies from Castaic Lake and discharge those supplies into the Foothill Feeder for conveyance to the Jensen Water Treatment Plant. In 1981, Metropolitan expanded the facility to add two hydroelectric turbines and associated control equipment to enable power generation. Although the facility is operating and is regularly maintained, the equipment used to monitor and control the turbine operations has been in place more than 40 years and is nearing the end of its useful life. In recent years more frequent repairs have been required and replacement parts have become difficult to obtain. The project, currently in final design, will replace the existing control system which utilizes mechanical-

based relays with a more industry standard PLC-based control system, and implement other needed electrical and mechanical equipment upgrades.

This constructability review examined the current design package and focused on construction activity sequencing and planning to ensure that construction activities can safely be performed while maintaining operation of the pressure control functions at the facility. The team also reviewed construction cost estimates and long lead-time procurement alternatives for Metropolitan to consider, as well as specific project risks and mitigation steps.

The team included a broad interdisciplinary group of Metropolitan Engineering, WSO and support staff, consultant design staff, and subject matter experts experienced in hydroelectric plant upgrades and control system integration work. The resulting workshop recommendations will inform the remaining design process and ensure the successful upgrade and continued operation of this electrical power generation system.

Foothill Pressure Control Structure

Foothill hydroelectric turbine Unit No. 1

Foothill hydroelectric power plant control panel

Pure Water Southern California Program

The Pure Water Southern California (PWSC) Program is a large-regional recycled water project that will provide a new local source of safe and reliable drinking water for Southern California. PWSC currently focuses in four areas: demonstration testing, environmental planning, technical studies, and preliminary design of initial pipeline reaches. PWSC will produce 150 mgd of purified water from the Advanced Water Purification Facility (AWPF) in Carson, for indirect potable reuse (IPR) and direct potable reuse (DPR) applications, with the initial deliveries by 2030 and completion by 2035.

- **Demonstration Testing**: Demonstration testing began in 2019 with N-only tertiary membrane bioreactor (tMBR) testing completed in 2021 and secondary MBR (sMBR) testing completed in 2023. Maintenance and modifications for tMBR optimization testing have been completed. The system is online and currently operating in the nitrification/denitrification mode. Roof replacement of three on-site trailers supporting demonstration plant operations and public outreach efforts has also been completed.
- **Environmental Planning**: The Environmental Planning Phase began in 2020 with the goal of preparing an Environmental Impact Report (EIR) for approval in 2025. Various technical studies have been prepared to support the effort. The draft EIR is currently scheduled for publication in early-2025, with board certification of the document in the third quarter of 2025. Staff continues to finalize the project description, perform additional technical studies, incorporate changes to the program due to inclusion of the LADWP Operation NEXT pipe upsizing, and develop text for the draft EIR.
- **Program Management:** PWSC program management efforts lead the planning for the Program, including project controls, scheduling, budget development, risk management, coordination with Program partners and stakeholders, grants and funding, and preparation of various plans and studies.
    - A PWSC cost estimate update was presented to the PWSC/Regional Conveyance Subcommittee in November 2023. A cost estimate methodology technical memorandum was prepared to document the cost details developed for the AWPF and conveyance systems and provided to the Subcommittee in January 2024.
    - A draft construction sequencing memorandum has been prepared to identify the milestones and construction contracts needed to meet the projected completion of the AWPF, the backbone pipeline, and full delivery for IPR in 2032. The memorandum will be finalized by March 2024.
    - A Large-Scale Water Recycling grant application requesting $125 million was submitted to the US Bureau of Reclamation (USBR) in November 2023. Successful applicants will be notified in early 2024. To receive funding, Metropolitan prepared and submitted a feasibility study on January 2024 to meet the USBR requirements.
- **Advanced Water Purification Facility:** The AWPF will purify wastewater from LACSD's A.K Warren facility (formerly the JWPCP) using membrane bioreactors (MBRs), reverse osmosis (RO), and ultra violet/advanced oxidation (UV/AOP).
    - A draft conceptual facilities plan has been prepared to document key assumptions of AWPF components.
    - The AWPF team is evaluating the use of progressive design build to design and construct the treatment plant facilities.
    - A proposed Request for Qualifications (RFQ) from qualified firms to design and construct the AWPF is scheduled for April 2024. Authorization of this procurement is planned for late 2024.
- **Direct Potable Reuse (DPR):** The California Division of Drinking Water (DDW) published the final DPR regulations in December 2023. Metropolitan has completed bench-scale testing to screen the potential DPR treatment processes that could be used for the program. Planning of pilot-scale testing is in progress.

- **Conveyance Pipeline System:** The program's backbone conveyance system consists of over 40 miles of pipeline and pump stations. Metropolitan's Board authorized consulting agreements for preliminary design in March 2023.
    - **Reach 1** – This reach is approximately six miles long and runs through the city of Carson. Current work includes utility field investigation and geotechnical work. Preliminary design is 35 percent complete and is scheduled to be complete by mid-2024.
    - **Reach 2** – This reach is approximately 8 miles long and runs through the cities of Long Beach and Lakewood. Current work includes ground penetrating radar and obtaining permits for geotechnical work. Preliminary design is 10 percent complete and is scheduled to be complete by late-2024.

Protecting the Public and Metropolitan's Assets

Engineering Services continued to develop state-mandated Emergency Action Plans (EAPs) for Metropolitan's state-regulated dams to help ensure long-term public safety. In January the EAPs for Garvey Reservoir and Palos Verdes Reservoir were approved by the Cal OES. The EAPs for Live Oak Reservoir and the Weymouth Finished Water Reservoir were submitted to the Cal OES and are currently under review. To date, ten of Metropolitan's 13 state required EAPs have been fully approved by Cal OES.

Information Technology Group

- **Information Technology Group Monthly Activities for January 2024**

Summary

This report provides a summary of activites related to the Information Technology Group for January 2024

Purpose

Informational

Detailed Report

The Information Technology Group plays a central role in support of the annual PeopleSoft tax updates, a critical component of Metropolitan payroll processing. The Enterprise Application team within the Information Technology Group partners with Payroll and HRIS to review the current changes to Federal and State tax legislation. Once these changes are applied, regression testing of the application is performed one month before the new year begins to ensure that the first pay cycle in the new year reflects the latest tax rates and brackets. Additional testing activities include, but are not limited to, the following:

1. Review tax updates to understand the changes
2. Research and review prerequisites to the tax updates
3. Download and apply tax updates to a development environment
4. Run and compare reports and identify affected customizations
5. Reapply customizations and verify both standard and custom functionalities
6. Apply to test environment and complete user acceptance test
7. Deploy to production and validate

The testing criteria were completed and updates were released on schedule.

Date of Report: January 2024

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Report

Water System Operations Group

- **Operations Monthly Activities Report January 2024**

Summary

This monthly report for the Water System Operations Group provides a summary of activities for January 2024 in the following key areas:

- Enhance Workforce Safety
- Develop Workforce and Prepare Employees for New Opportunities
- Provide Reliable Water Deliveries and Manage Storage
- Develop New Supplies and Optimize System Flexibility
- Manage Power Resources and Energy Use in a Sustainable Manner
- Protect Source Waters and Ensure Water Quality Compliance
- Optimize Water Treatment and Distribution
- Protect Infrastructure and Optimize Maintenance
- Ensure Power and Environmental Regulatory Compliance
- Enhance Emergency Preparedness and Response
- Prepare for Future Legislation and Regulations
- Advance Education and Outreach Initiatives
- Engage with Member Agencies and Other Stakeholders on Technical Matters

Purpose

Informational by the Water System Operations Group on a summary of key activities for the month of January 2024

Attachments

Attachment 1: Detailed Report – Water System Operations Group's Monthly Activities for January 2024

Date of Report: February 12, 2024

Water System Operations

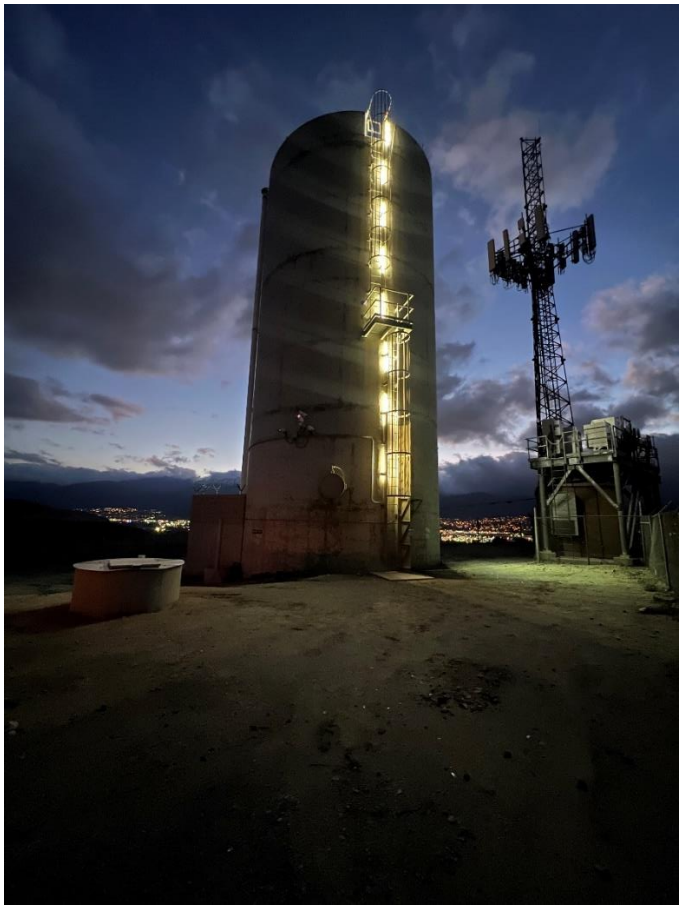
Core Business Objectives

Enhance Workforce Safety

During the Diemer plant shutdown, a temporary handrail system was constructed to provide staff with a safe entry point into a confined space area. The entry point was staffed 24/7 to log all employees who entered or exited the confined space. Staff also installed temporary gratings over the reservoir inlet channel to provide visual monitoring and enhance safety.

Temporary handrail and gratings installed for worker safety

To enhance worker safety at the hydroelectric power plants located along the Lower Feeder between Lake Mathews and the Diemer plant, staff installed lighting on the power plant towers to be able to safely climb the structure at night. The towers are often accessed at night to make flow changes, inspect gate positions, and install clearance points for shutdown activities.



Temescal Hydroelectric Plant tower lit up with the sun setting in the west

Develop Workforce and Prepare Employees for New Opportunities

In January, seven plant operators representing four water treatment plants participated in the inaugural T5 operator certification training class. At least one T5 certified operator is required to oversee the operation of each treatment plant. This prestigious certification is currently held by 18 staff at Metropolitan. Internal training was developed to assist and encourage more employees to acquire the T5 certification. This will provide Metropolitan with additional expertise and redundancy to ensure regulatory compliance and proper oversight of the treatment plants.

T5 Training Class participants (from left to right): Jeff Potter, Cris Zuniga, Matt Cloward, Brandon Morse, Ryan Jordan, Scott Walezonia, and Jonathan Chumpitaz

Provide Reliable Water Deliveries and Manage Storage

Metropolitan member agency water deliveries were 70,200 acre-feet (AF) for January, with an average of 2,260 AF per day, about 1,300 AF per day lower than in December. Metropolitan suspended Cyclic and Conjunctive Use Program deliveries in January to preserve State Water Project supplies. Treated water deliveries were 13,400 AF lower than in December, for a total of 36,700 AF, or 52 percent of total deliveries for the month. The Colorado River Aqueduct (CRA) pumped a total of 60,000 AF in January. Metropolitan maintained a four-pump flow along the CRA for most of the month. State Water Project (SWP) imports averaged 600 AF per day, totaling about 19,800 AF for the month. The target SWP blend is 0 percent for the Weymouth, Diemer, and Skinner plants.

On December 1, 2023, the Department of Water Resources issued an initial 10 percent SWP Allocation for 2024. The 10 percent SWP Allocation when combined with Colorado River supplies, does not provide the region with sufficient water to meet demands, and Metropolitan would need to rely on stored supplies if the allocation continues to remain low. Water supplies continue to be managed according to Water Surplus and Drought Management (WSDM) principles and operational objectives with an emphasis on positioning SWP supplies to meet future demands in the SWP-dependent area. Metropolitan continued deliveries to Desert Water Agency and Coachella Valley Water District.

With the low initial SWP Allocation, Metropolitan minimized its use of Table A supplies this month and will adapt its operations based on supply conditions as the year progresses.

Develop New Supplies and Optimize System Flexibility

Staff stabilized operations at the Napolitano Innovation Center demonstration facility, ensuring that the tertiary membrane bioreactor (MBR) could achieve more than 60 percent nitrogen removal in a nitrifying-denitrifying mode, mimicking earlier performance observed during pilot testing by the Los Angeles County Sanitation Districts. Staff also continued developing the tertiary MBR test plan in preparation for baseline testing to begin in February. A filtrate pump on the MBR system was replaced after internal pump seals failed and the pump seized, limiting the plant to half capacity for two weeks.

Staff repairing a pump at the Napolitano Innovation Center demonstration plant

Manage Power Resources and Energy Use in a Sustainable Manner

Energy markets in January 2024 experienced a brief natural gas supply and pricing event in the second week but remained broadly stable. Natural gas prices were generally in the seasonally normal $5–10 per Metric Million British Thermal Unit (MMBtu) range, with electricity prices in the CAISO market following suit, averaging in the $40–60 per megawatt-hour (MWh) range. Prices did briefly spike into the $200–300/MWh range because of extreme cold weather in the Pacific Northwest but had little effect on overall CRA energy costs.

CRA pumping averaged four pumps in January, driven by reduced demand and nearly full storage levels at Lake Mathews, helping to keep CRA pumping costs trending below budget. CRA pumping costs for January were about $6 million. The CRA energy cost budget for fiscal year 2023/24 is $82.6 million, with the current cost forecast significantly lower at $50 million because of reduced pumping and lower forward cost curves. Monthly costs are forecasted to increase after the scheduled CRA shutdown in March as the aqueduct returns to a higher scheduled flow and energy prices increase as summer approaches.

Daily generation output from Metropolitan's small hydroelectric plants averaged around 6 MW during January, for a total energy output of about 4,400 MWh. Metropolitan's solar facilities, totaling 5.4 megawatts of capacity, generated approximately 600 MWh in January.

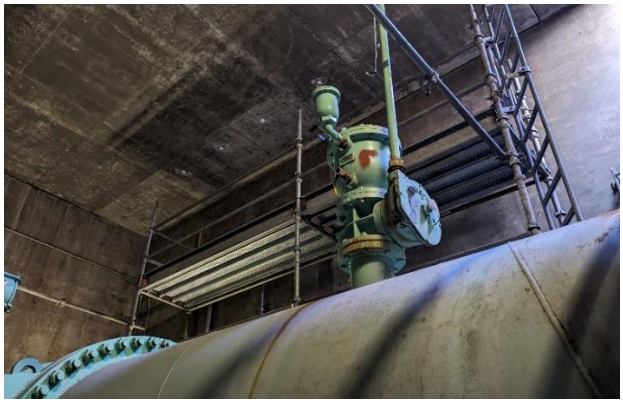
Protect Source Waters and Ensure Water Quality Compliance

Metropolitan complied with all water quality regulations and primary drinking water standards during December 2023.

Optimize Water Treatment and Distribution

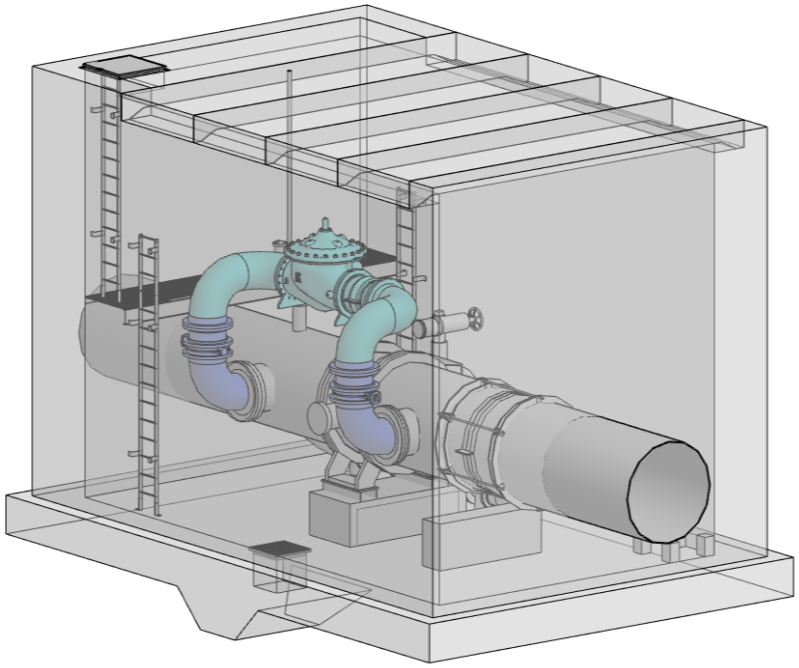
This month, in response to the low initial SWP allocation, the SWP target blend entering the Weymouth plant was lowered from 80 percent to zero percent. The SWP blend for the Diemer plant remained below 10 percent. The SWP target entering Lake Skinner was lowered to zero percent in January, and the SWP blend leaving the lake decreased gradually from 60 percent to below 40 percent. Flow-weighted running annual averages for total dissolved solids from December 2022 through November 2023 for Metropolitan's treatment plants capable of receiving a blend of supplies from the SWP and the Colorado River Aqueduct were 385, 442, and 490 milligrams per liter (mg/L) for the Weymouth, Diemer, and Skinner plants, respectively.

Staff began work to install a 24-inch Cla-Val pressure control valve inside the OC-88 sectionalizing valve structure along the Allen McColloch Pipeline (AMP). The valve installation is being performed for improved hydraulic control of the AMP, in response to a recent inspection of this prestressed concrete cylinder pipeline. Staff coordinated with Engineering Services and Safety & Regulatory Training (SRT) to remove the structure roof slabs. The existing lifting eyes were compromised, requiring new through-bolt style lifters to be procured and installed. The roof slabs are 6' wide and 23' long, weighing 23,000 lbs.



Inside view with scaffolding installed (left) and 100-ton crane setup for lid removal (right) at OC-88 valve structure along the AMP

Staff installed pipe elbows, isolation valves, and blind flanges for a bypass line at the OC-88 sectionalizing valve on the AMP during the Diemer plant shutdown. The final piping connections will be installed next month. The new bypass line will allow flexibility to operate the AMP at a lower pressure.



3D rendition of the planned final bypass pipe system along the AMP

Staff installed a new instrumentation panel at the Palos Verdes Reservoir to monitor water quality in the distribution system. The new water quality panel equipment uses a reagent-less chlorine probe. The self-cleaning and reagent-less equipment requires less maintenance and will reduce costs associated with labor, equipment parts, and reagents. Staff repaired the total organic carbon (TOC) analyzer, installed an uninterruptible power supply (UPS) system, and improved the instrument wiring to enhance use and accessibility.

Old (left) and new (right) water quality panel at the Palos Verdes Reservoir

To provide a safe and reliable system for operators to isolate and secure the electrical supply to chemical feed valves at the fluoride and polymer tank farms at the Weymouth plant, staff installed lockable rotary disconnect switches for ten individual valves and modified the control wiring. This allows operators to de-energize and secure each valve individually without causing a loss of chemical feed and process upset.

Staff terminating wiring and securing control panel at chemical tank farms at the Weymouth plant

Protect Infrastructure and Optimize Maintenance

The La Verne Shops received an urgent request to manufacture a new Venturi flowmeter and its associated adapter spools and thimbles for a service connection on the Santa Monica Feeder. An inspection was conducted that revealed significant wear to the existing meter. This resulted in the need to quickly manufacture, calibrate, and install the components. The meter was subsequently installed and is currently in operation.



Masking for initial blast (left), fitting of flanges to meter (center) and completed welding of flanges to meter (right) at the La Verne Shops


Machining of 28” flange (left), and welding of downstream (center) and upstream (right) spools at the La Verne Shops

During the Diemer plant shutdown, staff replaced batteries on the Remote Terminal Units (RTUs) throughout the plant and replaced an Uninterruptible Power Supply (UPS) unit for the ozone process. Staff also performed repairs on a chlorine solution line in the combined filter effluent channel. Overall, several critical repairs and maintenance were performed during this full-plant shutdown.

Staff working on RTUs and UPS during the 3-day Diemer plant shutdown

Staff repairing chlorine diffuser inside the combined filter effluent channel at the Diemer plant

Staff completed the coatings application on the Oak St. Pressure Control Structure (PCS) near the Palos Verdes Reservoir. The PCS provides crucial flow control in the Central Pool and also supplies an agency service connection. Oak St. PCS consists of seven flow control lines ranging in size from 16 to 30 inches. Staff prepared all surfaces by removing previous coatings using white metal blast cleaning and then applied an industrial coating system to maintain long-lasting reliability against corrosion.

Oat St. PCS pipe system before (left) and after (right) recoating

The harsh environment and extreme temperatures of the desert reduce the service life of equipment. Consistent maintenance ensures that Metropolitan obtains the maximum life expectancy from our assets. Staff refurbished a 20-foot jibboom for a mobile crane to extend its service life.

Refurbishment of a 20-foot jibboom for a mobile crane at a desert facility

Staff installed a rebuilt exciter rheostat on a CRA main pump motor. The rheostat adjusts voltage to create the 12,500-horsepower needed to operate the pump.

Staff installing a DC rheostat on a CRA pump motor

Staff performed switching to remove a transformer bank from service and to replace a high-voltage bushing on the 6.9kV transformer at Intake pumping plant.

Staff performing switching in the 6.9kV switch house at Intake pumping plant

Staff removed dirt and debris from a blowoff structure on the Upper Feeder in preparation for a February shutdown. Staff removed 50 tons of material and repaired storm damage in the earthen-lined channel that conveys water from the blowoff to the Los Angeles County storm drain system.

Staff removing debris from an earthen channel (left) and repairing erosion on a slope (right) along the Upper Feeder

Ensure Power and Environmental Regulatory Compliance

Metropolitan initiated its annual self-certification for the calendar year 2023, attesting to compliance with mandatory electric reliability compliance requirements as promulgated by the North American Electric Reliability Corporation (NERC) in January 2024. Metropolitan is subject to 39 NERC standards with 135 unique requirements. The Western Electricity Coordinating Council (WECC) is the Regional Entity tasked with enforcing NERC standards. For calendar year 2023, WECC requires Metropolitan to self-certify for the following two standards:

- TPL-001-5.1 R1, R2–Transmission Planning
- PRC-023-4 R2–Transmission Relay Load ability

The self-certification documentation is due to be submitted to WECC on March 1, 2024. Following best industry practices, Metropolitan reviews and ensures compliance with all applicable NERC standards annually.

Enhance Emergency Preparedness and Response

The Water Quality Incident Command Post conducted a tabletop exercise on January 22, focused on assigned roles and responsibilities during a simulated elevated turbidity event. Regular exercises and scenario role-playing ensures that staff are prepared to respond to emergencies and all unplanned operational events.

Staff continued the electrical improvement project connecting two substations at the Water Quality Laboratory. The improvement provides a connection to two substations and increases power reliability in the event of an emergency or other power loss to one of the substations.

Staff installing new electrical (left) and completed conduit installation (right) at the Water Quality Laboratory

Prepare for Future Legislation and Regulations

On December 19, the State Water Resources Control Board adopted its proposed Direct Potable Reuse regulations. The regulations provide the regulatory framework by which highly treated recycled water can be introduced either immediately upstream of a water treatment plant or directly into a public water system. Metropolitan commented with the Los Angeles County Sanitation Districts on the proposed regulations, as the regulations govern the DPR options for Pure Water Southern California.

On December 21, staff sent a comment letter supporting EPA's second draft guidance on how to apply the "functional equivalency" test found in the Supreme Court's County of Maui v. Hawaii Wildlife Fund decision. Under the Maui decision, the Supreme Court set forth seven factors to determine whether a NPDES permit is required when a point source pollutant discharged to groundwater has the same "functional equivalency" as a direct discharge to a navigable water. Metropolitan operations are not expected to be affected by the new guidance, though the guidance is expected to help protect source water quality throughout the Colorado River Basin.

On December 22, staff provided comments on Division of Drinking Water's new "Clearinghouse Annual Inventory Report (CAIR)." The CAIR consolidates a section of the Electronic Annual Report (eAR) and 2023 Drought and Conservation Reporting Order into a centralized location for public water systems to report water supply and demand data. Staff requested that three of Metropolitan's small water systems be removed from the drought reporting requirements under CAIR and offered technical fixes to help streamline data reporting. The CAIR went into effect January 1, 2024. Metropolitan staff were asked by DDW to serve on a working group to help streamline the reporting requirements under CAIR.

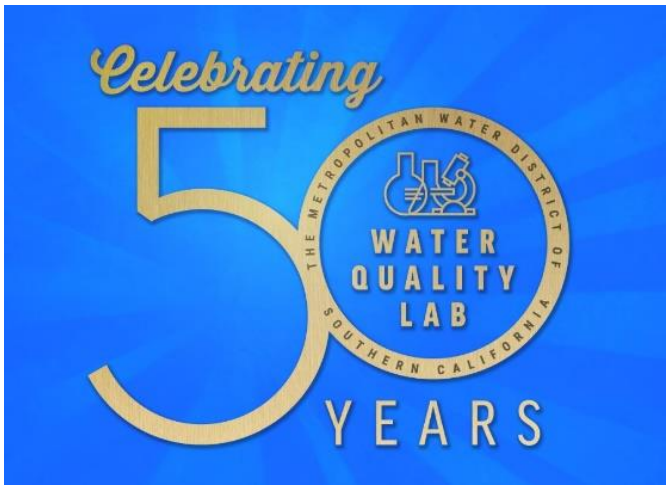
On December 26, staff submitted comments on CARB's Zero-Emission Forklift Rulemaking package. The proposed rule prohibits fleet operators from purchasing new propane or gasoline-fueled Class IV (any lift capacity) and Class V forklifts (lifting capacity up to 12,000 lbs.) starting in 2026. Metropolitan operates approximately 30 forklifts subject to the requirements of the proposed regulation. Metropolitan's comments focused on streamlining the forklift reporting requirements and modifying the low-use forklift purchasing exemption. CARB anticipates adopting the rule in Summer 2024.

On January 5, in accordance with a Consent Decree in the NRDC v. EPA case, the court announced that EPA will be required to propose a maximum contaminant level goal ("MCLG") and a national primary drinking water regulation ("NPDWR") for perchlorate by November 21, 2025, and publish a final MCLG and NPDWR by May 21, 2027. Previously, staff has commented in support of EPA promulgating a federal perchlorate standard to protect public health and help with long-term remediation of perchlorate contamination in the Colorado River Basin. Staff will continue to monitor and engage in any future regulatory activity with respect to perchlorate.

On January 8, the California Association of Mutual Water Companies, Community Water Systems Alliance, and the California-Nevada Section of the American Water Works Association submitted a letter in response to the Office of Environmental Health Hazard Assessment's (OEHHA) request for comments on the Draft Proposed Health-Protective Concentration for the Noncancer Effects of Hexavalent Chromium in Drinking Water. Staff provided support in developing the letter, which requested that OEHHA explain the rationale for changing uncertainty factors that make the calculated health-protective concentration much more stringent and questioned the potential impact of a lower Maximum Contaminant Level on affordability, particularly for low-income consumers.

Advance Education and Outreach Initiatives

Metropolitan's Water Quality Section will celebrate its 50th anniversary in 2024 with a series of events to mark this important milestone, in parallel with recognizing the 50th anniversary of the federal Safe Drinking Water Act. In January, staff completed designing commemorative displays for installation in the lobby of the Water Quality Laboratory in La Verne.



Metropolitan's Water Quality and Research Branch was founded in 1974

Engage with Member Agencies and Other Stakeholders on Technical Matters

On January 9, staff hosted Peter Grevatt, the Executive Director of the Water Research Foundation, for a meeting at the Water Quality Laboratory to discuss potential partnering, collaboration, research grant opportunities, and Metropolitan's long-standing support as one of the Foundation's utility subscribers.

Executive Director of the Water Research Foundation, Peter Grevatt, describes research funding opportunities to Metropolitan staff during a January 9 meeting

Invasive quagga mussels were detected for the first time in Idaho's Snake River in September 2023. On January 18, staff provided an overview of Metropolitan's experience managing quagga mussels in the Colorado River Aqueduct system to the Idaho Water Users Association as part of their effort to develop control and mitigation measures.

On January 24, the State Water Resource Control Board's Division of Drinking Water conducted staff training at the Weymouth facility, with tours of the plant and the Water Quality Laboratory providing background and insight into treatment plant operations and water quality monitoring.

The Weymouth plant treatment process being explained to Division of Drinking Water staff

Staff describing water quality monitoring and testing to representatives from the Division of Drinking Water

Staff met with Central Coast Water Authority representatives on January 29 to share and compare experiences of managing nitrification in distribution systems.

Engineering, Operations, & Technology Committee

Management Announcements and Highlights

Item 7a

February 12, 2024

Engineering Services

Perris Valley Pipeline Project

Tunnel Boring Machine Naming Event

- January 25, 2024
- March Air Field Museum, Riverside
- 115 people in attendance
- 3rd Grader Jessica Wang was contest winner
- TBM named "Rachel Carson"

Perris Valley Pipeline Project

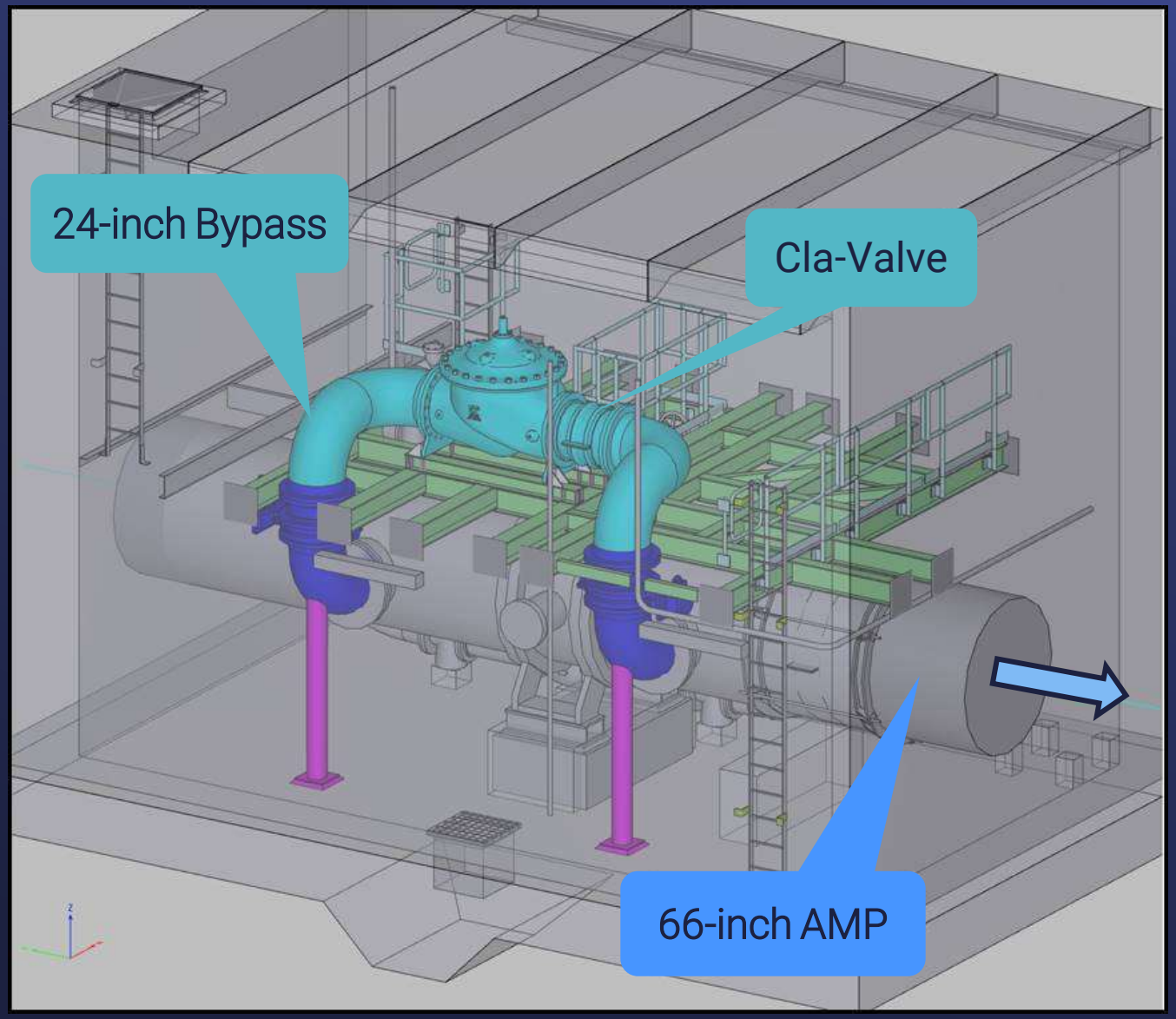
Tunnel Boring Machine Launch:

Start of Mining

Tunnel Launch Shaft

TBM Lowered into Launch Shaft

Allen-McColloch Pipeline Urgent Repairs



Installation of 24-inch bypass Valve at OC-88 vault

- 66-inch valve will be closed
- 24-inch valve used to convey water to south end of AMP
- Effectively reduces downstream hydraulic grade line in southern portion of AMP
  - Upstream HGL 750 ft
  - Downstream HGL 670 ft

Allen-McColloch Pipeline Urgent Repairs

66-inch Valve Vault prior to installation of Cla Valve

La Verne Shop Fabrication of Pipe Fittings

Inspection of 24-inch Cla Valve

Water System Operations

Managing Low Initial SWP Supplies

Current Operational Conditions

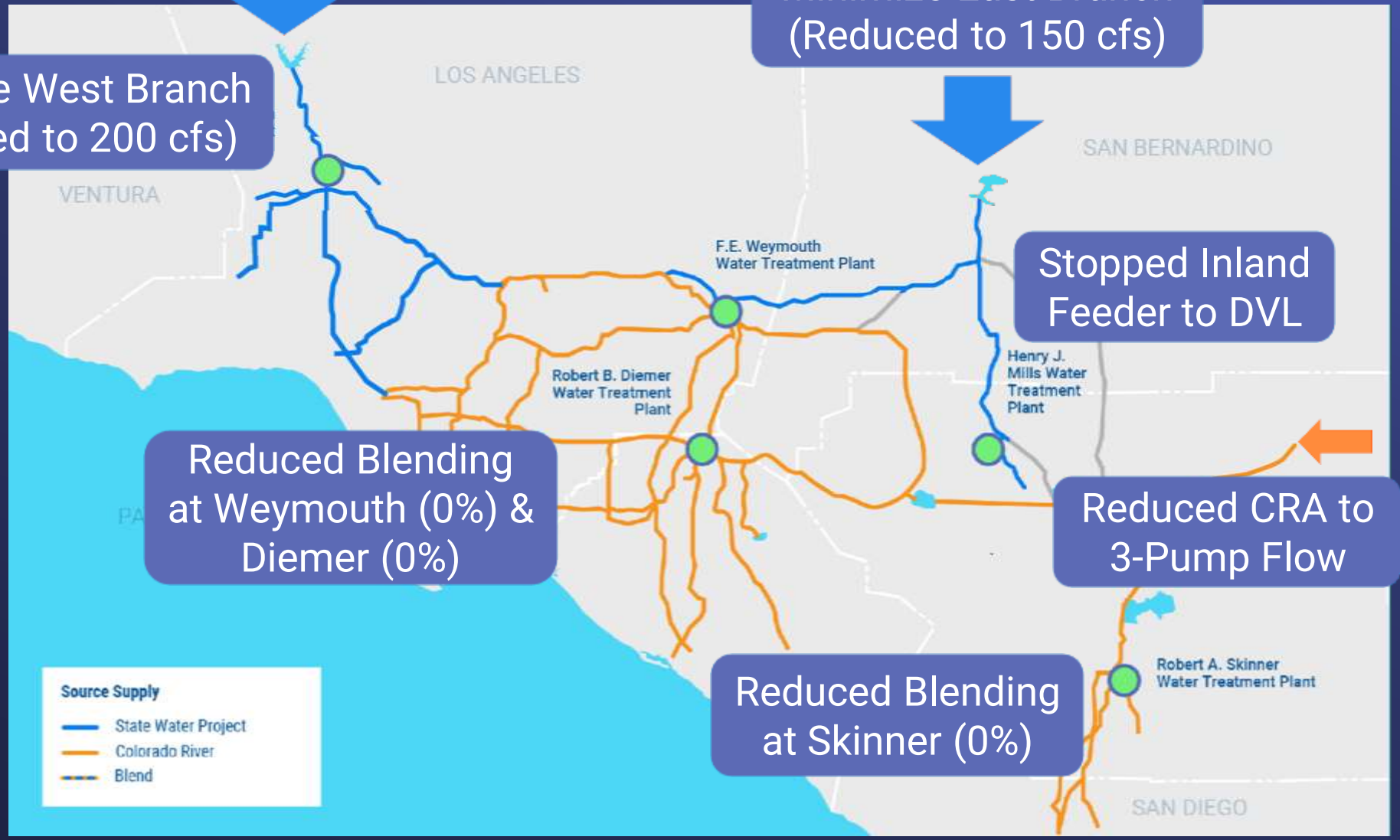
DWR Snow Survey
58% of Average, 1/30/24

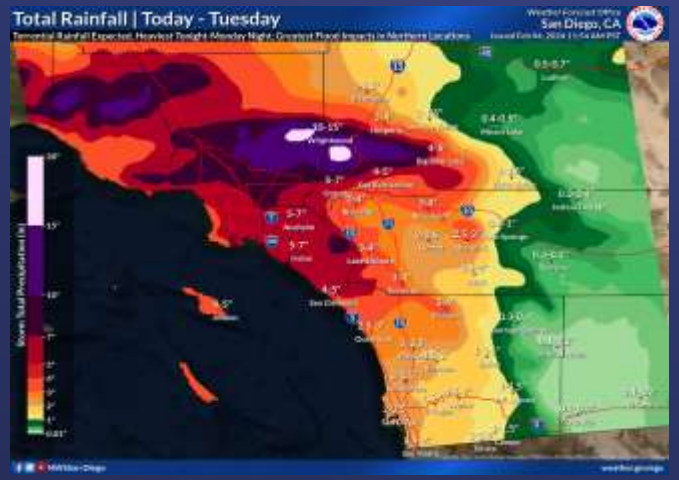
- 2024 SWP Allocation at 10%
- CRA at 3-pump flow
- Deliveries to DWCV at 0 cfs
- SWP blend targets are 0% at Weymouth, Diemer, and Skinner
- January 2024 deliveries of 65 TAF were 1 TAF higher than January 2023
  - Third lowest on record since 1979

Minimizing SWP Supplies in 2024

Early 2024 Operations

Minimizing SWP Supply Use to Prepare for Possible Drought Sequence





Severe Storm Event
February 2024

No major impacts to Metropolitan facilities or operations

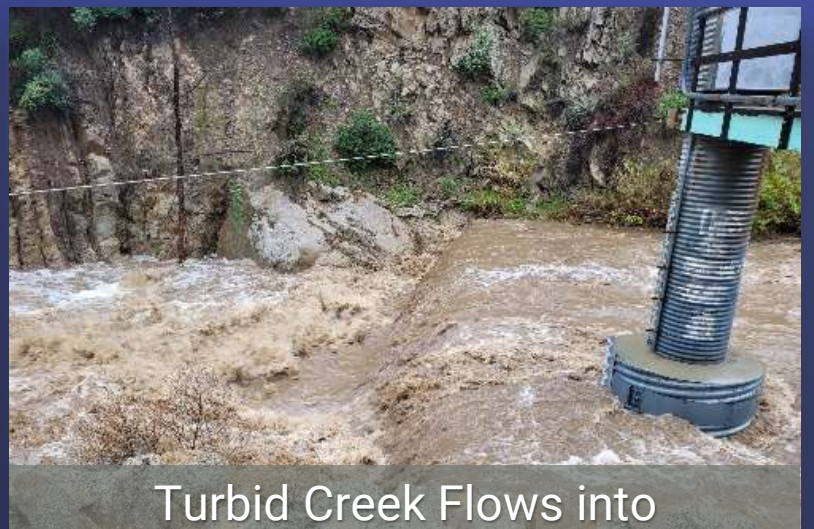
Emergency Preparedness and Response

- Metropolitan's EOC and ICPs were not activated
- Effective communications throughout event
  - GM memo and MetAlert message to employees encouraging teleworking where possible
  - WebEOC used for situational awareness/communications
  - Coordination with member agencies & emergency partners
- Some flooding at structures, erosion and downed trees around facilities, and building roof leaks
- Increased turbidity at Castaic and Silverwood lakes
- Upper Feeder shutdown postponed three days

February 2024 Severe Storm Event

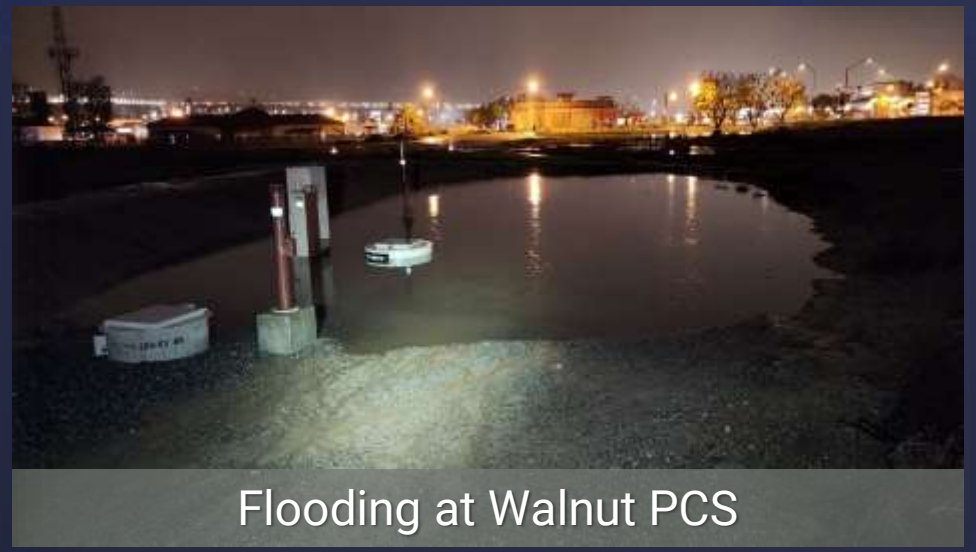
Flooding at Sampling Site

Erosion/Fence Damage at Sepulveda PCS



Turbid Creek Flows into Castaic Lake

Downed Tree at PV Reservoir



Flooding at Walnut PCS

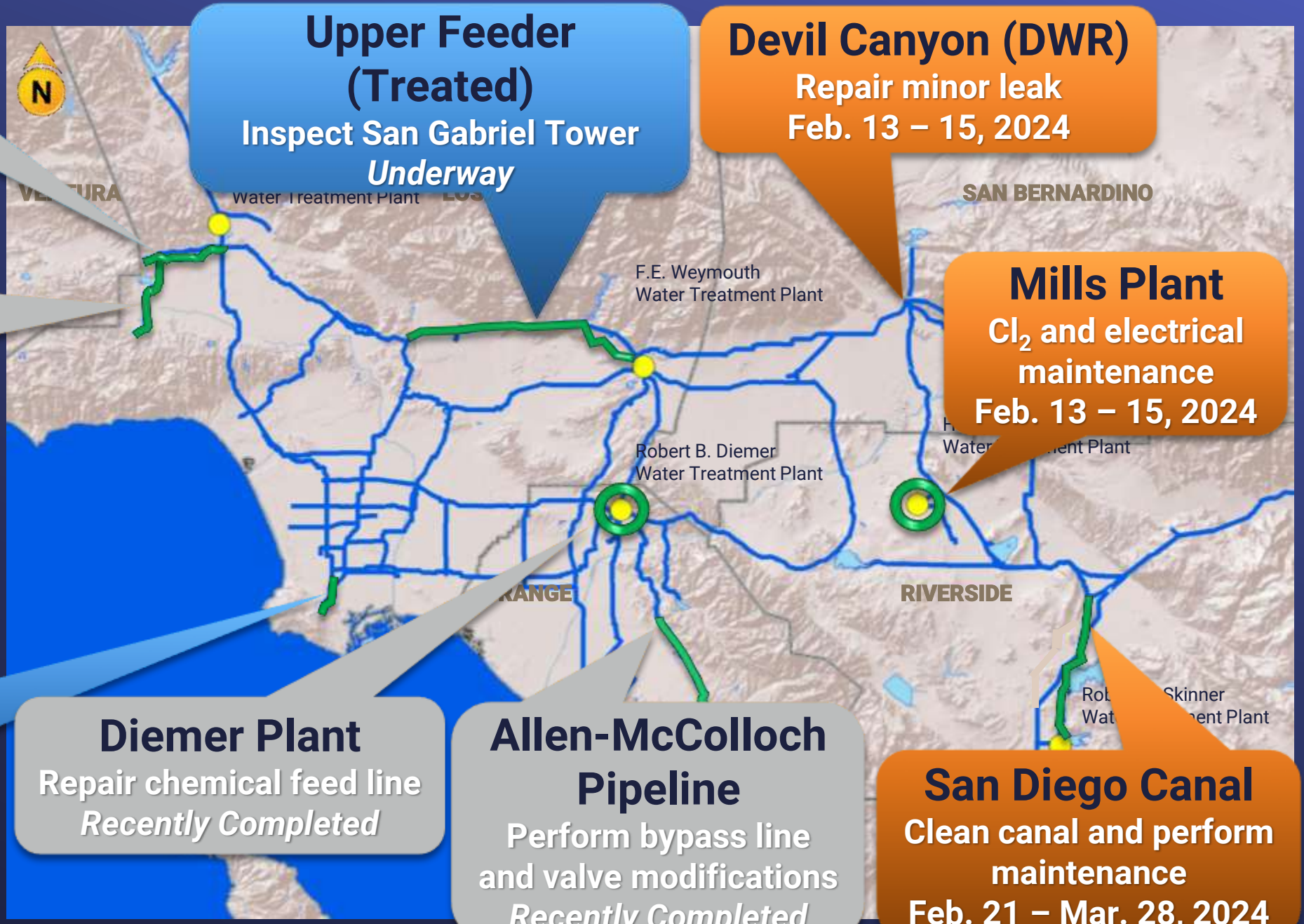
Soil Sloughing at Garvey Reservoir

Ensuring Continued System Reliability

West Valley Feeder No. 2
PCCP inspection
Recently Completed

Calabasas Feeder
PCCP inspection
Recently Completed

Second Lower Feeder
Rehabilitate PCCP
Underway



Upper Feeder (Treated)
Inspect San Gabriel Tower
Underway

Devil Canyon (DWR)
Repair minor leak
Feb. 13 – 15, 2024

Mills Plant
Cl_2 and electrical maintenance
Feb. 13 – 15, 2024

Diemer Plant
Repair chemical feed line
Recently Completed

Allen-McColloch Pipeline
Perform bypass line and valve modifications
Recently Completed

San Diego Canal
Clean canal and perform maintenance
Feb. 21 – Mar. 28, 2024

Information Technology

No update for this period


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928