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
A. Chacon
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 - Final - Revised 1

Meeting with Board of Directors *

January 8, 2024

9:30 a.m.

Monday, January 8, 2024 Meeting Schedule

09:30 a.m. EOT
11:30 a.m. EIA
01:30 p.m. Break
02:00 p.m. LRAC
03:00 p.m. OWS

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MWD Headquarters Building • 700 N. Alameda Street • Los Angeles, CA 90012
Teleconference Locations:
525 Via La Selva • Redondo Beach, CA 90277
Taper Imaging • 8705 Gracie Allen Dr • Los Angeles, CA 90048

* 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 November 13, 2023 (Copies have been submitted to each Director, any additions, corrections, or omissions) **21-2877**

Attachments: 01082024 EOT 2A (11132023) Minutes

3. CONSENT CALENDAR ITEMS - ACTION

7-1 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 **21-2898**

Attachments: 01092024 EOT 7-1 B-L
01092024 EOT 7-1 Presentation

7-2 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 **21-2899**

Attachments: 01092024 EOT 7-2 B-L
01092024 EOT 7-2 Presentation

7-3 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)] **21-2900**

Attachments: 01092024 EOT 7-3 B-L
01092024 EOT 7-3 Presentation

7-4 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 **21-2901**

Attachments: 01092024 EOT 7-4 B-L
01092024 EOT 7-4 Presentation

7-5 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 CEQA **21-2903**

Attachments: 01092024 EOT 7-5 B-L
01092024 EOT 7-5 Presentation

7-6 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] **21-2904**

Attachments: 01092024 EOT 7-6 B-L REVISED
01092024 EOT 7-6 Presentation

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

4. OTHER BOARD ITEMS - ACTION

NONE

5. BOARD INFORMATION ITEMS

NONE

6. COMMITTEE ITEMS

a. Allen McColloch Pipeline - Inspection Update Action Plan **21-2902**

Attachments: 01082024 EOT 6a Presentation

b. 2023 System Operations: A Year in Review **21-2905**

Attachments: 01082024 EOT 6b Presentation

c. Zero emission fleet transition **21-2906**

Attachments: 01082024 EOT 6c Presentation

d. Nitrification Management **21-2907**

Attachments: 01082024 EOT 6d Presentation

7. MANAGEMENT ANNOUNCEMENTS AND HIGHLIGHTS

a. Engineering Services, Information Technology, and Water System Operations activities **21-2878**

Attachments: 01082024 EOT 7a Presentation

8. SUBCOMMITTEE REPORTS AND DISCUSSION

a. Discuss and provide direction to Subcommittee on Pure Water Southern California and Regional Conveyance **21-2879**

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

November 13, 2023

Chair Erdman called the meeting to order at 9:00 a.m.

Director Peterson indicated that he is participating under AB 2449 "emergency circumstances" for a physical emergency that prevents him from attending in person.
Director Peterson appeared by audio and on camera.

AB 2449 "emergency circumstances" vote for Director Peterson was:

Ayes:	Directors Bryant, Erdman, Faessel, Fong-Sakai, McMillan, Morris, Ortega, Peterson, and Seckel.
Noes:	None
Abstentions:	None
Absent:	Directors Alvarez, Camacho, Chacon, Dennstedt, Lefevre, Miller, Petersen, and Smith

The motion for Director Peterson to participate using AB 2449 Emergency Circumstance passed by a vote of 9 ayes, 0 noes, 0 abstention, and 8 absent.

Members present: Directors Alvarez, Bryant, Camacho (entered after roll call), Dennstedt (entered after roll call), Erdman, Faessel, Fong-Sakai, Lefevre (teleconference posted location, entered after roll call), McMillan, Miller (entered after roll call), Morris, Petersen (entered after roll call), Peterson (AB 2449 Emergency Circumstance), Seckel, and Smith (entered after roll call).

Members absent: Director Chacon

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

Director Peterson indicated that he is participating under AB 2449 "Emergency Circumstances" regarding physical emergency. Director Peterson appeared by audio and on camera.

Committee staff present: Carter, Chapman, Chaudhuri, Eckstrom, Hagekhalil, Hattar, Parsons, Upadhyay, and Wheeler

Director Lefevre entered the meeting.

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. Paul Shoenberger – General Manager Mesa Water District – In support of item 7-1
2. Katy Wagner – Sierra Club California – In opposition to item 7-1
3. Darcy Burke – Elsinore Valley Water District – In support of item 7-1
4. Mark Stern – Assistant General Manager South Coast Water District – In support of item 7-1
5. Charming Evelyn– Sierra Club – In opposition to item 7-1
6. Maura Monagan– LA Waterkeepers – In opposition to item 7-1
7. Ashley Craig – Resident of Long Beach - In opposition to item 7-1
8. Tanya Sole – President of Blue Desal – In support of item 7-1
9. Andy Morris – President of Elsinore Valley MWD – In support of item 7-1
10. Jan Warren – Water Protector from Bay Area – In opposition to item 7-1
11. Greg Thomas – General Manager Elsinore Valley MWD – In support of item 7-1
12. Harvey Ryan – Elsinore Valley MWD – In support of item 7-1
13. Glenn Farrel – Cal Desal – In support of item 7-1
14. Lydia Ponce – We the Tonga People Sagnay – In opposition to item 7-1
15. Sofia Quinones – East L.A. Boyle Heights Coalition – In opposition to item 7-1
16. Ian Bassana – Resident of Paramount – In opposition to item 7-1
17. Connor Everts – Desal Response Group – In opposition to item 7-1

Directors Dennstedt, Camacho, 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 October 9, 2023 (Copies have been submitted to each Director, any additions, corrections, or omissions)

3. CONSENT CALENDAR OTHER ITEMS – ACTION

Director Fong-Sakai recused herself from item 7-1 and left the meeting.

7-1 Subject: Authorize professional services agreements with: (1) AECOM Technical Services Inc. in a total amount not to exceed $660,000; and (2) CDM Smith Inc. in an amount not to exceed $475,000, to perform water desalination studies in Metropolitan's service area; for desalination technologies for potential water supply augmentation; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Presented by: Warren Teitz, Team Manager Resource Development

Motion: Authorize professional services agreements with: (1) AECOM Technical Services Inc. in a total amount not to exceed $660,000; and (2) CDM Smith Inc. in an amount not to exceed $475,000, to perform water desalination studies in Metropolitan's service area

The following Directors provided comments or asked questions:

1. Camacho
2. Petersen
3. Ortega
4. Alvarez
5. Miller
6. Armstrong
7. Dennstedt

Director Fong- Sakai entered the meeting.

7-2 Subject: Authorize an agreement with General Networks Corporation in an amount not to exceed $6,609,900 for the implementation of a cloud-based Enterprise Content Management System; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Presented by: Steve Gonzales – Information Governance & Enterprise Content Management Specialist

Motion: Authorize an agreement with General Networks Corporation in an amount not to exceed $6,609,900 for the implementation of a cloud-based Enterprise Content Management System

The following Directors provided comments or asked questions:

1. Smith
2. Petersen
3. Goldberg

7-3 Subject: Authorize an increase of $3,100,000 in change order authority for the contract to replace the overhead bridge cranes 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 increase of $3,100,000 in change order authority for the contract to replace the overhead bridge cranes at the five Colorado River Aqueduct pumping plants

7-4 Subject: Award a $1,244,935 contract to HP Communications Inc. to construct a new fiber optic cable line from Parker Dam to the Gene Pumping Plant; and authorize an increase of $176,000 to an existing agreement with HDR Engineering Inc. for a new not-to-exceed amount of $451,000 for technical support during construction; the General Manager has determined that the proposed actions are exempt or otherwise not subject to CEQA

Presented by: None; no presentation requested

Motion: Award a $1,244,935 contract to HP Communications Inc. to construct a new fiber optic cable line from Parker Dam to the Gene Pumping Plant; and authorize an increase of $176,000 to an existing agreement with HDR Engineering Inc. for a new not-to-exceed amount of $451,000 for technical support during construction

After completion of the presentations, Director Seckel made a motion, seconded by Director Camacho, to approve the consent calendar consisting of item 2A, and items 7-1, 7-2, 7-3 and 7-4.

Director Peterson announced that no one was in the room with him 18 years of age or older.

The vote was:

Ayes:	Directors Alvarez, Bryant, Camacho, Dennstedt, Erdman, Faessel, Fong-Sakai, Lefevre, McMillan, Miller, Morris, Petersen, Peterson, Seckel, and Smith.
Noes:	Director Alvarez item 7-1
Abstentions:	Director Matt Petersen for item 7-1
Not voting:	Director Fong-Sakai for item 7-1
Absent:	Director Chacon

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

The motion for Item 7-1 passed by a vote of 12 ayes, 1 noes, 1 abstention, 1 not voting, and 1 absent.

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

4. OTHER BOARD ITEMS – ACTION

Director Fong-Sakai recused herself from item 8-1 and left the meeting

8-1 Subject: Award an $18,840,000 contract to Steve P. Rados Inc. to construct a surge protection facility on the Inland Feeder as part of the water supply reliability improvements in the Rialto Pipeline service area; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (This action is part of a series of projects that are being undertaken to improve the supply reliability for State Water Project dependent member agencies.)

Presented by: Wayne Thilo – Pr. Engineer, Engineering Services Group

Motion: Award an $18,840,000 contract to Steve P. Rados Inc. to construct a surge protection facility on the Inland Feeder near the Badlands Tunnel. This project is part of water supply reliability improvements in the Rialto Pipeline service area.

The following Directors provided comments or asked questions:

1. Faessel
2. Bryant
3. Erdman

After completion of the presentation, Director Morris made a motion seconded by Director Camacho to approve item 8-1.

The vote was:

Ayes:	Directors Alvarez, Bryant, Camacho, Dennstedt, Erdman, Faessel, Lefevre, McMillan, Miller, Morris, Petersen, Peterson, Seckel, and Smith.
Noes:	None
Abstentions:	None
Absent:	Director Chacon, Fong-Sakai

The motion for Item 8-1 passed by a vote of 14 ayes, 0 noes, 0 abstentions, and 2 absent.

Director Fong- Sakai entered the meeting.

8-2 Subject: Adopt the CEQA determination that the proposed action was previously addressed in the Mitigated Negative Declaration and award a $16,055,500 procurement contract to Northwest Pipe Company for steel pipe to rehabilitate a portion of the Lakeview Pipeline

Presented by: Cristian Ovalle – Team Manager – Program Management

Motion: Adopt the CEQA determination that the proposed action was previously addressed in the Mitigated Negative Declaration, and award a $16,055,500 contract to Northwest Pipe Company to furnish 12,500 feet of welded steel pipe to rehabilitate a portion of the Lakeview Pipeline.

The following Directors provided comments or asked questions:

1. Miller
2. Seckel
3. Dick
4. Petersen

After completion of the presentation, Director Peterson made a motion seconded by Director Morris to approve item 8-2.

Director Peterson announced that no one was in the room with them 18 years of age or older.

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
Absent:	Director Chacon

The motion for Item 8-2 passed by a vote of 15 ayes, 0 noes, 0 abstention, and 1 absent.

5. BOARD INFORMATION ITEMS

NONE

6. COMMITTEE ITEMS

a. Subject: Project Labor Agreement Annual Report

Presented by: Doaa Aboul-Hosn, Team Manager, Construction Contracts

Ms. Aboul-Hosn reported on the following:

- Project Labor Agreement adopted in October 2022
- Five-year term with 34 projects that covers 90% of planned CIP expenditures
- Major provisions to the agreement such as 60% goal for employment of local workers, 15% goal for employment of transitional workers and unique core small business carveout
- PLA Administration process: Contract award, PLA Orientation, Pre-Job Conference and Workforce Development Orientation
- Awarded 8 PLA Construction Contracts
- Next Annual Report in November 2024

The following Directors provided comments or asked questions

1. Miller

Director Camacho left the meeting.

b. Subject: Nitrification Management

Item Deferred

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. Upadhyay and Mr. Chapman reported on the following:

- Upcoming EOT Committee Inspection Trip on November 16, 2023
- Rupam Soni was recognized for Recycled Water Advocate of the Year award winner
- Southern California Chapter Arab American Association of Engineers & Architects recognized Mai Hattar for her leadership
- Information Technology & Water Quality staff Seyoum Gebremariam, Jonathan Houck & Seth Potter were recognized by the Center for Digital Government as the project winner of the Center for Digital Government GOVX Government Experience Award for creating the Lake Explorer Dashboard, a reservoir water quality dashboard that monitors levels of chlorophyll and cyanobacteria

8. SUBCOMMITTEE REPORTS AND DISCUSSION

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

Nothing to report.

The following Director's provided comments or asked questions

1. Smith

Staff responded to Director's comments.

9. FOLLOW-UP ITEMS

NONE

10. FUTURE AGENDA ITEMS

NONE

11. ADJOURNMENT

The next meeting will be on January 8, 2024.

Meeting adjourned at 11:33 a.m.

Dennis Erdman
Chair

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Action

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

1/9/2024 Board Meeting

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

Executive Summary

Metropolitan staff have participated in startup planning for the Center for Smart Infrastructure (CSI) at the University of California at Berkeley since its inception in 2020. The CSI mission focuses on developing and testing emerging technologies in the water industry. While innovative water infrastructure research is currently underway, CSI requires startup funding primarily to make capital improvements to the facility, improvements which will enhance the capabilities of the center. Several other water sector public agencies, including the Los Angeles Department of Water and Power and East Bay Municipal Utility District (EBMUD), are also funding these startup activities. Metropolitan is not currently providing direct funding to the CSI beyond initial startup planning support.

This action authorizes an agreement with CSI to provide $1 million to support the startup of the facility and an additional $1 million to fund Metropolitan-focused research projects to be conducted at CSI over the next four years. This funding earns Metropolitan "Founding Partner" status, which allows staff to work directly with CSI to focus on research in areas of particular interest to Metropolitan.

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

Staff Recommendation: Option #1

Option #1

Authorize an agreement with the Center for Smart Infrastructure in an amount not to exceed $2 million for startup costs and focused research.

Fiscal Impact: $1 million in operating funds plus up to $1 million in budgeted operating funds or capital funds under projects included in the Capital Investment Plan. $250,000 in O&M funds will be incurred this fiscal year. The remaining funds will be accounted for in future biennial budgets.

Business Analysis: This option allows Metropolitan to help develop CSI as a sustainable water infrastructure research resource and allows Metropolitan and member agencies to use CSI as an opportunity for infrastructure innovation and water-related research.

Option #2

Authorize an agreement with the Center for Smart Infrastructure in an amount not to exceed $1 million for focused research only.

Fiscal Impact: Up to $1 million in budgeted operating funds or capital funds under projects included in the CIP. These funds will be expended and accounted for in future biennial budgets.

Business Analysis: Allows Metropolitan and member agencies to use CSI as an opportunity for infrastructure innovation and water-related research, but will not provide enhanced protection against the risk of CSI becoming unsustainable over the long term.

Option #3

Do not proceed with funding CSI at this time.

Fiscal Impact: None

Business Analysis: Under this option, Metropolitan would not have the ability to work with CSI on innovation initiatives or research opportunities, either foregoing areas of interest or finding other research opportunities in support of the General Manager's business plan goal of applying innovation and technology across project lifecycles.

Alternatives Considered

Staff considered an alternative to fund research by task only and not provide $1 million in startup funding. CSI's relationships with some agencies follow this funding model. However, this option may limit the type of tests that can be performed by CSI due to limited research infrastructure, and delay the development and delivery of higher-quality products. The selected alternative provides startup funding that will be used to make enhancements at the CSI test facility. This alternative affords Metropolitan the opportunity to invest in a facility that is able to test a wide variety of equipment, provides focused engineering research, and exposes students to the water industry.

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)

Informational item presented to the Engineering, Operations, and Technology Committee on August 14, 2023

Summary of Outreach Completed

Informational item presented to member agency engineering managers on June 1, 2023

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 basic data collection, research, experimental management, and resource evaluation activities that do not result in a serious or major disturbance to an environmental resource. (State CEQA Guidelines Sections 15301 and 15304).

CEQA determination for Option #2:

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 basic data collection, research, experimental management, and resource evaluation activities that do not result in a serious or major disturbance to an environmental resource. (State CEQA Guidelines Sections 15301 and 15304).

CEQA determination for Option #3:

None required

Details and Background

Background

Metropolitan has a long history of participating in and supporting research and innovation in the water industry. From the development of new pump designs for the Colorado River Aqueduct (CRA) at the California Institute of Technology in the 1930s to inventing new pressure control valves at the Yorba Test Facility in the 1970s, Metropolitan continues to be a leader in the development of innovative water infrastructure technology.

In recent years, Metropolitan staff have cooperated with other agencies and academia to test the use of earthquake-resistant ductile iron pipe, flexible pipes that move with the ground during earthquakes, or in landslide areas. This innovative pipeline technology was recently installed on the Casa Loma Siphon and is the largest application of this pipe in the United States. Much of the seismic pipeline research for the Casa Loma project was done at Cornell University in New York, where they developed specialized test equipment to support this research. That laboratory was recently closed due in part to staff retirements.

Rather than dispose of that equipment, scientists, engineers, and faculty at the University of California at Berkeley moved these apparatuses to an empty warehouse at a campus facility. The collective gathering of this research equipment in Berkeley became the inception of the Center for Smart Infrastructure (CSI), a partnership between infrastructure owners, academia, industry, and regulators. The main focus of the center is to address the water industry's most pressing challenges, such as aging infrastructure, climate change, water supply, natural resources, and emergency and community preparedness.

The Center for Smart Infrastructure – Startup and Research Funding

CSI is unique in its capabilities. Its charter is to use a holistic approach to develop resilient systems through state-of-the-art laboratory and field-testing equipment, smart sensors and robotics, big data and machine learning, and multi-scale computer modeling and simulation tools. CSI has already established itself as the only pipe-testing facility on the West Coast and one of only two such facilities of this scale in the United States. CSI represents a rare opportunity to test innovative technologies and perform research on infrastructure problems.

CSI receives no funding from the University of California system and relies entirely upon funding from outside entities to operate. EBMUD provided CSI $1.5 million in startup funding at its inception. Los Angeles Department of Water and Power intends to provide CSI $1.5 million in startup funding. San Francisco Public Utilities Commission is considering providing significant funding for the same purpose. Other large organizations that have funded research at CSI include the State of California Energy Commission, the United States Army Corps of Engineers, the United States Department of Transportation, Caltrans, and the United States Department of Energy.

Since its inception in 2020, Metropolitan has engaged with other water agencies to help guide the direction of CSI since much of CSI's work focuses on water systems. The facility at UC Berkeley has performed tests and research in the below-listed areas. The results of these examples could prove helpful to Metropolitan and its member agencies:

- *Distributed sensors and networks using satellites, fiber optics, and wireless sensor networks - providing sensors everywhere*. This work could result in systems to continuously monitor the condition of Metropolitan's and its member agencies' pipelines and possibly link hydraulic models between Metropolitan and member agencies.
- *In-field autonomy using drones and robotics – for inspection, maintenance, and security activities*. This research could aid Metropolitan in continuous dam levee condition monitoring and autonomous security patrols.
- *High-performance cloud computational simulations using Big Data.* This area could potentially help Metropolitan by creating climate models specific to California's water supply or by modeling service area-wide post-seismic event damage assessment.

Planning is in place to perform Metropolitan-focused studies, including testing how Metropolitan's standard prestressed concrete cylinder pipe steel slip-lining design performs under seismic strain; and also modeling and

testing how the CRA's cut-and-cover unreinforced concrete "horseshoe" configuration performs under heavy above-ground loading. Additionally, Metropolitan staff are currently engaged with the Water Research Foundation to identify opportunities to perform joint studies at the CSI facility.

In cooperation with EBMUD, CSI has created a new class at UC Berkeley titled "CE 112 – Water and Wastewater Operations and Design". This class teaches water supply, water system design, and infrastructure resilience and sustainability from the perspective of a government water agency to create a pipeline of future workers in the water industry. There may be future opportunities for Metropolitan to participate in or expand upon this class and tap into this engineering resource.

In June 2023, CSI presented its vision to representatives from member agencies at the Member Agency Engineering Manager Forum held at Inland Empire Utilities Agency's headquarters. The response from member agency participants was positive, and staff intends to share both opportunities to participate in innovation activities and results from relevant research with Metropolitan member agencies.

At the September 2023 Engineering, Operations, and Technology Committee meeting, staff solicited feedback from directors on the CSI investment opportunity. Proceeding with an agreement with CSI at this time is based on the positive support for the initiative expressed by the directors at that meeting.

Innovation and Research Services (Center for Smart Infrastructure) – New Agreement

CSI is recommended to perform research and testing services in support of Metropolitan's innovation program and Capital Investment Plan. Startup funding for CSI will primarily be used to make capital improvements to the center's facilities in Berkeley and include procurement and installation of a new overhead crane, pipe bending equipment, a reinforced floor capable of supporting heavy equipment, and other facility upgrades. By making this contribution, Metropolitan will be recognized as a "Founding Partner" of CSI and will have Metropolitan's seal and name prominently displayed on the front of the building.

Planned activities for CSI include (1) capital improvements to the center's facility and staff funding; and (2) sponsor-focused research in support of Metropolitan O&M and capital projects.

This action authorizes a four-year agreement with CSI for a not-to-exceed amount of $2 million. This funding amount consists of two components. The first component of funding provides $250,000 per year for four years to fund the startup of CSI, which includes enhancements to the center's testing infrastructure. The startup funding would come from Metropolitan's operating budget. The second component of funding provides an additional amount of discretionary spending capacity of up to $250,000 per year for focused innovation research studies that would be negotiated by Metropolitan staff on a per-task basis. Funds for this focused research would come from operating or capital funds based on the nature of the work.

Project Milestone

End of 2024 – complete first Metropolitan research study with CSI

12/18.2023

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

12/19/2023

Adel Hagekhalil *Date*
General Manager

Ref# es12694105

Engineering, Operations, & Technology Committee

Center for Smart Infrastructure

Item 7-1

January 8, 2024

Item 7-1
Center for Smart Infrastructure

Subject

Authorize an agreement with the Center for Smart Infrastructure to fund the organization's startup costs and focused water innovation research

Purpose

This action authorizes an agreement with CSI to support the startup of the facility and to fund Metropolitan-focused research projects over the next four years

Recommendation and Fiscal Impact

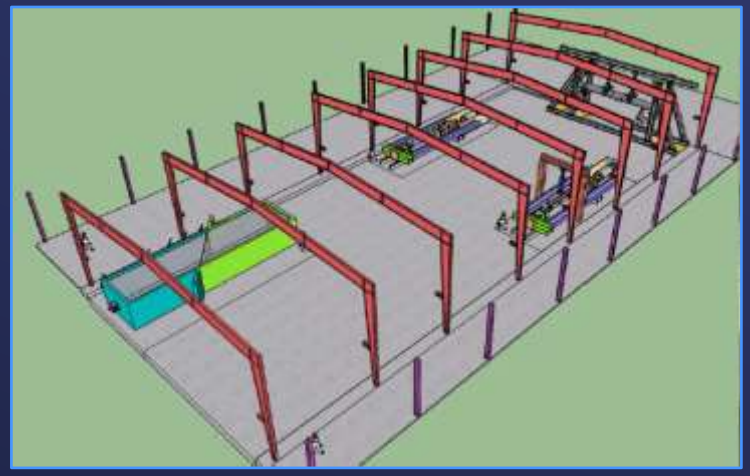
$1 million in operating funds plus up to $1 million in budgeted operating funds or capital funds under projects included in the CIP

Budgeted

Center for Smart Infrastructure

Background

- Located at UC Berkeley
  - Center was launched in 2021
  - UC Berkeley provided 23,000 sq ft building
  - UC Berkely provides on-going operational and maintenance staff to the facility
- Only pipe testing facility on west coast



CSI Building Layout

Center for Smart Infrastructure

Background

- Partnership between infrastructure owners, academia & industry to solve problems through innovation
- Mission: Develop resilient systems through state-of-the-art lab/field testing equipment, smart sensors and robotics, gig data & machine learning/multi-scale computer modeling & simulation
- Predominantly supported by outside funding

Background - “Owner” Collaborators

U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

US Army Corps of Engineers®

Activities – Phase 1

- Initial organizational development & staffing
- Capital improvements to existing UC Berkeley facility
  - Install seismic slip plane box
  - Strengthen floor
  - Add pipe bending equipment & overhead crane

CSI Startup & Peer Funding

EBMUD - $1.5 M

LADWP - $1.5 M

Pre-Phase 1 CSI Building

Examples of Water-related Research Beneficial to Metropolitan

Metropolitan and Member Agency Benefits

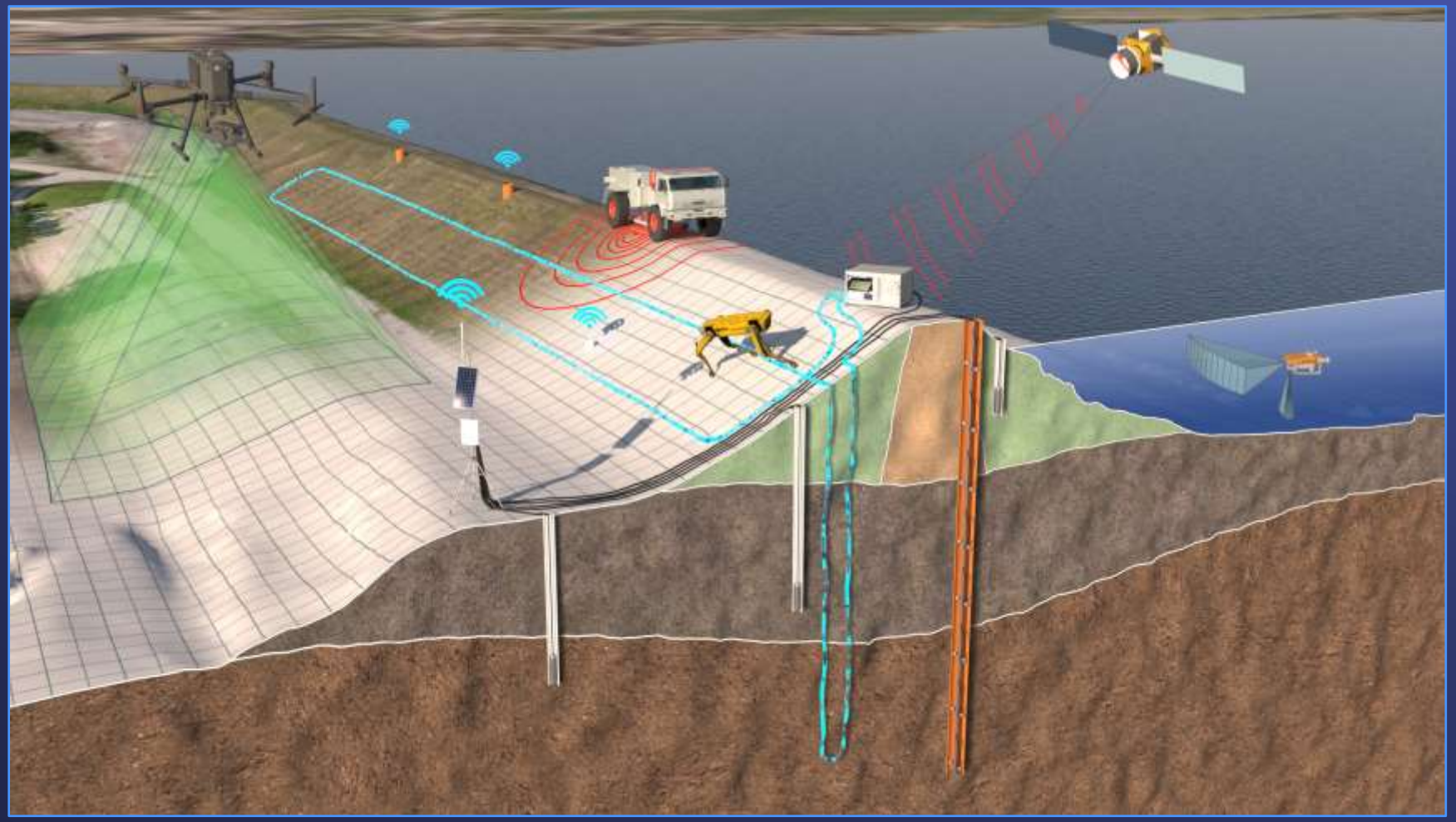
Polymer Pipe Testing

- Fiber optic pipe deformation monitoring across faults and in landslide zones
- Automatic Metering Infrastructure (AMI) testing
- Post-earthquake system vulnerability assessments and dam inspection criteria development
- Spillway subdrain performance testing
- Testing different pipeline materials, designs, & manufacturers

Levee Condition Monitoring

Research & Innovation Projects

- Levee condition assessments using satellites, ground penetrating radar, smart sensors and drones
- Metropolitan currently piloting this tech with WaterStart in the Bay-Delta

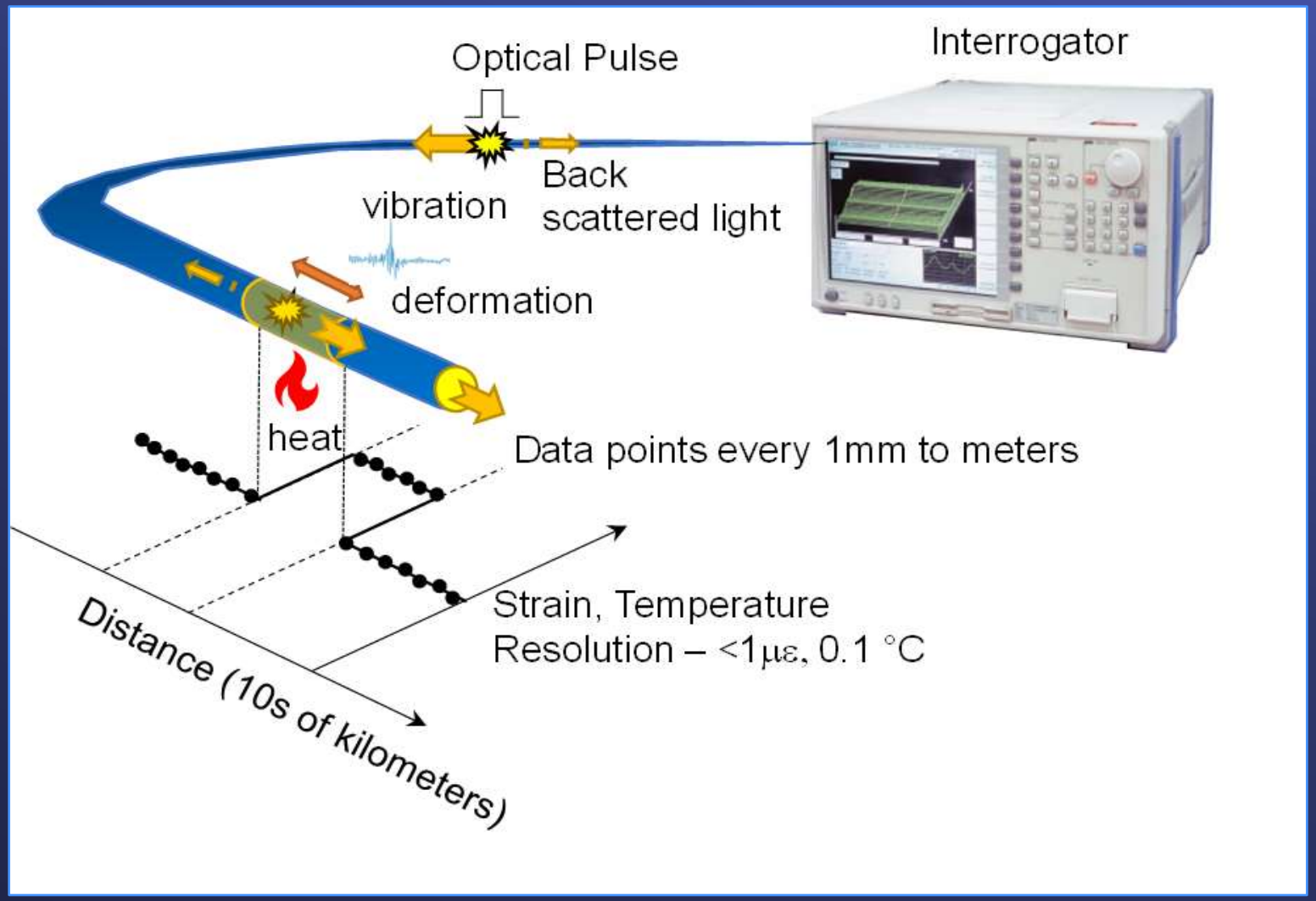


Technologies Used for Dam Assessment

Smart Infrastructure

Research & Innovation Projects

- Real-time fiber optic pipeline monitoring for deformation and strain
- CSI discussed this tech at Member Agency Engineering Managers annual meeting at IEUA on June 1, 2023



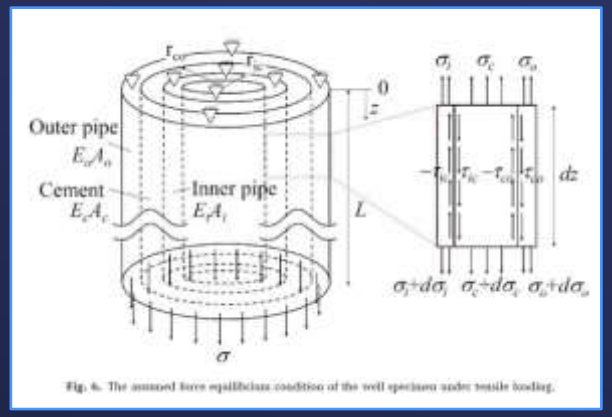
Fiber Optic Condition Monitoring

Earthquake Resistant Ductile Iron Pipe

Research & Innovation Projects

- Earthquake Resistant Ductile Iron Pipe (ERDIP) Testing – first ever test to failure
- Further development of technology

Center for Smart Infrastructure



Steel-lined PCCP Pipe in a Slide Zone

Future Opportunities for Metropolitan

- Testing other earthquake-resistant designs, fabricators, & products
- Testing PCCP slip-lining structure and developing in-house wire break risk curves
- Modeling and testing CRA cut/cover structural capabilities
- Analyzing Metropolitan service area water pipeline network for post-earthquake condition/response
- Developing advanced sensors, tools & analytics to monitor asset condition over time
- Recalibrating climate change & supply impact models with the latest climate data

Future Workforce Development

Center for Smart Infrastructure

UC Berkeley developing curriculum specific to the water business

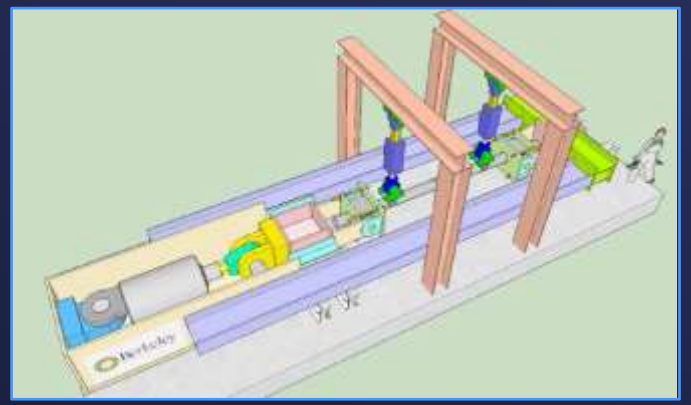
Looking at participating in their program, and developing partner programs in Metropolitan service area

UC Berkeley Students at CSI

Staff Recommendation

- Metropolitan to become a funding partner of the Center
  - Initial authority of $250k/year for four years to support the Center's startup activities
    - Funded through budgeted O&M
  - Additional authority of $250k/year for 4 years to fund focused research to benefit MWD or Member Agencies:
    - Funded by budgeted CIP projects or budgeted O&M

Center for Smart Infrastructure



Model of Bi-axial Pipe Test Apparatus

Board Options

- Option #1

  Authorize an agreement with the Center for Smart Infrastructure in an amount not to exceed $2 million for startup costs and focused research.

- Option #2

  Authorize an agreement with the Center for Smart Infrastructure in an amount not to exceed $1 million for focused research only.

- Option #3

  Do not proceed with funding CSI at this time.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

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

1/9/2024 Board Meeting

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

Executive Summary

This action authorizes increasing the General Manager's change order authority for the Colorado River Aqueduct (CRA) Domestic Water Treatment System Upgrades. The increase in change authority will address the procurement, programming, and installation of nine programmable logic controllers (PLCs) to facilitate communication between the domestic water treatment systems and Metropolitan's Supervisory Control and Data Acquisition (SCADA) system. The original contract specified that Metropolitan would furnish and deliver to the contractor for installation nine remote terminal units (RTUs). The specialty vendor with whom Metropolitan has a longstanding partnership to supply these RTUs decided to take significant exceptions to Metropolitan's standard contract terms and conditions, which had the impact of halting the RTU procurement process. After numerous discussions, it became evident that a mutually agreeable resolution would not be reached. To resolve the issue, staff recommends that the construction contractor provide PLCs to support the communications requirements described above. The provision of the PLCs by the contractor, instead of Metropolitan-furnished RTUs, will require the contractor to conduct significantly more work than originally planned. Based on this scope increase to the existing contract, the extent of required extra work under the subject contract is projected to exceed the General Manager's current change order authority of $1,641,200.

Staff recommends that the General Manager's change order authority for this construction contract be increased by $4,800,000 at this time so the contractor can complete the remaining work without delay and at the lowest overall cost. See **Attachment 1** for the Financial Statement and **Attachment 2** for the Location Map.

Proposed Action/Recommendation and Options

Staff Recommendation: Option #1

Option #1

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.

Fiscal Impact: Expenditure of up to $4,800,000 in capital funds. Approximately $1.3 million will be incurred in the current biennium and has been previously authorized. The remaining funds from this action will be accounted for in the next biennial budget.

Business Analysis: This option will allow the timely completion of all remaining work for the upgrades to the domestic water treatment systems at the five Colorado River Aqueduct pumping plants.

Option #2

Do not authorize an increase in change order authority.

Fiscal Impact: Additional costs would likely be incurred in the future as an additional contract(s) will need to be authorized to complete the work that was planned in the original contract.
Business Analysis: This option is unlikely to result in lower costs for the extra work performed and would delay the project's completion.

Alternatives Considered

Staff made multiple attempts to negotiate terms and conditions with the current RTU supplier. However, the final terms were deemed unfavorable and posed significant risks to Metropolitan with procurement delays, equipment quality, warranty concerns, and long-term equipment support. These risks could result in significant delays in the start-up and commissioning of the domestic water treatment systems and compromise the long-term reliability of the water supply for all the pumping plants. Additionally, since the industry is slowly transitioning to PLCs, there is limited availability of maintenance support and replacement parts for RTUs, making long-term maintenance challenging for staff. Using the current contractor to complete the PLCs procurement and installation minimizes construction delays, provides reliable water treatment systems, and ensures the most cost-effective approach.

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 Actions/Future Actions

By Minute Item 52628, dated December 14, 2021, the Board awarded a $32,824,000 contract to J.F. Shea Construction Inc. to upgrade the domestic water treatment systems at the five CRA pumping plants.

By Minute Item 21997, dated April 11, 2022, the Board appropriated a total of $600 million for projects identified in the Capital Investment Plan for Fiscal Years 2022/23 and 2023/24.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

On December 14, 2021, the Board approved the CRA Domestic Water Treatment System Upgrades Project. The General Manager determined the project to be exempt from CEQA pursuant to Sections 15301, 15302, and 15304 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, 63 miles of canals, and 55 miles of conduits, siphons, and reservoirs. The aqueduct was constructed in the late 1930s and was placed into service in 1941.

The CRA pumping plants and villages are located in remote areas of Riverside and San Bernardino Counties, where municipal water supplies are unavailable, necessitating reliance on local domestic water systems for potable water. The existing water treatment systems are early-generation membrane filtration units installed in 1993. While fully functional today, system components are deteriorating, requiring frequent repairs and adjustments. The domestic water treatment systems are critical infrastructure components supporting the CRA

pumping plants. The domestic water treatment systems need to be replaced to maintain compliance with drinking water regulations, reduce the frequency of repairs, and maintain reliable operation.

In December 2021, Metropolitan's Board awarded a $32,824,000 contract to J.F. Shea Construction Inc. to upgrade the domestic water treatment systems at all five CRA pumping plants, including replacing the water treatment units. Construction is approximately 20 percent complete and scheduled to be completed by late 2025.

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. Change orders to construction contracts are issued for a variety of reasons, including (1) owner-initiated changes because they increase the overall project quality and efficiency; (2) to address design errors and/or omissions discovered after construction began; (3) to address field conditions that differ from those shown on the contract drawings and specifications; and (4) changes needed to benefit other related construction projects. Metropolitan staff negotiates the cost and schedule impacts of all change orders before they are formally authorized.

Metropolitan's construction contracts are typically completed with final change order amounts within the General Manager's Administrative Code authority. Since the beginning of 2018, Metropolitan has completed 115 public works contracts with a total awarded amount of approximately $571 million and total earnings after net extra work of $585 million. The average change order authority utilized over this period is 2.6 percent. All but five of the 115 contracts have stayed within their initially awarded change order authority amount.

If changes occur on a construction contract that exceeds the General Manager's authority, additional authorization from the Board is required. For this contract, the original change order authority based on the construction contract amount is $1,641,200. At this time, the subject contract has experienced unforeseen circumstances when the contract was originally advertised for construction bids. Staff anticipates that the timely resolution of these issues will exceed the General Manager's Administrative Code authority.

CRA Domestic Water Treatment System Upgrades – Increase in Change Order Authority (Contract No. 1949)

The original scope of Contract No. 1949 required the contractor to install nine Metropolitan-furnished RTUs to facilitate communication between the new domestic water treatment systems and Metropolitan's SCADA system. This approach has proven to be successful on past construction contracts and requires Metropolitan to procure the RTU equipment directly from a specialty vendor. Metropolitan's RTUs interface with proprietary software developed in conjunction with this specialty vendor, which has been supplying equipment to Metropolitan for the past several years. This proprietary software contains enhanced security features to prevent Metropolitan's SCADA system breaches. The RTUs are then programmed by in-house staff based on the individual project's specific requirements. The programmed RTUs are supplied to the general contractor for installation. Besides providing advanced security measures, this strategy offers competitive pricing, reduces supply chain risks, and ensures that the RTUs meet all the latest codes and security standards.

During the procurement of the RTUs for this project, the specialty vendor with whom Metropolitan has a longstanding partnership decided to make significant exceptions to the liability limits outlined in Metropolitan's standard terms and conditions contract, thereby halting the procurement process. After numerous negotiation attempts, it became evident that a mutually agreeable resolution would not be reached. To minimize delays, and in consultation with Metropolitan's Legal staff, it was decided to replace the RTUs with PLCs, which are an alternative product with similar functionalities to the RTUs. PLCs were selected since they can be readily programmed for integration with Metropolitan's proprietary software and the SCADA system and procured relatively quickly in today's market conditions. Additionally, the industry is slowly phasing out RTUs and transitioning to PLCs. Metropolitan is also transitioning to keep up with the evolving technology and the latest industry standards, and this evolution is evidenced in the ongoing SCADA replacement program that is currently underway at the Mills Plant.

The transition from RTUs to PLCs on this project has resulted in a revised and increased scope of work for the existing contractor. The changes necessitated significant revisions to existing design drawings, and the

development of new specifications were required to direct the contractor to purchase, program, test, and commission the PLCs. The contractor was also required to modify electrical cabinets, provide additional conduits and raceways, and reconfigure the layout of new electrical equipment within the pumphouse to accommodate the new PLCs. As part of the overall costs, Metropolitan has agreed to pay the existing contractor additional fees to expedite vendor submittals, procurement, and shipping to minimize any delays to the project. Metropolitan has taken a similar approach on a few other construction contracts, experiencing a similar situation with a high degree of success.

The changes described above and other more minor changes to the contract resulting from unforeseen field conditions have utilized most of the existing change order authority. Several months of work are required for PLC procurement, fabrication, installation, start-up, and commissioning. Consequently, it is expected that there will be additional unanticipated changes to the construction contract. This action increases the original change order authority to accommodate both the known issues listed above as well as potential unforeseen future issues.

Per Metropolitan's Administrative Code, the General Manager has the authority to execute change orders for this contract up to a maximum of $1,641,200. To date, approximately $700,105 in change orders have been executed. To fully resolve these issues and complete the re-design for replacement components, fabrication, installation, start-up, and commissioning of the SCADA components at all five CRA pumping plants, staff recommends that the change order authority be increased by $4,800,000 for a new maximum amount of $6,641,200. This increase will enable all remaining work to be performed expeditiously without delaying the contract completion. This action authorizes an increase in the General Manager's authority to execute change orders from $1,641,200 to an aggregate amount not to exceed $6,641,200 for the CRA domestic water upgrades project.

Project Milestone

December 2025 – Construction completion

12/14/2023

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

12/19/2023

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Location Map

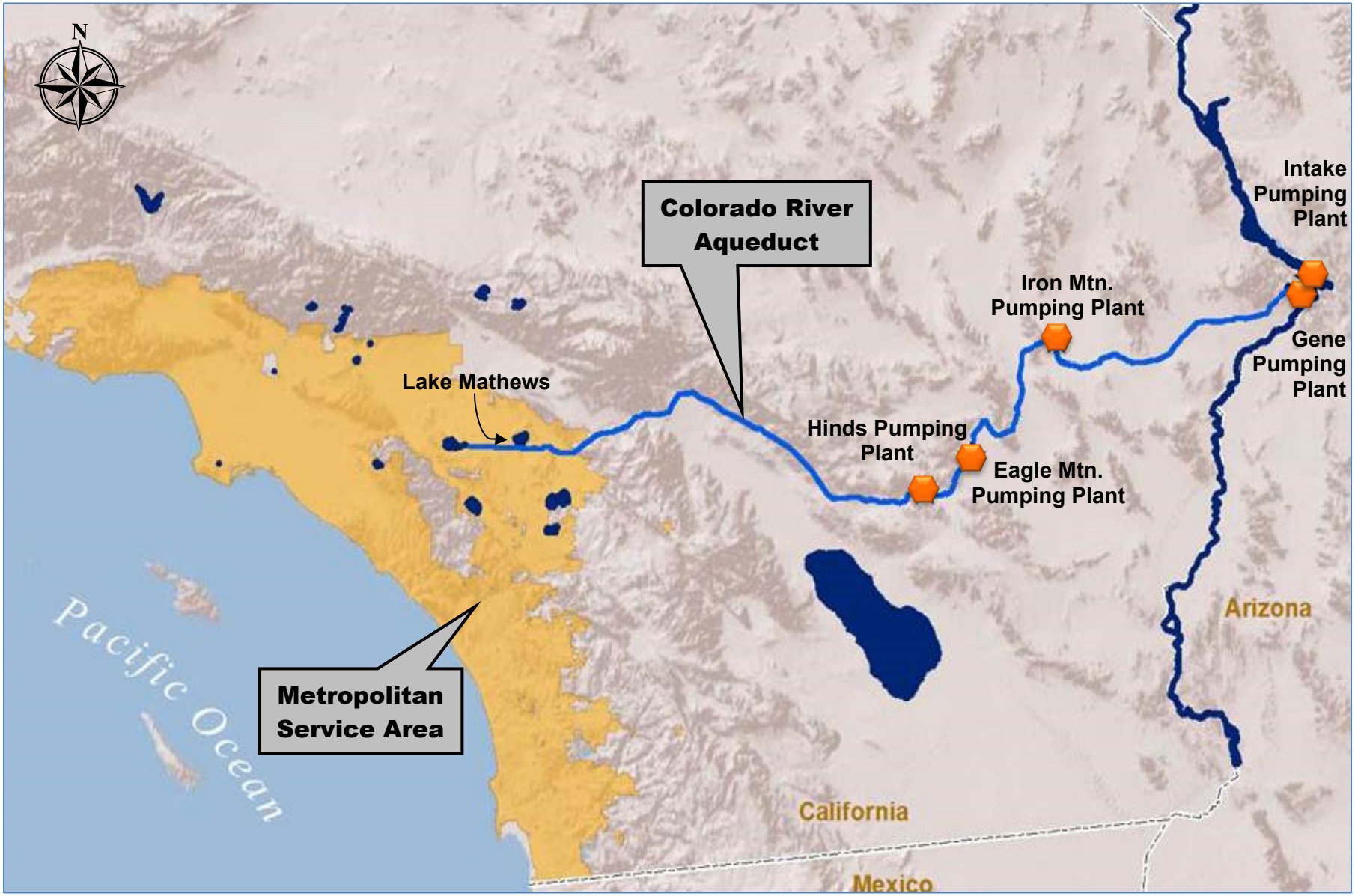
Ref# es12692467

Allocation of Funds for CRA Domestic Water Treatment System Upgrades

	Current Board Action (Jan. 2024)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	-
Submittals Review & Record Drwgs.	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Right-of-Way	-
Equipment Use	-
Contracts	-
J.F. Shea Construction Inc.	4,800,000
Remaining Budget	-
Total	**$ 4,800,000**

The total amount expended to date to replace the CRA Domestic Water Treatment Systems is approximately $20.5 million. The total estimated cost to complete the CRA Domestic Water Treatment Systems, including the amount appropriated to date and funds allocated for the work described in this action, is $52 million.

Location Map



Engineering, Operations, & Technology Committee

Change Order Authority Increase for CRA Domestic Water Treatment Systems Upgrades Project

Item 7-2

January 8, 2024

Item 7-2
Change Order Authority Increase for CRA Domestic Water Treatment Systems Upgrades Project

Subject

Authorize an increase in change order authority to upgrade the domestic water treatment systems at five Colorado River Aqueduct pumping plants

Purpose

Procure, program, and install 9 Programmable Logic Controllers (PLCs)

Recommendation and Fiscal Impact

Authorizes a $4.8 million increase in change order authority for the contract to upgrade the domestic water treatment systems.

Fiscal impact $4.8 million

Budgeted

Location Map

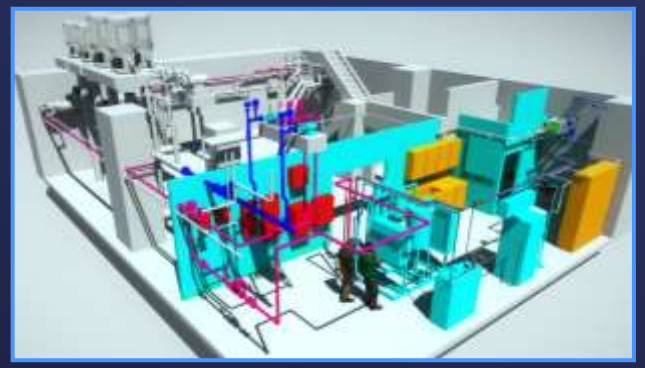
Change Order Authority Increase for CRA Domestic Water Treatment Systems Upgrades

Background

- Original treatment systems installed in 1993
  - Provides drinking water for CRA pumping plants & villages
  - Maintains compliance with drinking water regulations
  - First microfiltration systems approved by DDW for these purposes
- Equipment is deteriorating & requires frequent repairs
- Replacement parts difficult to obtain

Existing Microfiltration Units

Change Order Authority Increase for CRA Domestic Water Treatment Systems Upgrades



New Membrane Equipment & Piping

Contractor Scope

- Dec. 2021 – Contract awarded to J.F. Shea Construction Inc.
- Contract Amount - $32,824,000
- Contract Scope:
  - Replace membrane filtration units & piping
  - Construct temperature-controlled buildings
  - Upgrade water quality instrumentation & laboratory equipment
  - Replace electrical conduits & water piping
  - Install MWD-furnished process control equipment
  - Perform tie-ins & start-up testing
- Construction is approx. 35% complete

Change Order Authority Limits

Change Order Authority Increase for CRA Domestic Water Treatment Systems Upgrades

- Change order authority determined by Admin. Code (Section 8123)
  - GM authority to execute change orders is the greater of:
    - 5% of the original contract amount
    - $250,000
- Since 2018 – 115 contracts have been completed
  - 110 of the 115 contracts have stayed within their original change order authority amount
  - Average change order authority is 2.6%

Change Order Authority Increase

Contract No. 1949	
• Original contract value:	$32,824,000
• Original change order authority:	$1,641,200
Requested Action	
• Proposed increase for Contractor supplied PLCs:	$4,800,000
• New change order authority:	$6,441,200

Electrical Panel at
Intake Pumping Plant

Process Controls Approach

- Remote Terminal Units (RTUs) control process logic & facilitate communication between the domestic water treatment system & Metropolitan's SCADA system
  - RTUs purchased & programmed by District Forces
  - RTUs provided to contractor for installation
  - Total of 9 RTUs required for project
  - Specialty vendor took exceptions to Terms & Conditions
  - No mutually agreeable resolution
- RTUs replaced with Programmable Logic Controllers (PLCs)
  - Similar functionality
  - Programmed for integration with SCADA
  - Allows for enhanced security features

Existing RTU

Scope Changes Required to Convert to PLCs

- Revisions required to existing design drawings
- New specifications developed for PLCs
- Additional work by contractor
  - Procure, program, test, & commission PLCs
  - Procure and assemble PLC panels
  - Make additional electrical modifications required for PLCs
- Expedite submittals, procurement, & shipping to minimize construction delays

PLC Panels (Typical)

Change Order Authority

CRA Domestic Water Treatment Systems Upgrades

Alternatives

- Staff attempted to negotiate terms & conditions with current RTU supplier
  - Final terms were deemed unfavorable
  - Risk of procurement delays & substandard equipment quality
  - Concerns about warranty & long-term equipment support
- Selected Alternative – Issue change order for PLCs
  - Ensures reliable communication with water treatment systems
  - Minimizes construction delays
  - Most cost-effective approach

Project Schedule

Board Options

- Option #1

  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.

- Option #2

  Do not authorize an increase in change order authority.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Action

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

1/9/2024 Board Meeting

7-3

Subject

Authorize agreements with (1) Jacobs Group Engineering 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)]

Executive Summary

Metropolitan safeguards critical infrastructure and personnel through a multi-layered combination of physical barriers, contracted security guard services, employee awareness, and a physical security system.
The 2003 Homeland Security Presidential Directive and North American Electric Reliability Corporation Critical Infrastructure Protection Plans require Metropolitan to operate and maintain video surveillance and intrusion detection systems at critical facilities. A recent comprehensive assessment of Metropolitan's facilities has identified the need for enhancements to the existing security measures at multiple facilities. The planned work under this action will provide security improvements at 14 additional sites and will be consistent with Metropolitan's latest security and technology standards for essential facilities.

This action authorizes two new agreements to provide design services for improvements to the security features at multiple water treatment plants, hydroelectric plants (HEPs), and pressure control structures (PCSs) throughout Metropolitan's Distribution System. See **Attachment 1** for the Allocation of Funds and **Attachment 2** for the Listing of Subconsultants.

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

Staff Recommendation: Option #1

Option #1

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.

Fiscal Impact: Expenditure of $7.55 million in capital funds. Approximately $1 million in capital funds will be incurred in the current biennium and have been previously authorized. The remaining capital expenditures will be funded from future Capital Investment Plan budgets following board approval of those budgets.
Business Analysis: This option will enhance safety and security throughout Metropolitan's system.

Option #2

Do not proceed with the project at this time.
Fiscal Impact: None

Business Analysis: Under this option, the treatment plants, HEPs, and PCSs will continue to experience security system equipment failures.

Alternatives Considered

Alternatives considered for design of the security system improvements included utilizing in-house Metropolitan staff to conduct 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) to use project-specific professional services agreements when resource needs exceed available in-house staffing or require specialized technical expertise in order to provide a concentrated engineering effort over an extended duration.

This strategy relies on the assumption that in-house engineering staff will handle the baseload of work on capital projects, while professional services agreements are selectively utilized to handle projects above this baseload or where specialized needs are required. This strategy allows Metropolitan's staff to be strategically utilized on projects to best maintain key engineering competencies and to address projects with special needs or issues. After assessing the current workload for in-house staff and the nature of the design work, staff recommends utilizing a professional services agreement for this work. This approach will allow for 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 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 Capital Investment Plan for Fiscal Years 2022/2023 and 2023/2024.

Future board actions are planned for the award of construction contracts for security system improvements at the facilities identified in this action.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is exempt from CEQA because it involves only feasibility or planning studies for possible future actions which the Board has not approved, adopted or funded (Public Resources Code Section 21080.21; State CEQA Guidelines Section 15262.). In addition, the proposed action is categorically exempt from CEQA because it consists of basic data collection and research activities which do not result in a serious or major disturbance to an environmental resource, which 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 (State CEQA Guidelines Section 15306.)

CEQA determination for Option #2:

None required

Details and Background

Background

Metropolitan's service area covers approximately 5,200 square miles, extending from Ventura County to the Mexican border. It includes the Colorado River Aqueduct system, five water treatment plants, 830 miles of pipelines, and approximately 5,400 conveyance and distribution system structures.

Metropolitan currently employs hundreds of security surveillance and intrusion detection systems throughout its service area. In recent years, staff has conducted comprehensive threat and physical security assessments of Metropolitan's facilities and identified locations requiring improvements. Following these findings, staff initiated preliminary design to upgrade the site security systems in accordance with Metropolitan's latest security and technology standards for essential facilities.

Metropolitan's security system is being improved through several projects. Metropolitan's Board previously authorized agreements for final design of security improvements at the Joseph Jensen Water Treatment Plant in July 2022 and Colorado River Aqueduct facilities in July 2023. Staff recommends proceeding with final design of security system replacement at the other four treatment plants and ten distribution system facilities under this action. Final design for the remaining facilities, including 28 HEPs and PCSs, five reservoirs, and two lakes, is being performed under two existing board-authorized, on-call agreements.

Security System Improvements – Final Design

Planned improvements include upgrades to the security surveillance and intrusion detection systems at the identified facilities. Planned design activities by the consultants include: (1) detailed field investigations; (2) evaluation of equipment alternatives; (3) development of design and equipment criteria; (4) preparation of final design drawings and specifications for installation; (5) development of construction cost estimates; and (6) design support during advertisement. These activities will be performed by Jacobs Engineering Group Inc. and Brown and Caldwell, as discussed below. Metropolitan staff will provide design oversight, perform overall project management, and agreement administration.

A total of $7.55 million is required to perform this work. Allocated funds include $3.425 million for design activities by Jacobs Engineering Group Inc. and $2.26 million for design activities by Brown and Caldwell under new agreements for the facilities described below. Allocated funds for Metropolitan staff include $581,000 for design review; $1,007,000 for environmental support, project management, project control, security review, and preparation of multiple bid packages; and $277,000 for remaining budget. Jacobs Engineering Group Inc. is preparing design packages for three water treatment plants, while Brown and Caldwell are preparing design packages for the Mills plant and ten HEP/PCS facilities. Metropolitan's treatment plant facilities are located on relatively large sites with extensive underground site utilities, so the security systems for the treatment plants are more extensive and complex than at the PCS or HEP facilities. As a result, the design costs are higher. **Attachment 1** provides the allocation of required funds.

As described above, design will be performed by Jacobs Engineering Group Inc. and Brown and Caldwell. Engineering Services' performance metric target range for final design with construction of more than $3 million is 9 to 12 percent. For the security system improvements at the treatment plants (Jacobs Engineering Group Inc.), the performance metric for final design is 12.2 percent of the total construction cost. The estimated cost of final design is $3,670,000, which includes $3,425,000 for consultant design and $245,000 for Metropolitan staff review. The estimated cost of construction is anticipated to range from $30 million to $32 million. The final design performance metric for the treatment plant security systems exceeds the metric target range due to the complexity described above and the need to prepare separate construction contract packages for each site. This will allow staff to issue multiple construction contracts based on facility needs and risks. For the security system improvements at the HEPs and the PCSs (Brown and Caldwell), the performance metric for final design is 9.3 percent of the total construction cost, which is within the metric target range. The estimated cost of final design is $2,596,000, which includes $2,260,000 for consultant design and $336,000 for Metropolitan staff review. The estimated cost of construction is anticipated to range from $28 million to $30 million.

Security System Improvements (Treatment Plants)– New Design Services Agreement (Jacobs Engineering Group Inc.)

Jacobs Engineering Group Inc. (Jacobs) is recommended to perform design services for the security system improvements at the Diemer, Weymouth, and Skinner plants. Jacobs was prequalified through a competitive process via Request for Qualifications No. 1305. Jacobs was selected for these services based on the firm's knowledge of Metropolitan facilities and expertise in designing security systems. Jacobs performed preliminary design for the security system improvements.

This action authorizes an agreement with Jacobs for a not-to-exceed amount of $3.425 million to provide design services for security system improvements. For this agreement, Metropolitan has established a Small Business Enterprise participation level of 25 percent. Jacobs has agreed to meet this level of participation. See **Attachment 2** for a listing of the subconsultants.

Security System Improvements (Hydroelectric Plants & Pressure Control Structures)– New Design Services Agreement (Brown and Caldwell)

Brown and Caldwell is recommended to perform design services for the security system improvements for the Mills plant and ten HEP/PCS facilities. Brown and Caldwell were prequalified through a competitive process via Request for Qualifications No. 1305. Brown and Caldwell was selected for these services based on the firm's knowledge of Metropolitan facilities and expertise in designing security systems. Brown and Caldwell performed preliminary design for the security system improvements at these facilities.

This action authorizes an agreement with Brown and Caldwell for a not-to-exceed amount of $2.26 million to provide design services for security system improvements at the Mills plant and several HEPs and PCSs. For this agreement, Metropolitan has established a Small Business Enterprise participation level of 25 percent. Brown and Caldwell have agreed to meet this level of participation.

Summary

This action authorizes an agreement with Jacobs Engineering Group Inc. in an amount not to exceed $3.425 million and with Brown and Caldwell in an amount not to exceed $2.26 million to provide design services for the security system improvements at several water treatment plants, HEPs, and PCSs throughout Metropolitan's system.

Project Milestones

December 2024 – Completion of design for security system improvements at ten HEPs and PCSs and the Mills plants

April 2025 – Completion of design for security system improvements at three treatment plants

12/18/2023
John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

12/20/2023
Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Listing of Subconsultants

Ref# es12696031

Allocation of Funds for the Security System Upgrades

	Current Board Action (Jan. 2024)
Labor	
Studies & Investigations	$ -
Final Design	581,000
Owner Costs (Program mgmt., envir. support)	1,007,000
Submittals Review & Record Drwgs.	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Brown and Caldwell	2,260,000
Jacobs Engineering Group Inc.	3,425,000
Right-of-Way	-
Equipment Use	-
Contracts	-
Remaining Budget	277,000
Total	**$ 7,550,000**

The total amount expended to date is approximately $1.5 million. The total estimated cost for this project, including the amount appropriated to date, funds for the work described in this action, and future construction costs, is anticipated to range from $67 million to $79 million.

The Metropolitan Water District of Southern California

Subconsultants for Security System Upgrades Agreements

Consultant: Jacobs Engineering Group Inc.

Subconsultant and Location	Service Category; Specialty
DRP Engineering Inc. Monterey, California	Information Technology, Architectural, and Engineering

Consultant: Brown and Caldwell

Subconsultant and Location	Service Category; Specialty
Am-Tec Security Chino, California	Security
Projectline Technical Services Costa Mesa, California	Information Technology

Engineering, Operations, & Technology Committee

Security Systems Improvements

Item 7-3

January 8, 2024

Item 7-3
Security System Improvements

Subject

Authorize agreements with Jacobs Engineering Group Inc. and Brown and Caldwell for design of security system improvements at several facilities throughout Metropolitan's Distribution System

Purpose

Safeguard Metropolitan's critical infrastructure and personnel

Recommendation and Fiscal Impact

Authorize agreements with Jacobs Engineering Group Inc. and Brown and Caldwell

Fiscal impact $7.55 million

Budgeted

Security System Improvements

Background

- Federal security standards require security systems at Metropolitan facilities
- Comprehensive assessment identified the need for enhancements at several locations
- Planned scope of improvements
  - Video surveillance systems
  - Intrusion detection systems

Security System Improvements

Alternatives Considered

- Utilize Metropolitan staff
  - Assess current workload
  - Assess relative priority of projects
- Selected Alternative – Use consultant services
  - Specialized expertise
  - Will allow for timely & efficient completion of design activities

Security System Improvements

Jacobs Engineering Group Inc. – Agreement

- Prequalified via RFQ No. 1305
- Scope of Work - Weymouth, Diemer, & Skinner Plants
  - Detailed field investigation
  - Evaluate equipment alternatives
  - Develop design & equipment criteria
  - Prepare contract documents & construction cost estimate
  - Design support during advertisement phase
- NTE amount: $3,425,000
- SBE participation level: 25%

Security System Improvements

Brown and Caldwell – Agreement

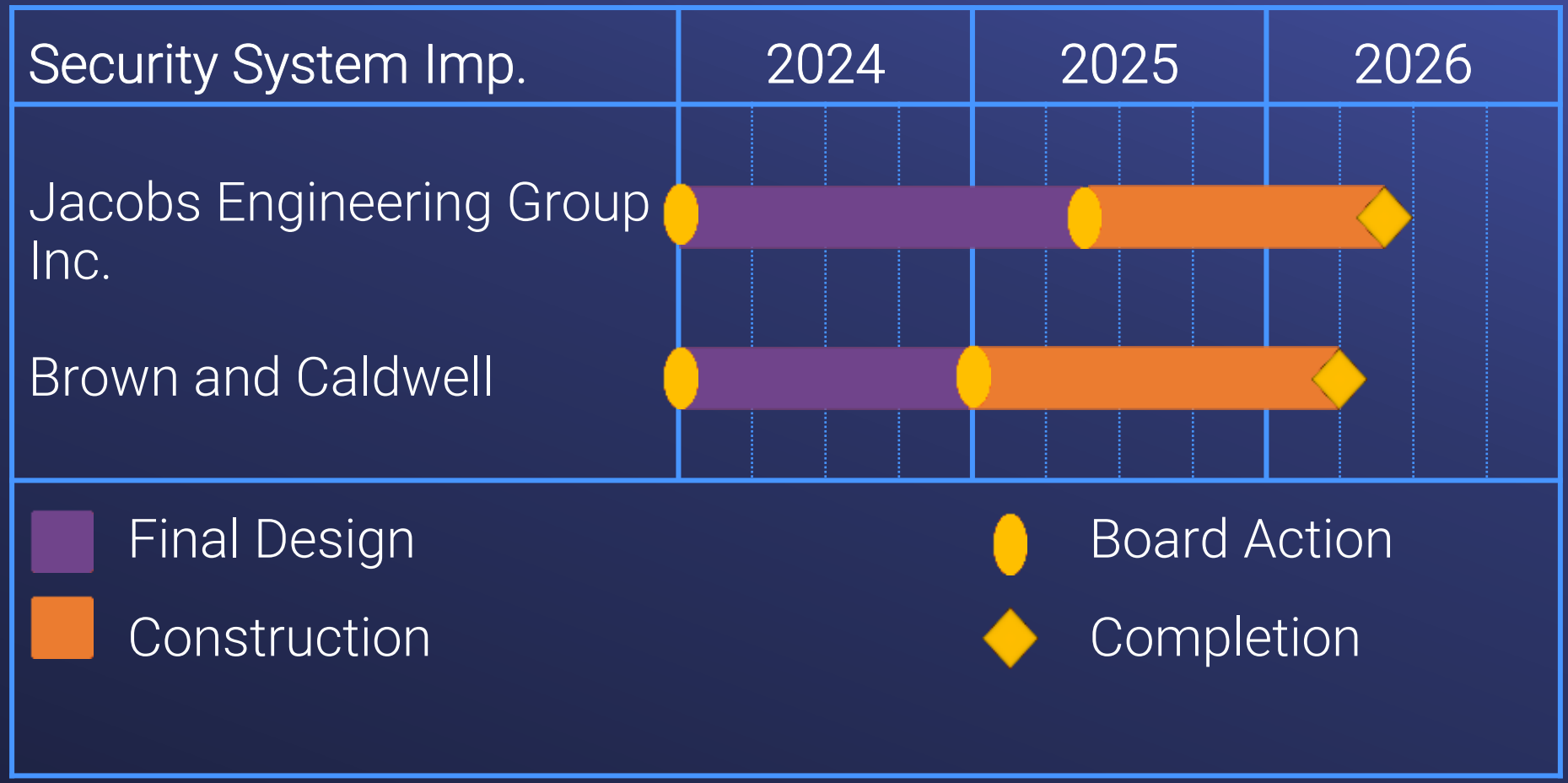
- Prequalified via RFQ No. 1305
- Scope of Work – Mills Plant & 10 HEP/PCS facilities
  - Detailed field investigation
  - Evaluate equipment alternatives
  - Develop design & equipment criteria
  - Prepare contract documents & construction cost estimate
  - Design support during advertisement phase
- NTE amount: $2,260,000
- SBE participation level: 25%

Allocation of Funds

Security System Improvements

Metropolitan Labor	
Final Design	$ 581,000
Owner Costs (Proj. Mgmt., Envir. Support)	1,007,000
Professional/Technical Services	
Brown and Caldwell	2,260,000
Jacobs Engineering Group Inc.	3,425,000
Remaining Budget	277,000
Total	$ 7,550,000

Project Schedule



Board Options

- Option #1
  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.
- Option #2

  Do not proceed with the project at this time.

Staff Recommendation

- Option#1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA

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

1/9/2024 Board Meeting

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

Executive Summary

The Foothill Feeder conveys untreated water from the West Branch of the State Water Project into the western portion of Metropolitan's service area, while the Rialto Pipeline conveys untreated water from the East Branch of the State Water Project into the eastern part of Metropolitan's service area. Several blowoff structures along the pipeline alignments are used to dewater the pipelines. Each blowoff structure has two plug valves: one for isolation and the other to control flows during dewatering episodes. Twenty 16-inch-diameter plug valves, located on Foothill Feeder and Rialto Pipeline, are from each pipeline's original construction. These valves have been in service for more than 50 years and require replacement.

This action awards a $549,592.04 procurement contract to Caasi Flow Control for 20 plug valves to be installed on the Foothill Feeder and Rialto Pipeline. See **Attachment 1** for the Allocation of Funds, **Attachment 2** for the Abstract of Bids, and **Attachment 3** for the Location Map.

Proposed Action/Recommendation and Options

Staff Recommendation: Option #1

Option #1

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

Fiscal Impact: Expenditure of $725,000 in capital funds. $19,000 will be incurred in the current biennium and has been previously authorized. The remaining funds from this action will be accounted for in the next biennial budget.

Business Analysis: This option will improve the operational reliability of two major pipelines within the distribution system.

Option #2

Do not proceed with the project at this time.

Fiscal Impact: None

Business Analysis: This option would forego the opportunity to improve the operational reliability of the two pipelines.

Alternatives Considered

Staff considered refurbishing the existing valves, but refurbishment was deemed unviable based on the current deteriorated condition of the valves. Staff also considered substituting butterfly valves for the deteriorated plug valves. Butterfly valves are less expensive but are not as robust as plug valves. Butterfly valves are also susceptible to damage from cavitation when used in this particular dewatering application. Since the valves are

used for isolation and energy dissipation during dewatering, failure of a valve would require an unplanned shutdown of the pipeline for replacement. Replacement of the existing plug valves in kind was selected for its superior performance in this application and to maintain water delivery reliability.

Applicable Policy

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

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

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

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

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is exempt from CEQA because it involves the repair and maintenance of existing public structures, facilities, and mechanical 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.).

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 Joseph Jensen Water Treatment Plant. The member agencies that rely on this supply include Calleguas Municipal Water District, Central Basin Municipal Water District, Las Virgenes Municipal Water District, West Basin Municipal Water District, and the cities of Beverly Hills, Burbank, Compton, Glendale, Long Beach, Los Angeles, San Fernando, Santa Monica, and Torrance.

Similarly, the Rialto Pipeline conveys untreated water from the East Branch of the State Water Project into the eastern part of Metropolitan's service area. The pipeline extends east from the Department of Water Resources' Devil Canyon Afterbay and terminates at the San Dimas Control Facility. In addition to serving the Weymouth plant, the Rialto Pipeline directly serves Three Valleys Municipal Water District and the Inland Empire Utilities Agency.

Dewatering of the pipelines utilizes several blowoff structures. Each blowoff structure has two plug valves: one for isolation and the other to control flow. The existing 16-inch-diameter valves on the Foothill Feeder and Rialto Pipeline are from the original construction and have been in service for more than 50 years. Although the valves have been maintained, they have deteriorated to the point that they leak and are no longer repairable.

Procurement specifications for the replacement of plug valves are complete, and bids have been received. Staff recommends proceeding with the procurement of replacement plug valves at this time. The valves will be installed by Metropolitan forces during planned pipeline shutdowns in 2025.

Foothill Feeder and Rialto Pipeline Blowoff Valve Replacements – Procurement

The scope of the work includes furnishing 20 16-inch-diameter lubricated plug valves, submittal review, fabrication inspection, and contract administration. Plug valves are the primary isolation and flow control valve types used at Metropolitan's blowoff facilities throughout the distribution system. Replacement of failed valves is critical for dewatering of the facilities and for maintenance of the distribution system as a whole. Installation of

the valves will be completed by Metropolitan forces during planned shutdowns of each pipeline, and funds for that work have been previously allocated.

A total of $725,000 is required for this work. In addition to the amount of the procurement contract described below, allocated funds for Metropolitan staff include $14,000 for submittal review; $59,000 for contract administration and fabrication inspections; $35,000 for project management; and $67,407.96 for 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, funds allocated for the work described in this action, and future construction costs, is anticipated to range from $3.0 million to $3.25 million.

Award of Procurement Contract (Caasi Flow Control)

Request for bids No. RFB-KK-423868 for procurement of 20 plug valves was advertised on October 20, 2023. As shown in **Attachment 2**, three bids were received and opened on November 13, 2023. The low bid from Caasi Flow Control, in the amount of $549,592.04, complies with the requirements of the specifications. This amount includes all sales and use taxes imposed by the State of California. The budgetary estimate for this material, based on previous procurements, ranged from $575,00 to $625,000. As a procurement contract, there are no subcontracting opportunities, and a Small Business Enterprise participation level was not established for this contract.

Project Milestone

February 2025 – Complete installation of the valves during upcoming planned shutdowns

12/14/2023

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

12/19/2023

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Abstract of Bids

Attachment 3 – Location Map

Ref# es12697418

Allocation of Funds for Plug Valve Replacements for Foothill Feeder and Rialto Pipeline

	Current Board Action Jan. 2024
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt.)	35,000
Submittals Review & Record Drwgs.	14,000
Fabrication Inspection & Support	59,000
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Right-of-Way	-
Equipment Use	-
Contracts	-
Caasi Flow Control	549,592.04
Remaining Budget	67,407.96
Total	**$ 725,000**

The expended amount for replacement of the 20 plug valves for the Foothill Feeder and Rialto Pipelines is $128,000. The total estimated cost to complete the valve replacement, including the amount appropriated to date, funds allocated for the work described in this action, and future construction costs, is anticipated to range from $3,000,000 to $3,250,000.

The Metropolitan Water District of Southern California

Abstract of Bids Received on November 13, 2023 at 11:00 A.M.

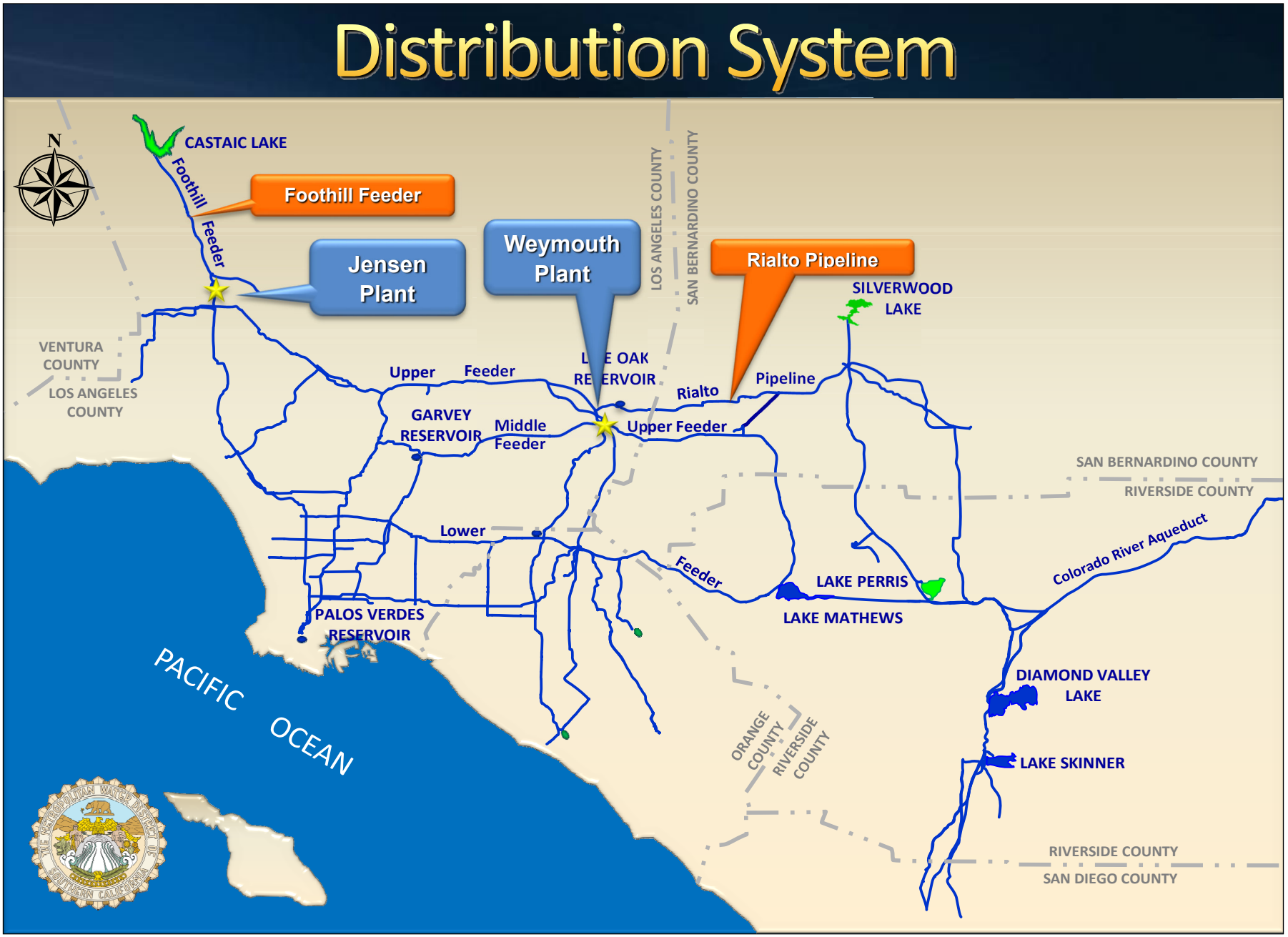
RFB No. RFB-KK-423868
Lubricated Plug Valves for Distribution System

The work includes procurement of 20 plug valves.

Budgetary estimate: $575,000 to $625,000

Bidder and Location	Total
Caasi Flow Control **San Ramon, CA**	**$549,592.04**
B&K Valves & Equipment Inc. Carlsbad, CA	$576,000
Southwest Valve & Equipment Irvine, CA	$649,026

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


Distribution System
N
CASTAIC LAKE
Foothill Feeder
Foothill Feeder
Jensen Plant
Weymouth Plant
Rialto Pipeline
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
SILVERWOOD LAKE
VENTURA COUNTY
LOS ANGELES COUNTY
Upper Feeder
E 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

Blowoff Valve Procurement

Item 7-4

January 8, 2024

Item 7-4
Blowoff Valve Procurement

Subject

Award a $549,592.04 procurement contract to Caasi Flow Control for 20 plug valves to be installed on the Foothill Feeder and Rialto Pipeline

Purpose

Replacement of blowoff valves are needed to maintain system reliability

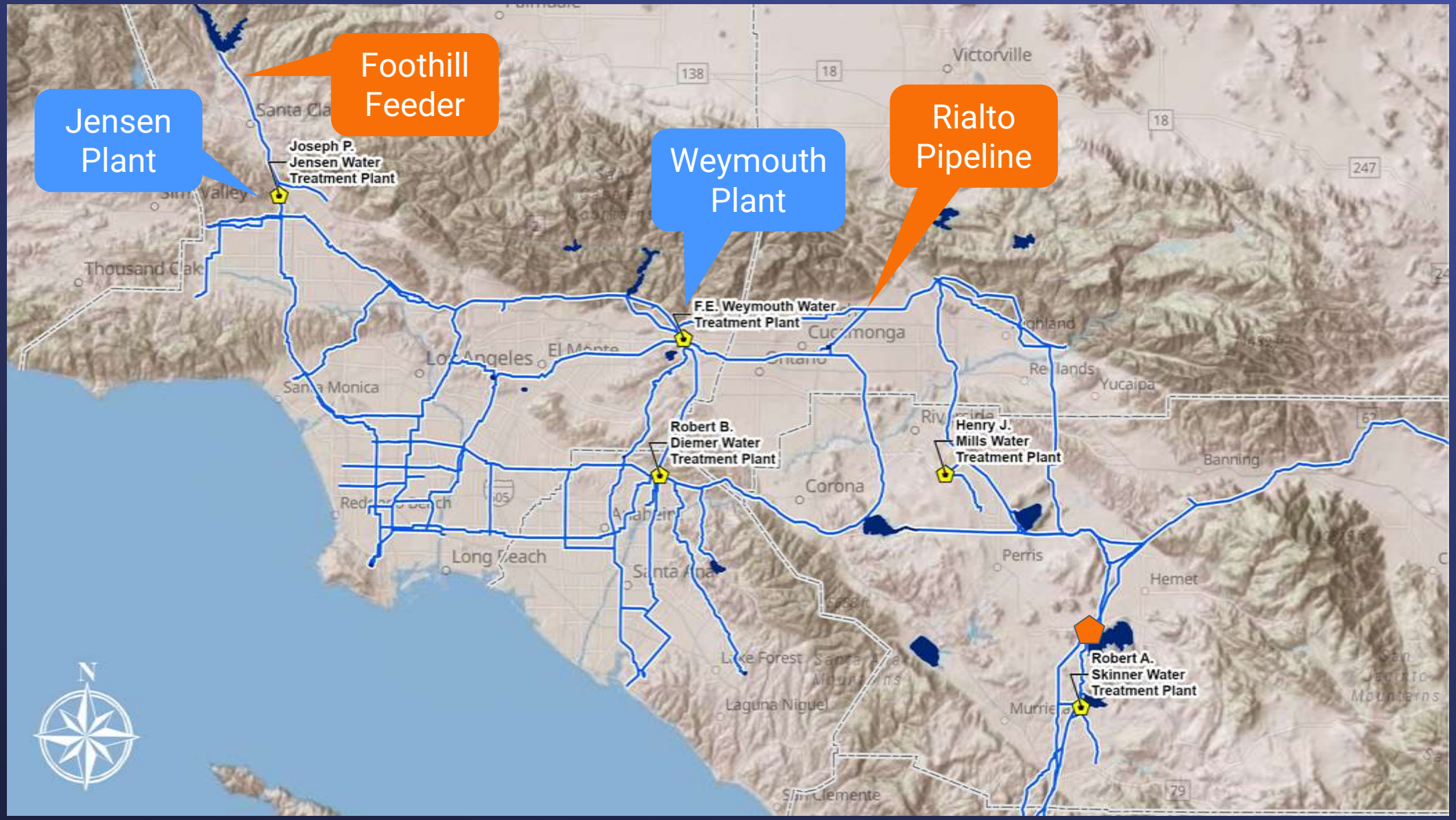
Recommendation and Fiscal Impact

Award of a procurement contract

Fiscal impact of $725,000

Budgeted

Distribution System



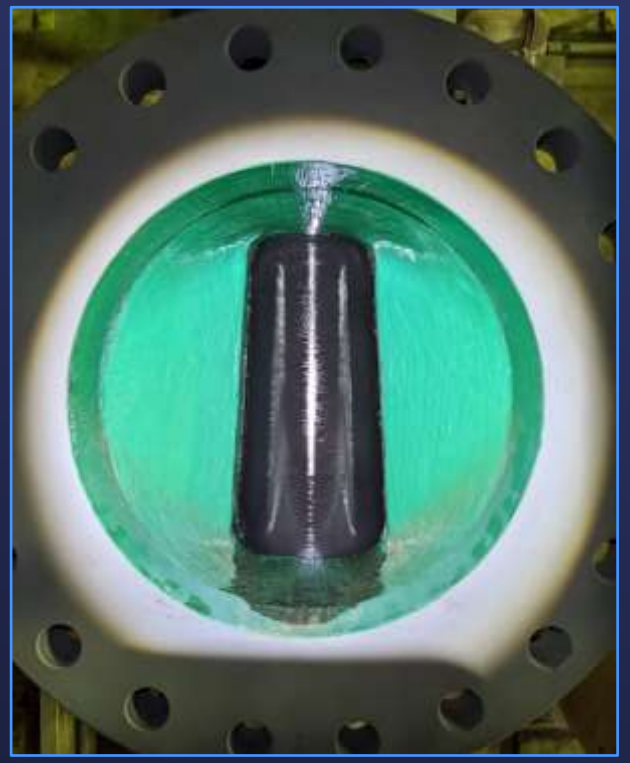
Plug Valves Procurement

Existing
Plug Valve Interior

Background

- Blowoff Structures
  - Used to dewater pipelines
  - Isolation valves – shutdown required to replace
- Twenty 16-inch replacement valves needed
  - (14) Foothill Feeder & (6) Rialto Pipeline
  - In service over 50 years
  - Valves are corroded, worn beyond repair

Plug Valves Procurement



New Plug Valve Interior

Alternatives Considered

- Refurbish existing valves
  - Existing valves too worn, deteriorated
  - Extended pipeline outage
- Replace with butterfly valves
  - More readily available
  - Less robust construction
  - Potential for damage in this application
- Selected alternative
  - Replace existing plug valves in-kind

Plug Valves Procurement

Plug Valve Installation

Scope of Work

- Contractor
  - Furnish 20 16-inch plug valves
- Metropolitan
  - Fabrication inspection, submittal review, contract administration
  - Project management, project controls

Bid Results

Request for Bids No. RFB-KK-423868

Bids Received	November 13, 2023
No. of Bidders	3
Lowest Responsible Bidder	Caasi Flow Control
Low Bid	$549,592.04
Range of Other Bids	$576,000 - 649,026
SBE Participation*	N/A

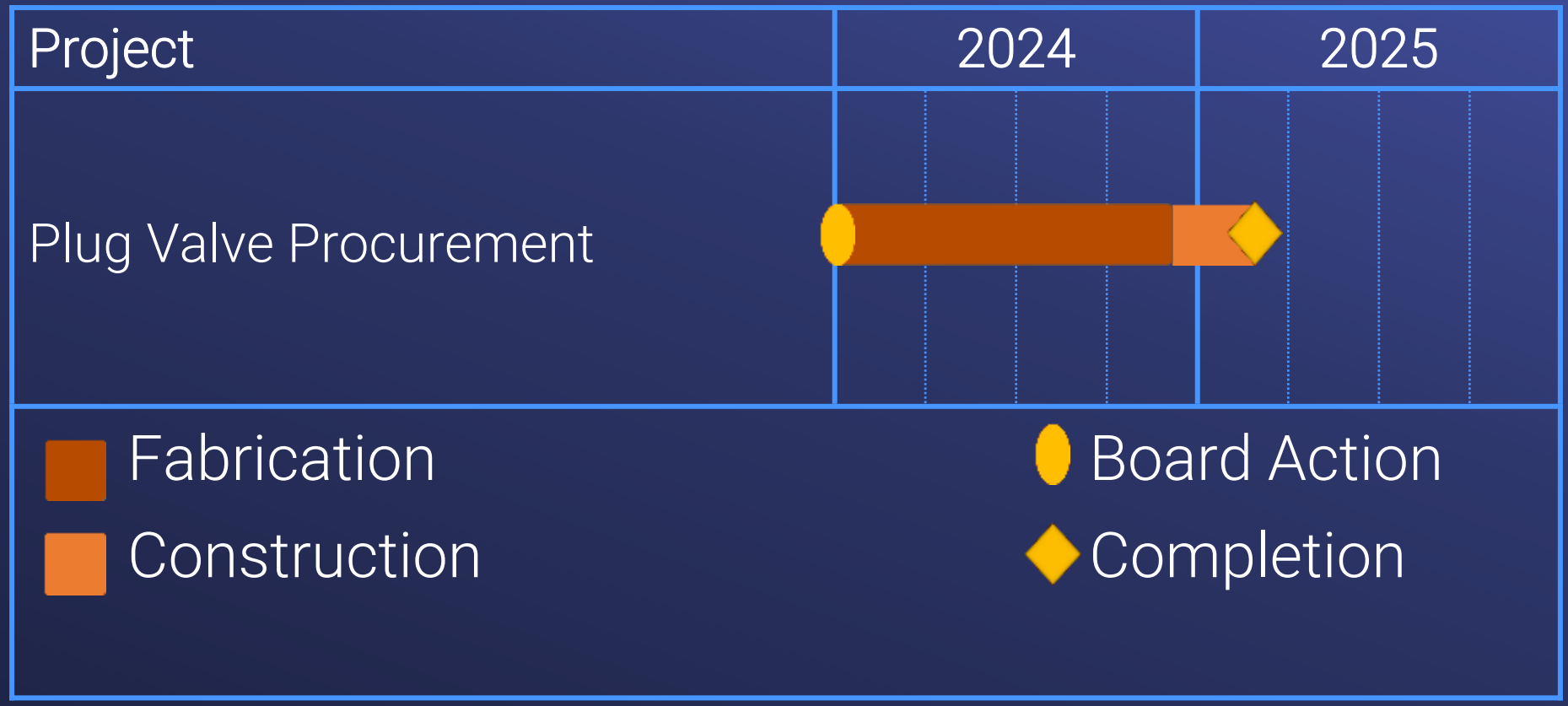
*SBE (Small Business Enterprise) participation level not established for procurement contract

Allocation of Funds

Plug Valves Procurement

Metropolitan Labor	
Owner Costs (Proj. Mgmt., Contract Admin.)	$ 35,000
Fabrication Inspection & Support	59,000
Submittals Review & Tech. Support	14,000
Contract	
Caasi Flow Control	549,592.04
Remaining Budget	67,407.96
Total	$725,000

Project Schedule



Board Options

- Option #1

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

- Option #2

  Do not proceed with the project at this time.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
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THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Action

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

1/9/2024 Board Meeting

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 CEQA

Executive Summary

Metropolitan is seeking services to implement a new Oracle E-Business Suite Procurement Services module, specifically for construction contracts, and other standard features for contract management. The new module shall be integrated with the existing E-Business Suite platform.

This action authorizes project management, design, and development of professional services for implementation of the Oracle Services Procurement module in the Oracle E-Business Suite. This implementation will streamline the Construction Contracts and Procurement business process, automating retention or other withholdings required to be specified as liabilities in the General Ledger. The implementation of this module would eliminate missed retention withholdings from future payments and record the transactions correctly and timely in the General Ledger, thereby avoiding penalties and saving funds for Metropolitan.

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

Staff Recommendation: Option #1

Option #1

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.

Fiscal Impact: Expenditures of $1,720,000 in capital funds
Business Analysis: This project provides accurate General Ledger reporting on financial commitments related to Construction Contracts at Metropolitan. The need for improved General Ledger reporting was identified by the Audit Department and Finance.

Option #2

Do nothing at this time
Fiscal Impact: No capital expenditures
Business Analysis: Maintain the current manual processes

Alternatives Considered

Construction Management Services proposed a solution from Textura, a third-party Payment Management Cloud Service on Oracle Cloud Infrastructure. This application does not meet all the requirements and does not integrate into Metropolitan's current Oracle E-Business Suite platform. This solution turned out to be very expensive due to the annual cloud subscription. No other alternatives were considered as third-party solutions will require customization to integrate with the Oracle E-Business Suite system, which would be cost prohibitive and problematic whenever the E-Business Suite platform is updated or upgraded.

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 Capital Investment Plan for Fiscal Years 2022/23 and 2023/24.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is exempt from CEQA because there is no potential for the activity in question to have a significant effect on the environment. (State CEQA Guidelines Section 15061(b)(3).)

CEQA determination for Option #2:

None required

Details and Background

Background

The Oracle E-Business Suite is the primary financial system used at Metropolitan for Purchasing, Accounts Payable, Accounts Receivable, Fixed Assets, iProcurement, Inventory, iExpenses, and General Ledger reporting. To improve process efficiency and comply with financial reporting requirements, an additional module for Services Procurement is recommended to be integrated with the existing E-Business Suite platform.

There have been several audit findings on retention transactions not being held from construction contract payments. When retention is performed correctly, the amount of retention is either sent to an escrow account or held as a liability in the General Ledger. Stop Notices and Liquidated Damages should also be held as liabilities in the General Ledger. In the current Oracle E-Business Suite, it is difficult to automate and record these types of transactions.

The Oracle on-premises Services Procurement Module automates retention transactions at the time of payment. The Services Procurement module is part of the Oracle E-Business Suite. The completion of this project will eliminate missed retention withholdings from future payments and record the transactions correctly and timely in the General Ledger.

This action authorizes $800,000 for the Oracle E-Business Suite implementation for the Services Procurement module. The total project budget is $1,720,000 and includes funds for awarding a new contract with Applications Software Technology LLC for $800,000 for professional and technical services. Other costs included are $668,000 for labor costs by Metropolitan staff, including owner costs and project management, $80,000 for software licenses, and $172,000 for remaining budget.

This project has been evaluated and recommended by Metropolitan's Capital Investment Plan Evaluation Team, and funds are available within the fiscal year 2023/24 capital expenditure plan. See **Attachment 1** for the Financial Statement.

Project Milestones

Request for Proposal via Request for Bids and Vendor Selection	May – Sep 2023
Board Letter and Action	Jan – 2024
Project Kick off and Discovery	Feb – 2024
Design and Implementation	Feb – Jul 2024
Testing and Deployment	Aug – Oct 2024
Go-Live	Nov – Dec 2024

12/18/2023

Charles Eckstrom *Date*
Group Manager, Information Technology

12/19/2023

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Financial Statement

Ref# IT12697556

Allocated Funds for Oracle EBS Module Implementation: Services Procurement

	Current Board Action (Jan. 2024)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt.)	668,000
Submittals Review & Record Drwgs	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	80,000
Incidental Expenses	-
Professional/Technical Services	800,000
Equipment Use	-
Contracts	-
Remaining Budget	172,000
Total	**$ 1,720,000**

Engineering, Operations & Technology Committee

Services Procurement Module Implementation on Oracle EBS

Item: 7-5

January 8, 2024

Item 7-5
Services Procurement Module Implementation on Oracle EBS

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.

Purpose

This implementation will streamline the Construction Contracts and Procurement business process, automating retention or other withholdings required to be specified as liabilities, eliminate missed retention withholdings from future payments and record the transactions correctly and timely in the General Ledger, thereby avoiding penalties and saving funds for Metropolitan.

Recommendation and Fiscal Impact

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.

Budgeted

Background

- The Oracle EBS is the primary financial system used at Metropolitan for Purchasing, Accounts Payable, Accounts Receivable, Fixed Assets, iProcurement, Inventory, iExpenses and General Ledger (GL) Reporting.
- Currently, the Service Contracts are not automated and are managed by the Construction Contracts staff in Engineering Services Group, in coordination with Finance for Payment Processing.
- Metropolitan is seeking Professional Services to implement a new Services Procurement module, for automating the process of handling the Engineering Construction Services contracts & Payments.

High Level Scope of Work

- The new Oracle on-prem Services Procurement Module will be integrated with the existing EBS platform.
- To improve the process efficiency and comply with the financial reporting and audit requirements.
- To automate retention transactions at the time of payment, as per the terms in construction contracts and agreements.
- To record the transactions correctly and timely in the GL, thereby eliminating missed retention withholdings from future payments, avoiding high penalties.

High Level Scope of Work

- To use other available standard features of this new module for contract management that better integrates with the existing Oracle EBS platform, providing a user-friendly interface for business users.
- To document the entire business process and perform knowledge transfer with adequate hands-on testing by the business users.

Procurement

- June 2, 2023 - RFP 1349 with Business Requirements issued.
- July 10, 2023 – Only one Vendor responded with the proposal.
- August 1, 2023 - Evaluation & Scoring completed. The Panel consisted of five scorers, one SME from each stakeholder group and two Technical Advisors.
- September 9, 2023 - Follow up Demo & Q&A conducted by Procurements & Contracts.
- September 26, 2023 – a Request To Award Memo (RTAM) for $800,000 was approved.

Vendor Selection

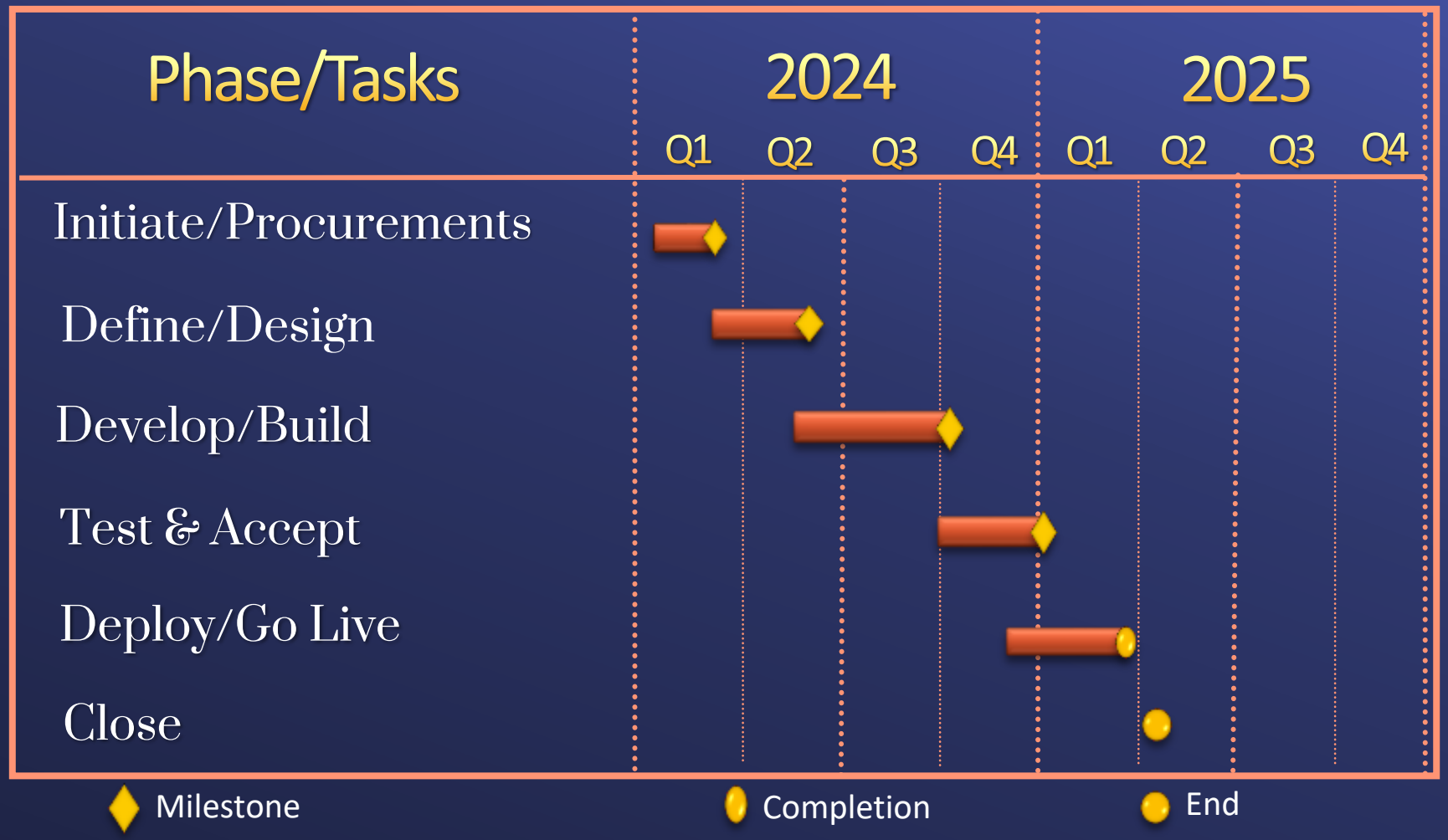
- Vendor selection was based on final scores derived from the evaluation criteria defined in the RFP.
- The SBE/RBE/DVBE participation goal designated for this solicitation was twenty-five percent (25%).
- The vendor did not qualify for SBE/RBE/DVBE.
- Application Software Technology, LLC was selected as the winning vendor.

Budget Cost Breakdown

Description	FY 2023-24	FY 2024-25	Total
Oracle Procurement Services Implementation			
MWD Labor	$ 300,000	$ 368,000	$ 668,000
Software Licenses		$ 80,000	$ 80,000
Professional & Technical Services	$ 500,000	$ 300,000	$ 800,000
Contingency		$ 172,000	$ 172,000
Total Project Budget	$ 800,000	$ 920,000	$ 1,720,000

Project Plan Milestones

Timeline Estimates



Board Options

Option #1

- 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.

Option #2

- Do nothing at this time.

Staff Recommendation

Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Action

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

1/9/2024 Board Meeting

REVISED 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]**

Executive Summary

This action awards an agreement to Alvarez LLC (Alvarez) for services to execute the migration of legacy applications from hardware running Windows Operating Systems that are no longer supported by the vendor, Microsoft Inc., to new hardware running Microsoft-supported Windows Operating Systems. Alvarez will provide the professional services to execute the migration of the identified legacy applications and provide post-execution support as necessary. The licenses for Alchemy software provided by Cloudhouse Technologies Limited (Cloudhouse) are necessary to continue running the legacy applications on the new servers. The licenses will be for a period of up to three years.

There are a multitude of critical applications that are running on legacy Windows Operating Systems. Due to the technical challenges involved with moving off these systems or implementing an alternate solution, these instances must continue to run into 2024, if not longer. However, the continued use of these unsupported systems poses a significant operational, security, and financial risk to Metropolitan.

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

Staff Recommendation: Option #1

Option #1 (Revised)

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.

Fiscal Impact: Expenditure of $2,955,000in capital funds
Business Analysis: The solution offered by Alvarez LLC was evaluated by a committee of Metropolitan subject matter experts who feel that it could overcome current technical challenges and extend the lifetime of legacy applications by migrating them onto hardware running Windows Supported systems

Option #2

Do nothing at this time
Fiscal Impact: No capital expenditures
Business Analysis: This option would maintain current use of Microsoft unsupported Operating Systems, and the Operational, Security, and financial risk to Metropolitan would remain.

Alternatives Considered

Alternative solutions by Yanilex Systems LLC and SHI International Corp were considered. However, their proposed solutions did not meet the technical requirements needed by Metropolitan. We felt that using either solution would result in the servers not being migrated efficiently and correctly, and ultimately require more work to maintain in the future.

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 Capital Investment Plan for Fiscal Years 2022/23 and 2023/24.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is exempt from CEQA because there is no potential for the activity in question to have a significant effect on the environment. (State CEQA Guidelines Section 15061(b)(3).)

CEQA determination for Option #2:

None required

Details and Background

Background

In June 2021, the current capital project was approved to upgrade all out-of-support operating systems. Over the past two years, many applications have either been upgraded, migrated onto a supported operating system, or completely replaced. However, during the migration and upgrade process, it was discovered there was a large number of applications with technical challenges that made upgrading, migrating, or replacement non-viable.

Given the security need to upgrade applications to supported servers, alternative solutions were explored leading to this current action.

This action authorizes 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 total project budget is $2,955,000 and includes funds for awarding a new contract with Alvarez LLC for $1,923,940 for professional and technical services. Other costs included are $229,160 for labor costs by Metropolitan staff, including owner costs and project management, and $801,900 for licensing costs.

This project has been evaluated and recommended by Metropolitan's Capital Investment Plan Evaluation Team, and funds are available within the fiscal year 2023/24 capital expenditure plan. See **Attachment 1** for the Financial Statement.

Project Milestones

Board approval	Jan 2024
Discovery/Design Phase	Feb – Mar 2024
Development Phase	Apr 2024
Deploy Phase	May – Aug 2024

1/3/2024

Charles Eckstrom *Date*
Group Manager, Information Technology

1/3/2024

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Financial Statement

Ref# IT12699102

Allocated Funds for Application Servers Upgrade

	Current Board Action (Jan. 2024)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt.)	229,160
Submittals Review & Record Drwgs	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	801,900
Incidental Expenses	-
Professional/Technical Services	1,923,940
Equipment Use	-
Contracts	-
Remaining Budget	-
Total	**$ 2,955,000**

Engineering, Operations & Technology Committee

Migration of Legacy Applications

Item 7-6

January 8, 2024

Item 7-6
Migration of Legacy Applications

Subject
Authorize agreements with (l) 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.

Purpose
So that we may proceed with agreements with Alvarez and Cloudhouse Technologies Limited.

Recommendation and Fiscal Impact
Authorize agreements with (l) 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.

Budgeted

Background

- Project to upgrade out of support Server operating systems.
- Technical Challenges (70 servers)
  - e.g. WINS – 9 Servers, EDMS – 6 Servers
- RFP was conducted to identify a solution to execute migrations.
- Recommended solution offered by Alvarez, LLC (“Alvarez”).

Scope of Work

- Procurement of Licenses to run Cloudhouse Alchemy solution.
  - Cloudhouse Alchemy allows applications to run on operating systems that normally would not be compatible.
- Alvarez to provide professional and technical services to execute migrations.

Procurement

- June 1, 2023: RFP 1344 issued
- July 17, 2023: 3 Proposals received
- September 12, 2023: Follow up interviews conducted with vendors
- October 16, 2023: Recommendation to Award (RTAM) approved

Alvarez, LLC	S/DVBE Yes	Achieved S/DVBE Participation Yes	RBE No

Vendor Selection

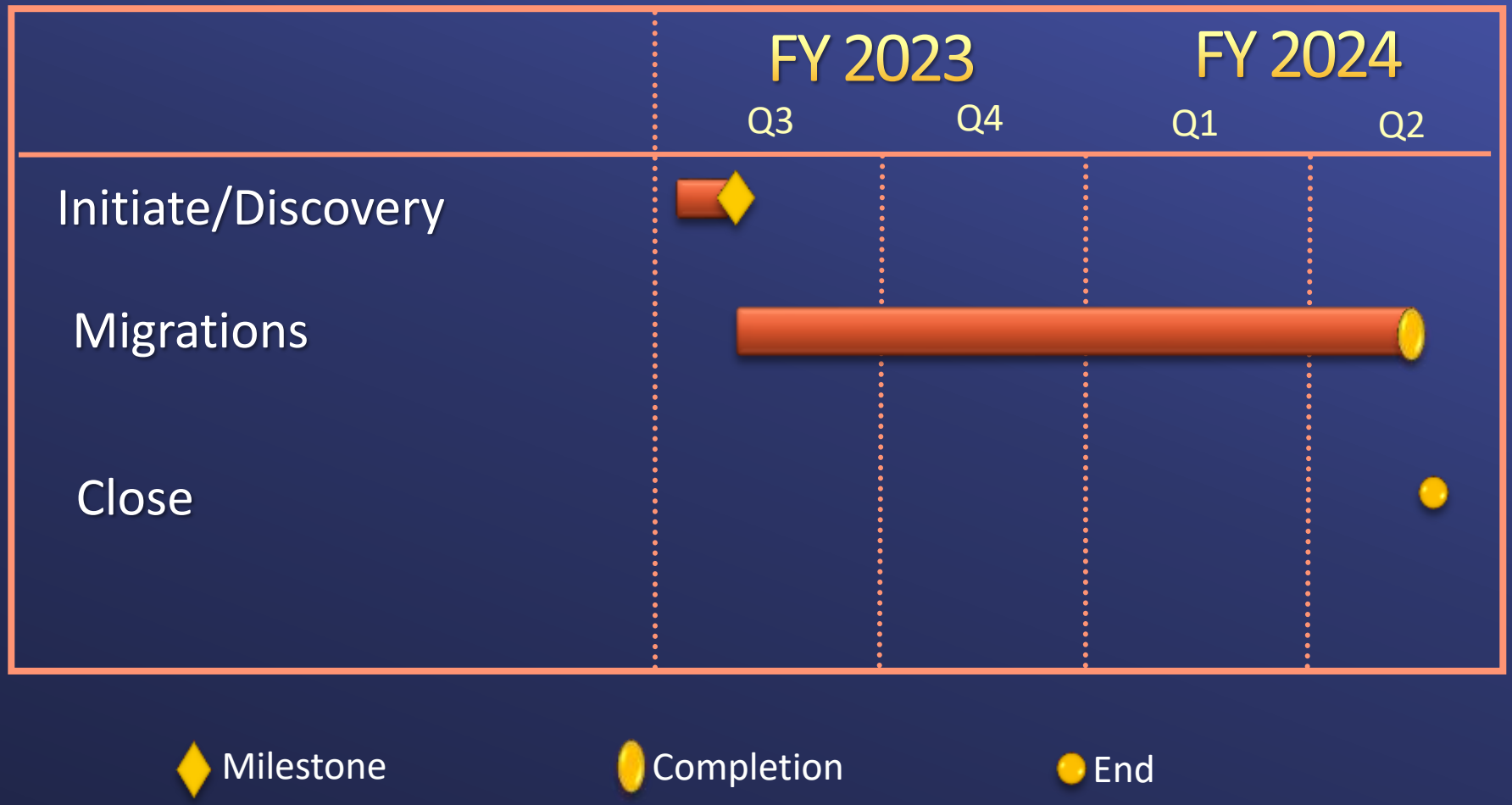
- Vendor selection was based on final scores derived from the evaluation criteria defined in the RFP.
- Scoring conducted by committee of MWD subject matter experts.
- September 19, 2023: Final scores were submitted

Cost Breakdown

Description	FY 2023-24	FY 2024-25	Total
Internal Labor	$ 152,812	$ 76,348	**$ 229,160**
Licenses	$ 561,330	$ 240,570	**$ 801,900**
Professional and Technical Services	$ 1,346,758	$ 577,182	**$ 1,923,940**
Total	**$ 2,158,400**	**$ 796,600**	**$ 2,955,000**

Plan Milestones

Timeline



Board Options

Option #1

- Authorize agreements with (l) 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.

Option #2

- Do nothing at this time.

Staff Recommendation

Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

Engineering, Operations, & Technology Committee

Allen McColloch Pipeline - Inspection Update Action Plan

Item 6a

January 8, 2024

Item 6a
Allen McColloch Pipeline Inspection Update Action Plan

Subject

Allen McColloch Pipeline (AMP) Inspection Update Action Plan

Purpose

Summarize condition assessment of AMP Prestressed Concrete Cylinder Pipeline (PCCP) by including results of recent inspection & preliminary risk analysis. Review mitigation measures & present pipeline rehabilitation plan.

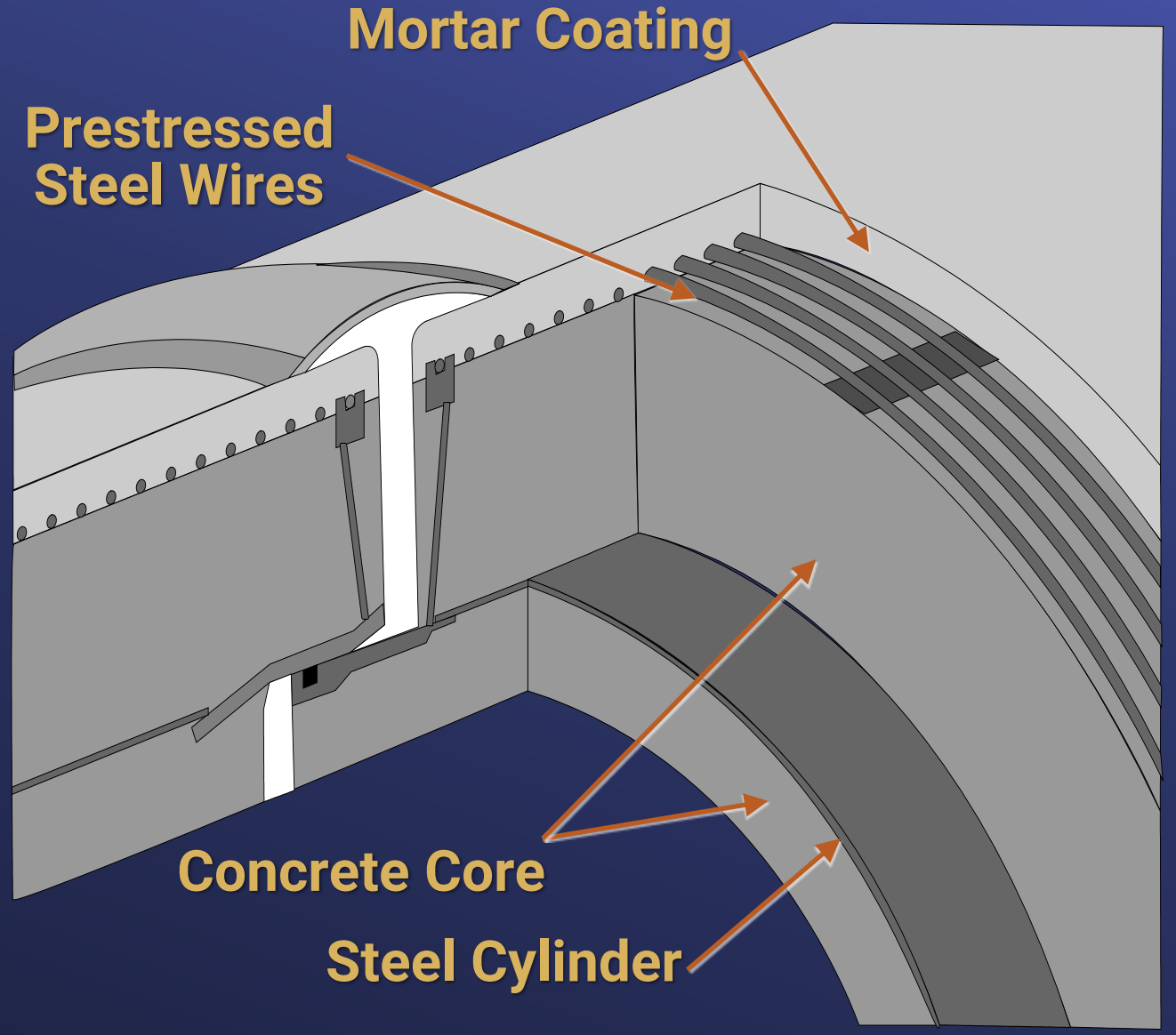
Next Steps

Complete immediate mitigation in January 2024. Recommend near-term rehabilitation in April 2024 and long-term rehabilitation in Winter 2024/2025.

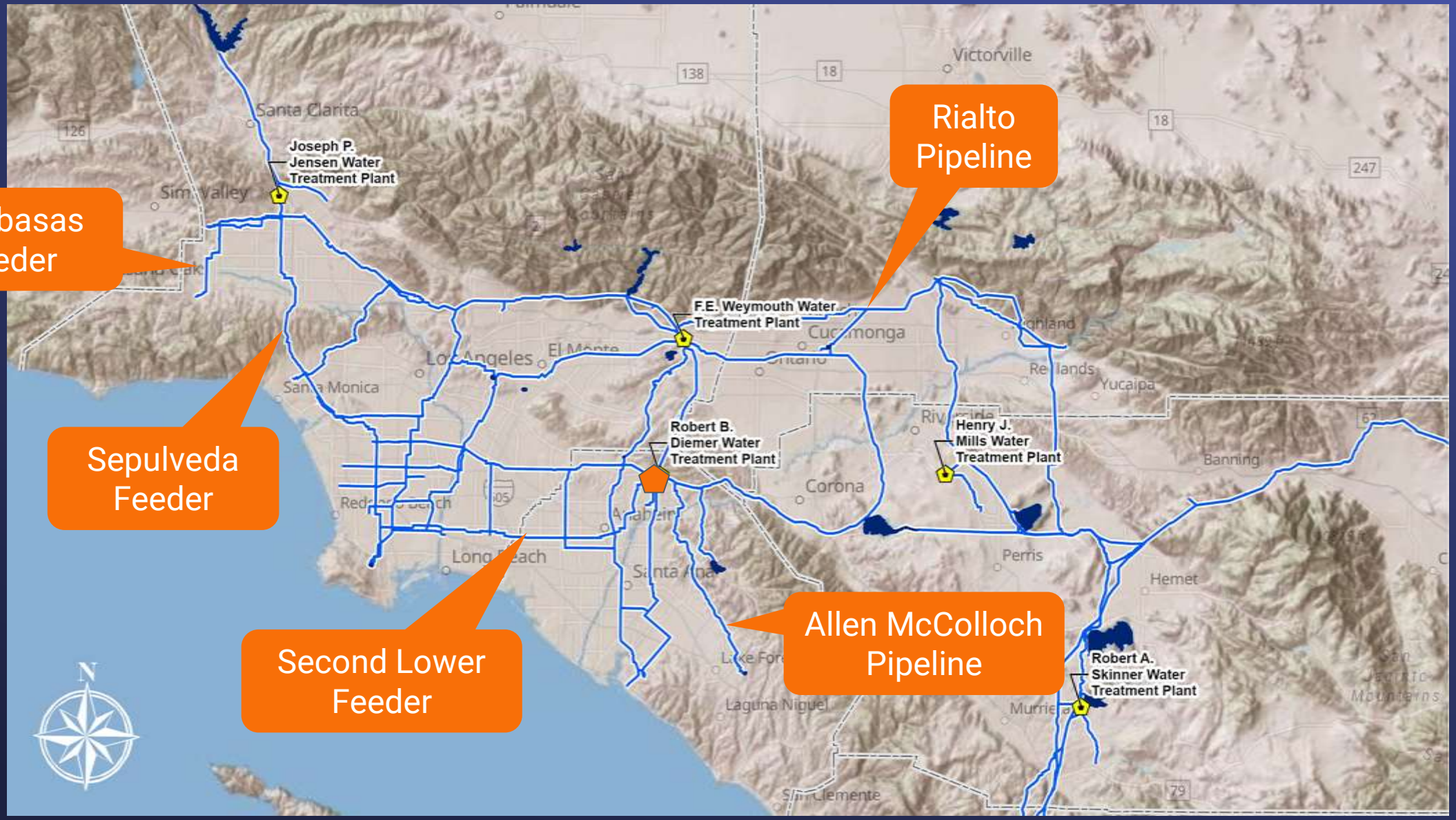
What is PCCP?

Maryland PCCP Rupture (2013)

Prestressed Concrete Cylinder Pipe



Distribution System – Five Priority Pipelines



PCCP Risk Management Strategy

PCCP Management Strategy

- Conduct regular inspections, monitoring & assessments
- Monitor stray currents & install drain stations where necessary
- Perform individual segment repairs as needed
- Plan & execute long-term rehabilitation
  - Completed preliminary design
  - Coordinate planned shutdowns with member agencies

Allen McColloch Pipeline (AMP)

Diemer Water Treatment Plant to El Toro Reservoir

- Completed: 1980
- Acquired: 1995
- Length: 26 miles
  - Steel: 17 miles
  - PCCP: 9 miles
- PCCP diameters from 78” to 54”

AMP Pipeline Failure & Repair in 1999

Additional AMP Urgent Repairs

Allen McColloch Pipeline

Rehabilitations

53 pipe segments over 20 years

- Apr. 2000 – Rehabilitation of 18 pipe segments
- Feb. 2001 – Replacement of 1 pipe segment
- Oct. 2001 – Carbon fiber lining 8 pipe segments
- May 2010 – Steel lining of 6 pipe segments
- Nov. 2020 – Steel lining of 20 pipe segments

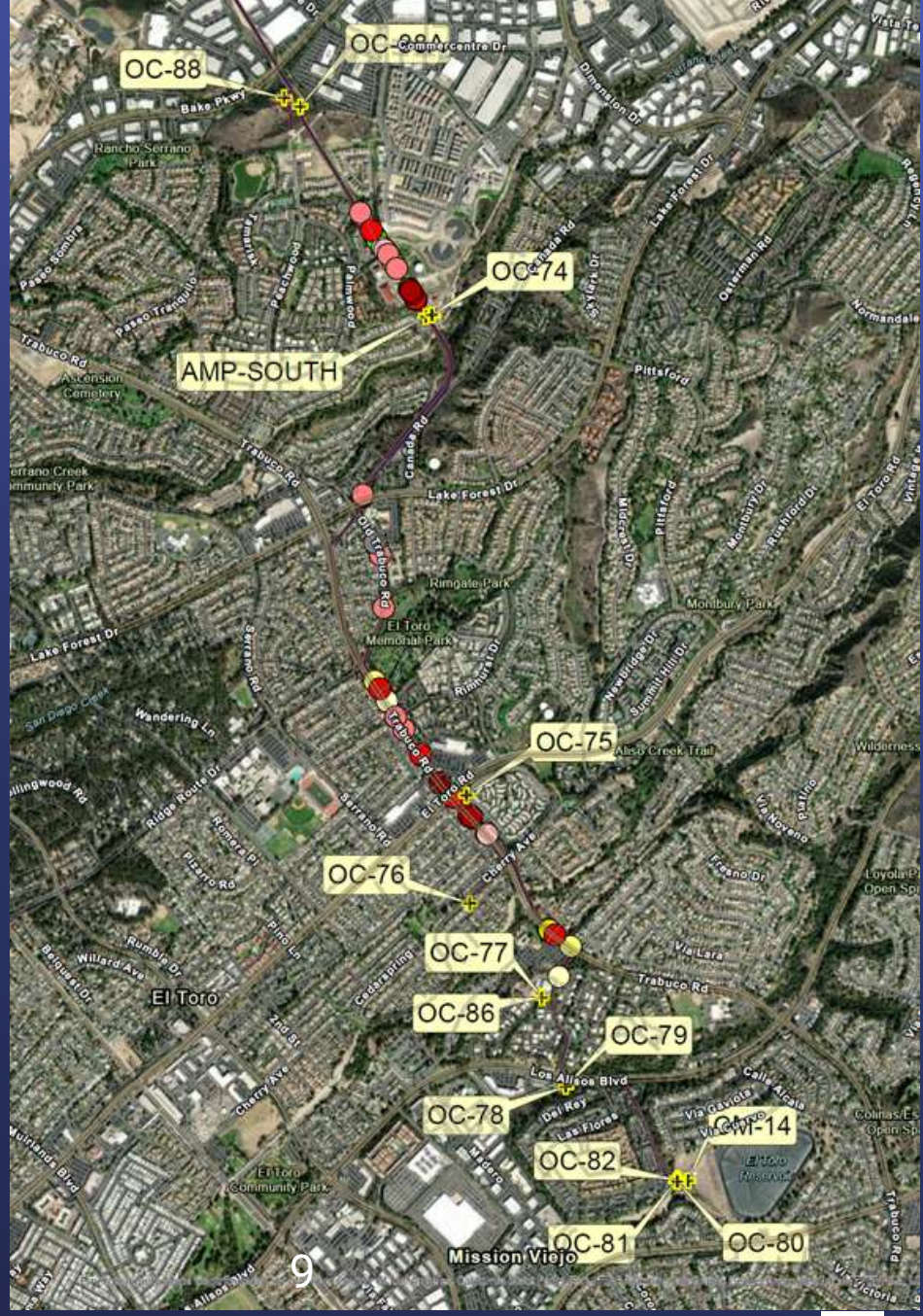
2010 Steel Lining

AMP PCCP Inspection in 2023

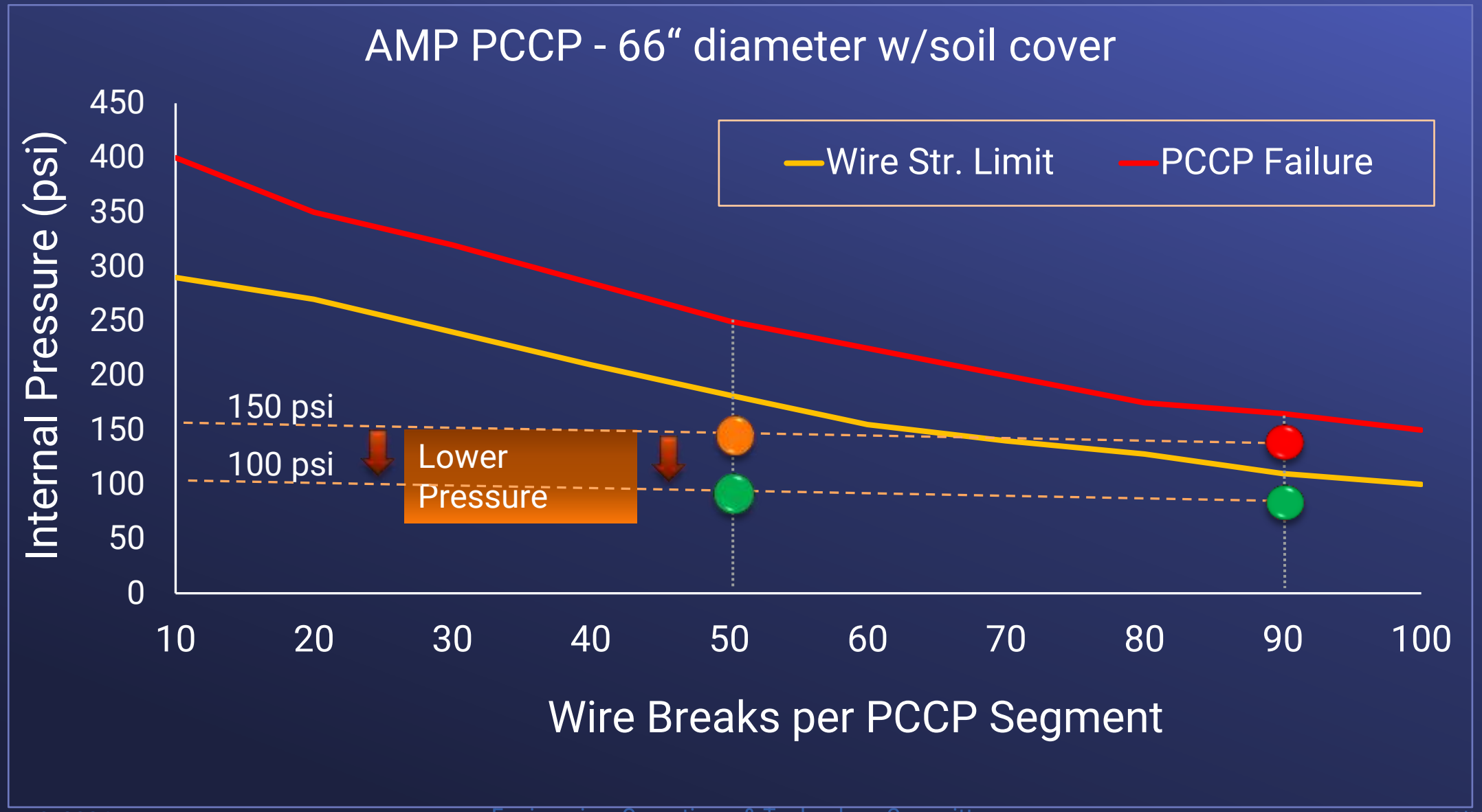
- Electromagnetic inspection in Nov 2023
- Inspection report completed in Dec 2023
  - Anomalies consistent w/prestressed wire damage
    - 81 wire break locations (5 to 130 per segment)
    - 73 new segments compared to 2018 inspection
- Inspection summary: 44 critical pipe segments

Wire Breaks (WB)	*No. of pipe segments*
130	1
95-70	4
60-50	8
45-40	12
35-30	5
25-20	14
15-5	37
Total	**81**

44



PCCP Condition Assessment - Typical Risk Curve

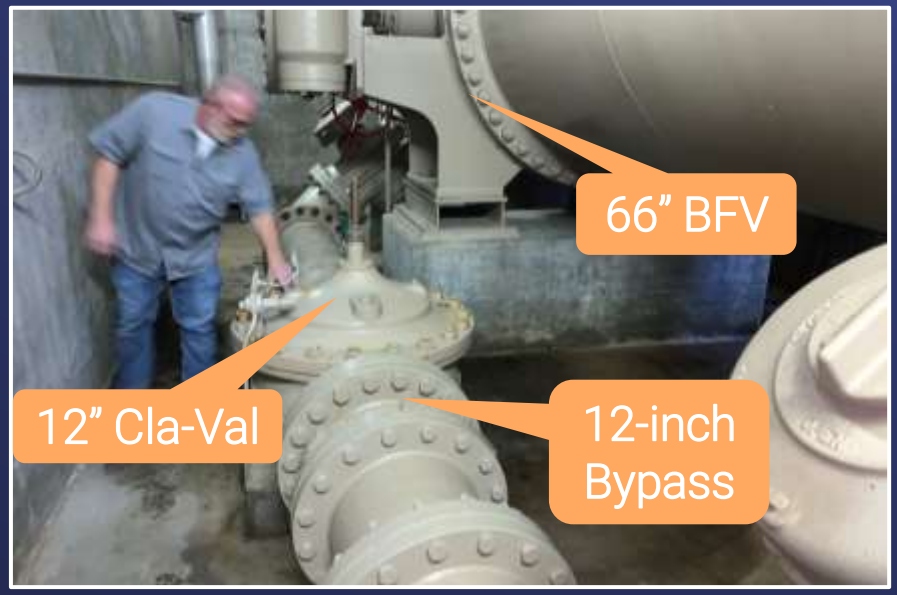


AMP PCCP Risk Reduction Action Plan

Risk Reduction
Immediate Mitigation

1. Immediate mitigation
   - Collaborate with Member Agencies
   - Lower Diemer hydraulic grade (completed in Dec 2023)
   - Up-size bypass line and valves for full flow (Jan 2024)
   - Reduce pressure on pipeline

Lower Diemer outlet gate



Increase size of bypass valve to 24-inches

PCCP Risk Reduction Action Plan (Cont'd)

2. Near-term rehabilitation

- Prioritize replacement of distressed PCCP segments based on risk analysis
- Conduct rehabilitation work using multiple existing contracts on CFRP & steel-lining during April 2024 shutdown
- Install bulkhead south of OC-88 to isolate AMP for rehabilitation

3. Long-term rehabilitation

- Install steel lining for remaining distressed segments in early 2025
- Continue to assess and monitor PCCP

Carbon Fiber Reinforced Polymer (CFRP)

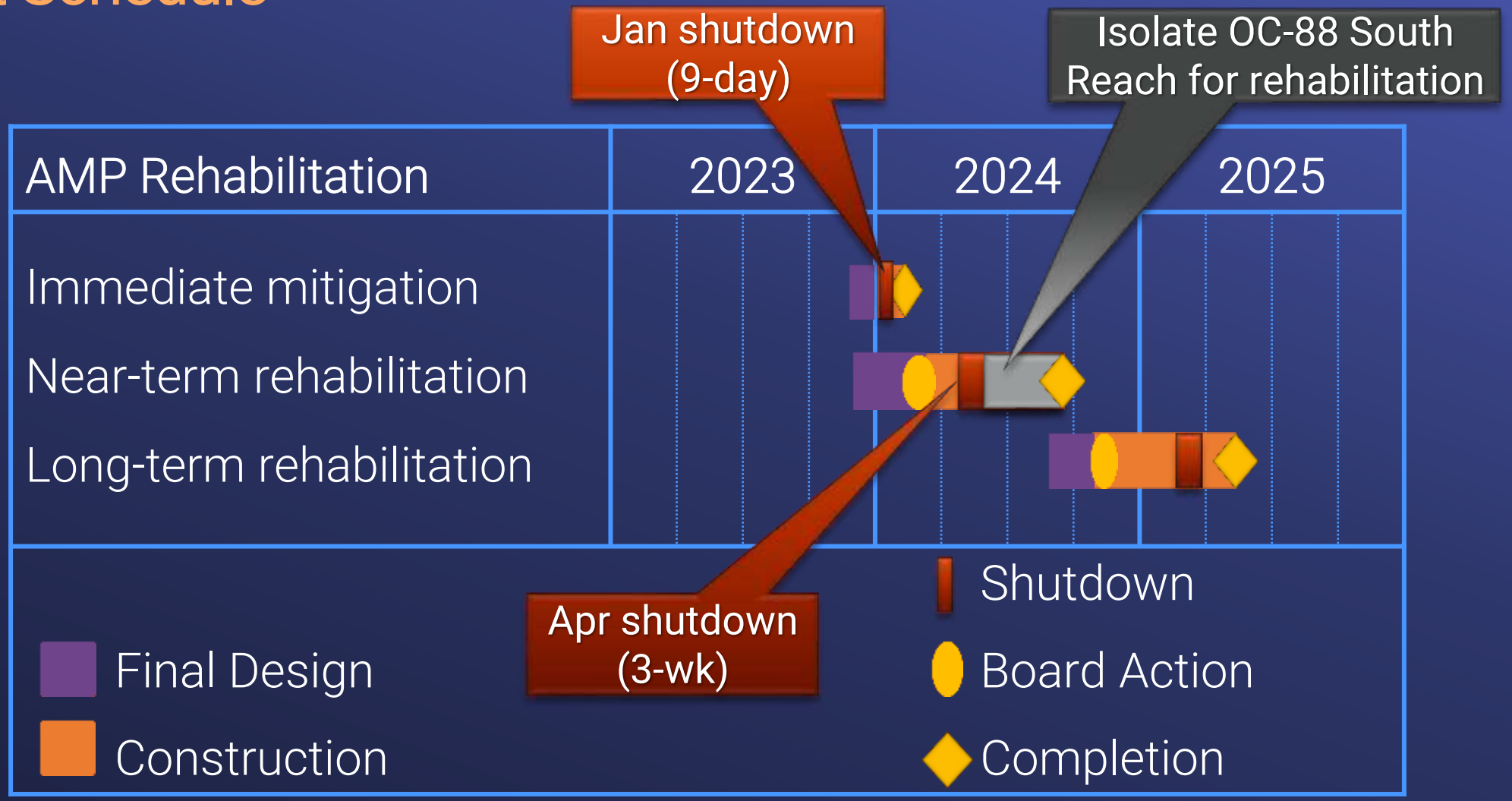
Steel Slip-Lining

Urgent Repairs to AMP

Approach to Contracting Urgent Repairs

- Utilize Change Order authority in existing contracts to immediately commence planning and staging work
  - Contract 2002: Lakeview Pipeline steel pipe procurement
  - Contract 2026: Second Lower Feeder PCCP relining
  - Contract 2088: Sepulveda Feeder PCCP Carbon Fiber lining
- Return to Board in February 2024 to increase change order authority on all three contracts

Project Schedule




THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

Engineering, Operations, and Technology Committee

2023 System Operations
A Year in Review

Item 6b

January 8, 2024

Item 6b

2023 System Operations A Year in Review

Subject

Update on 2023 System Operations

Purpose

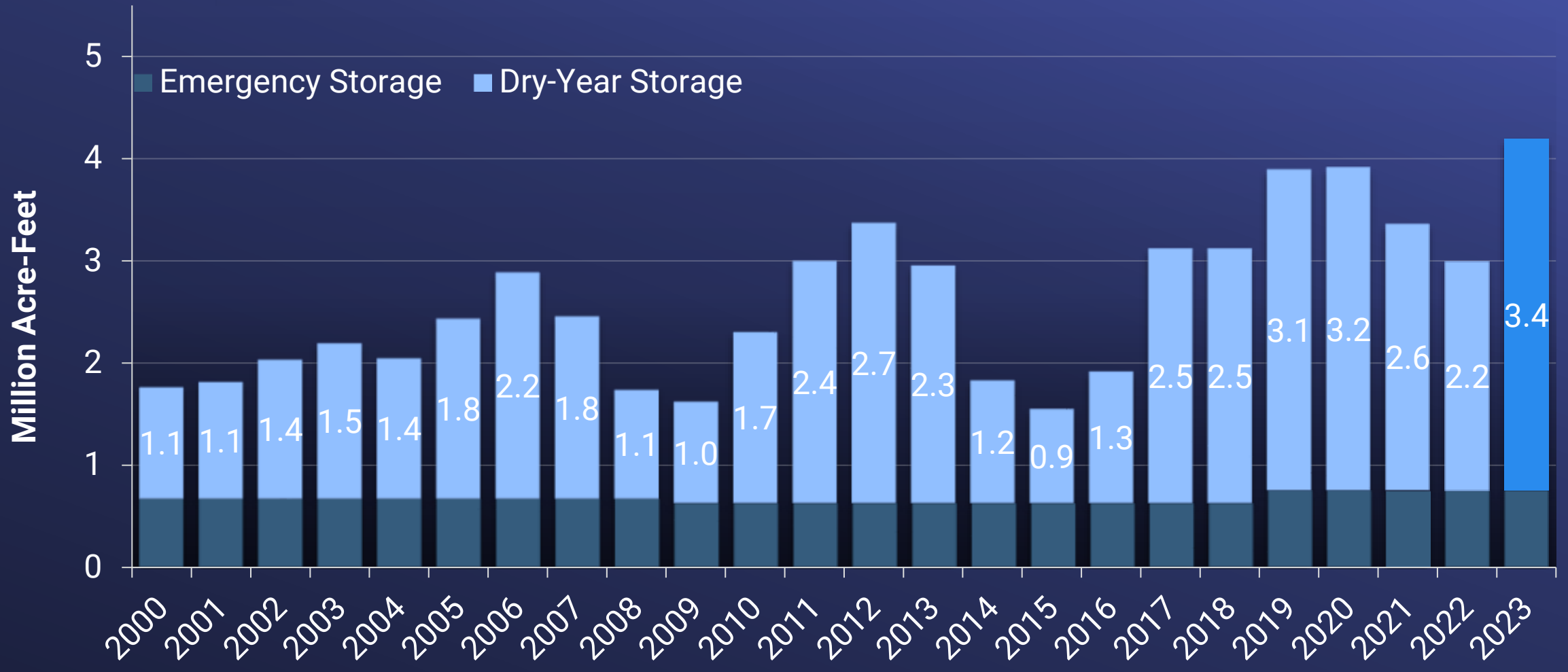
Provide recap of 2023 operations

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.

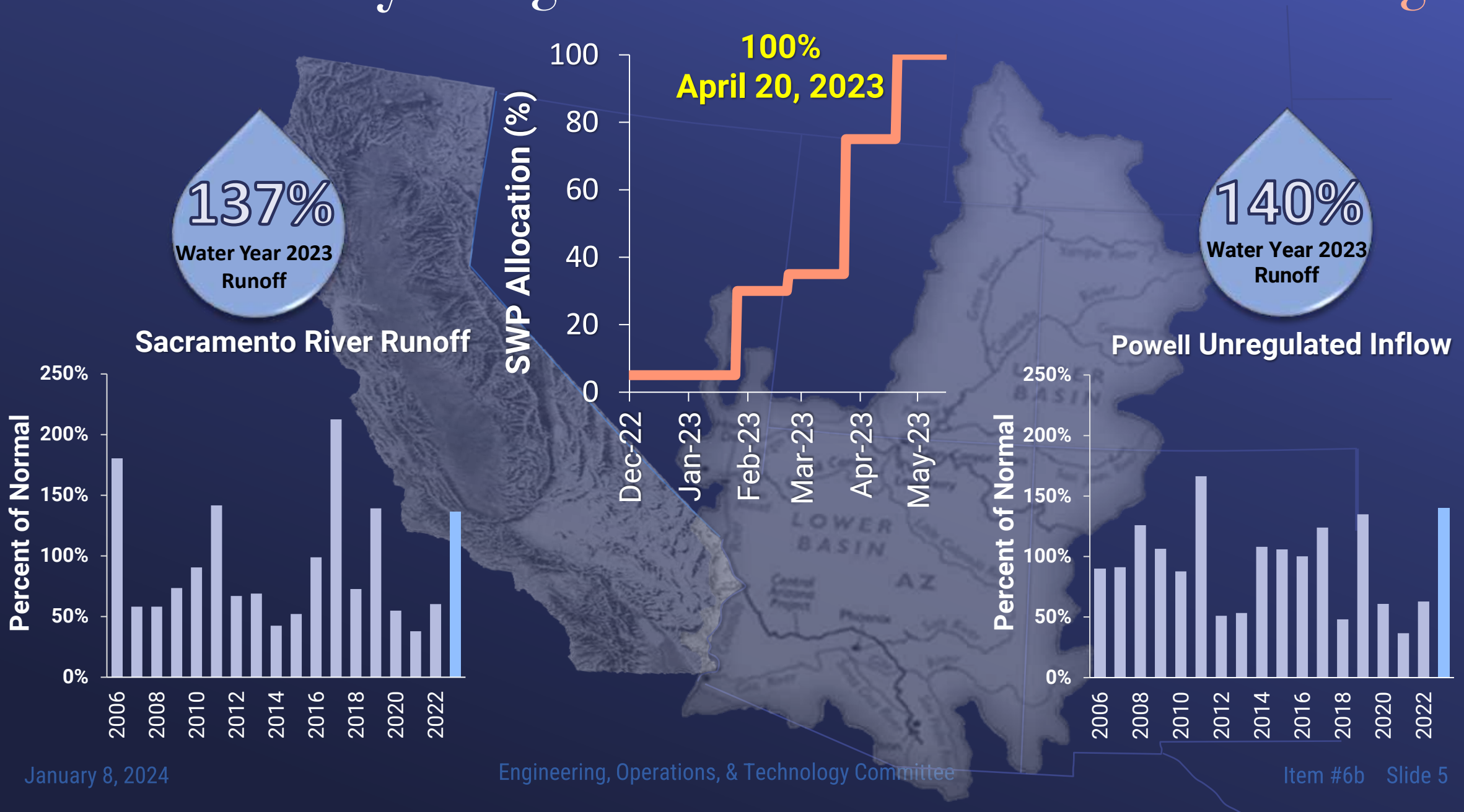
Minimizing SWP Use as Allocation Developed

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



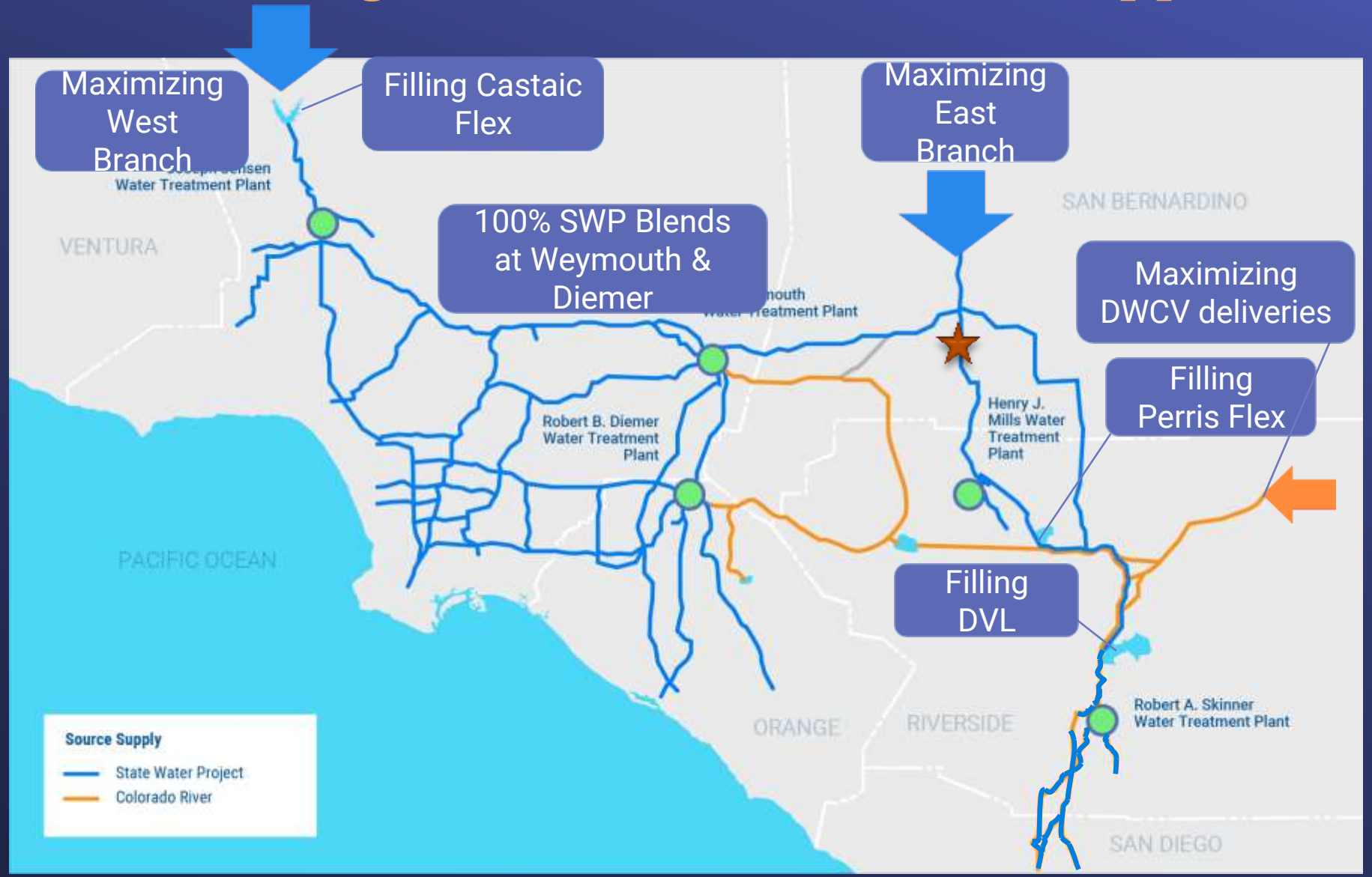
Maximizing SWP Use and Article 21 Supplies

100% SWP Allocation
First time since 2006

Received 134 TAF of Article 21 supplies

March-April Operations

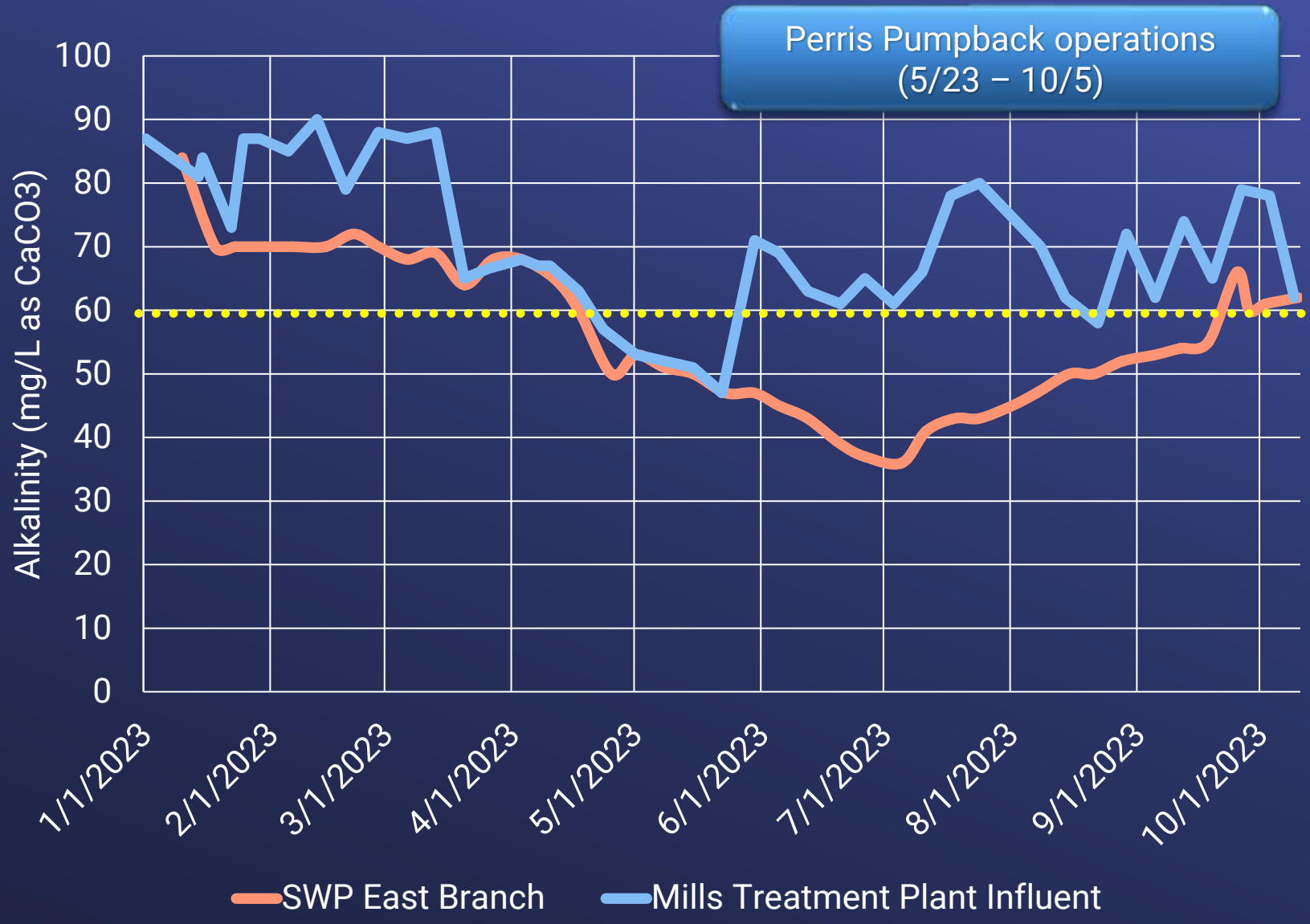
Article 21 Deliveries to Diamond Valley Lake on March 27, 2023



Low Alkalinity Water from Snowmelt

Water Quality Challenges

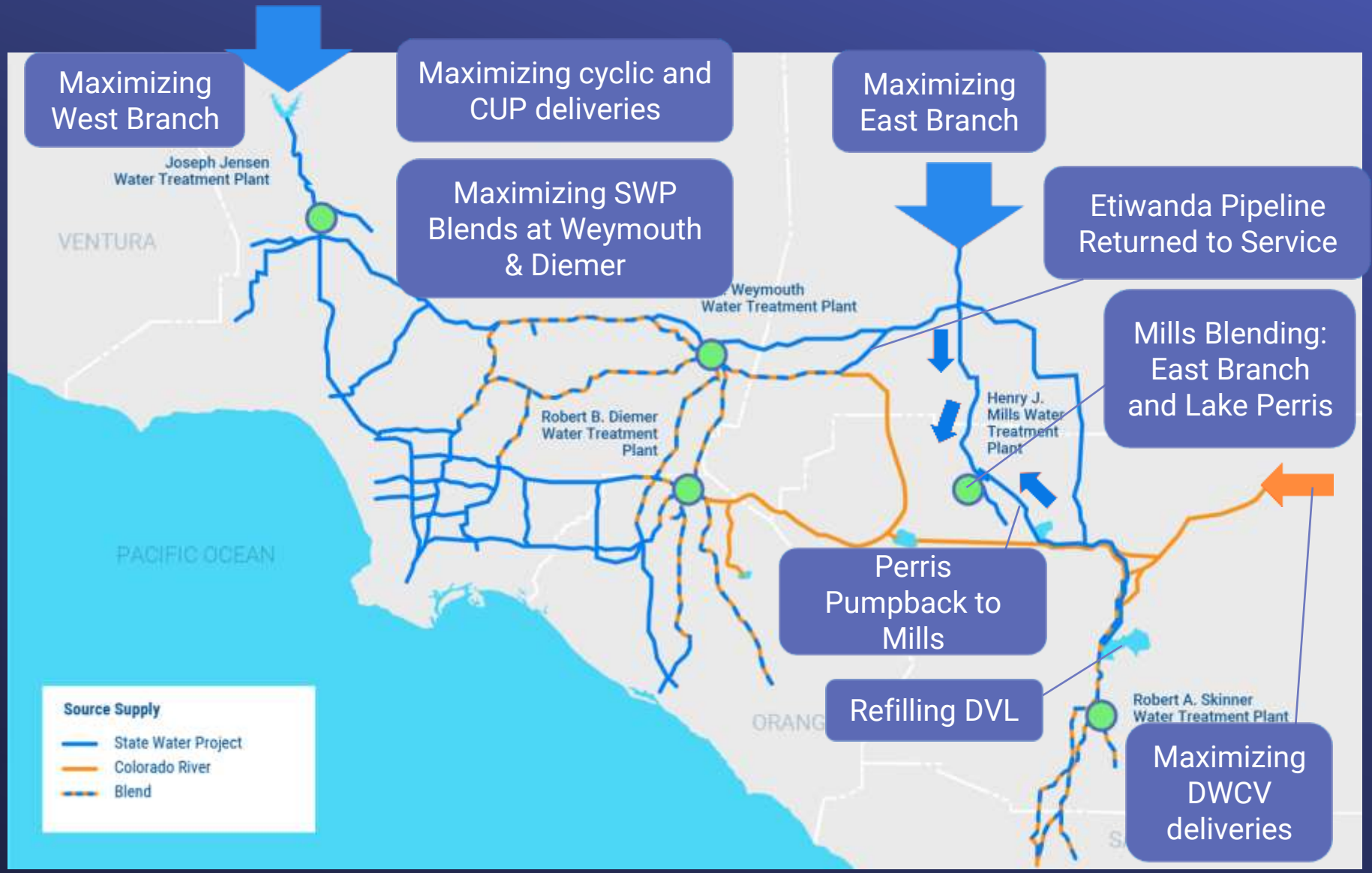
Reoperated system to help manage alkalinity levels and facilitate water treatment



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

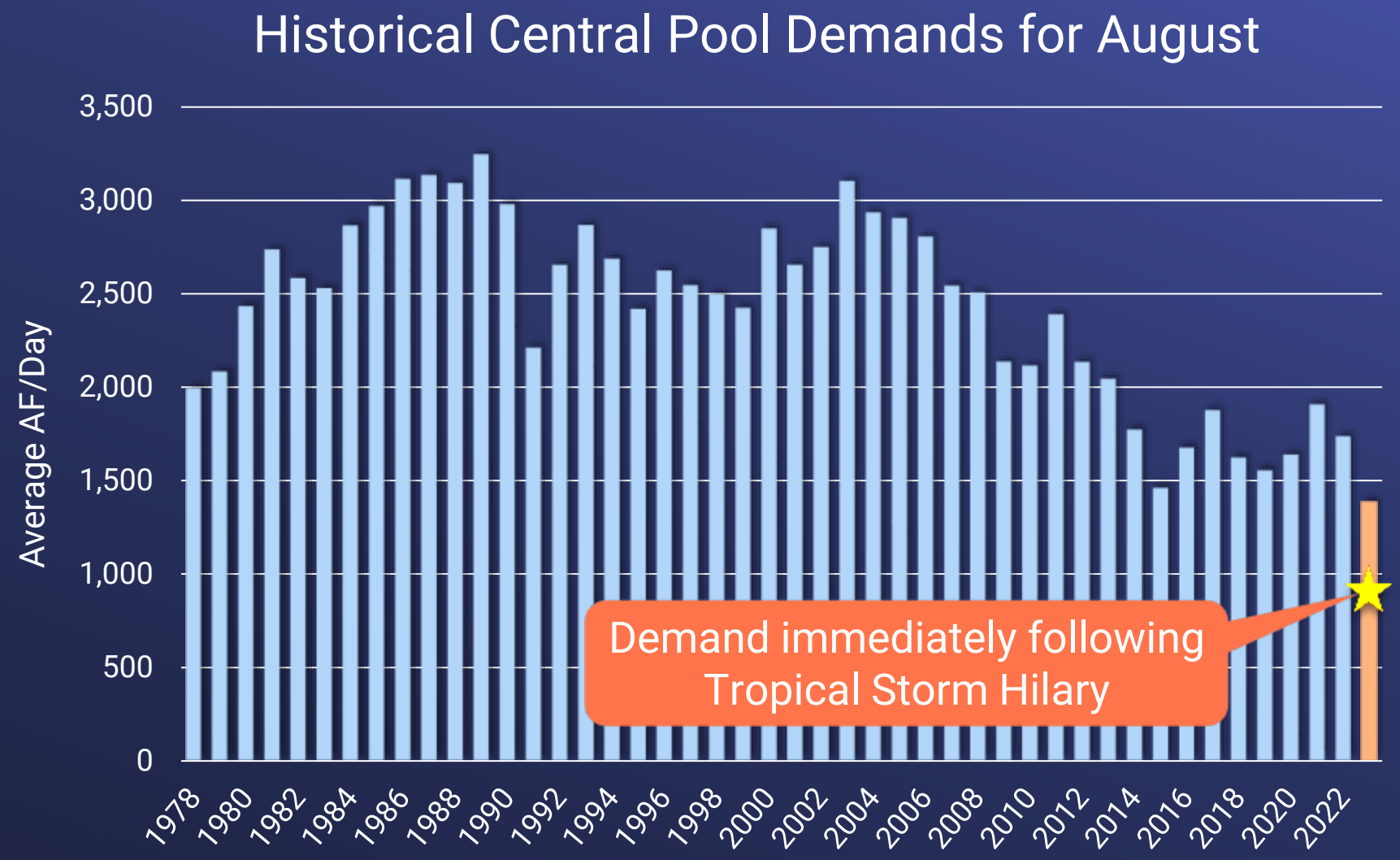
- Activated Emergency Operations Center at Level 3
  - Reduced Colorado River Aqueduct pump flow
  - Suspended deliveries to DWCV storage
- Across the system:
  - Assessed dams & reservoirs
  - Performed aerial & ground patrols following storm
- No major impact to Metropolitan's facilities

Photo by Nicholas Weiss
Equipment Operator on Aqueduct Maintenance Team

Record Low August Demands

Tropical Storm Impact

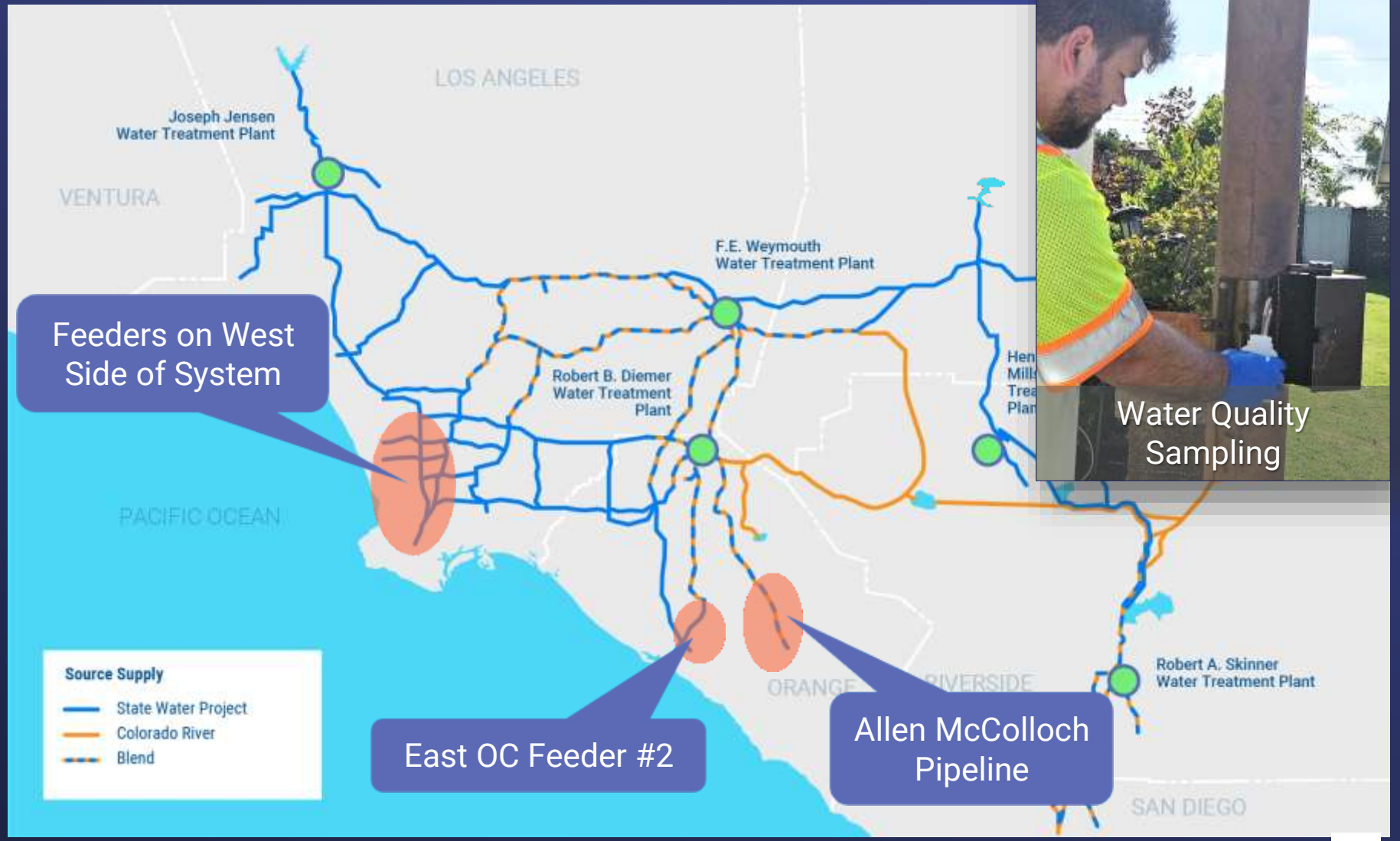
2023 August summer demand is lower than average February winter demands prior to 2014



Managing Nitrification Across Los Angeles and Orange Counties

Nitrification Event

Extensive coordination with member and retail agencies

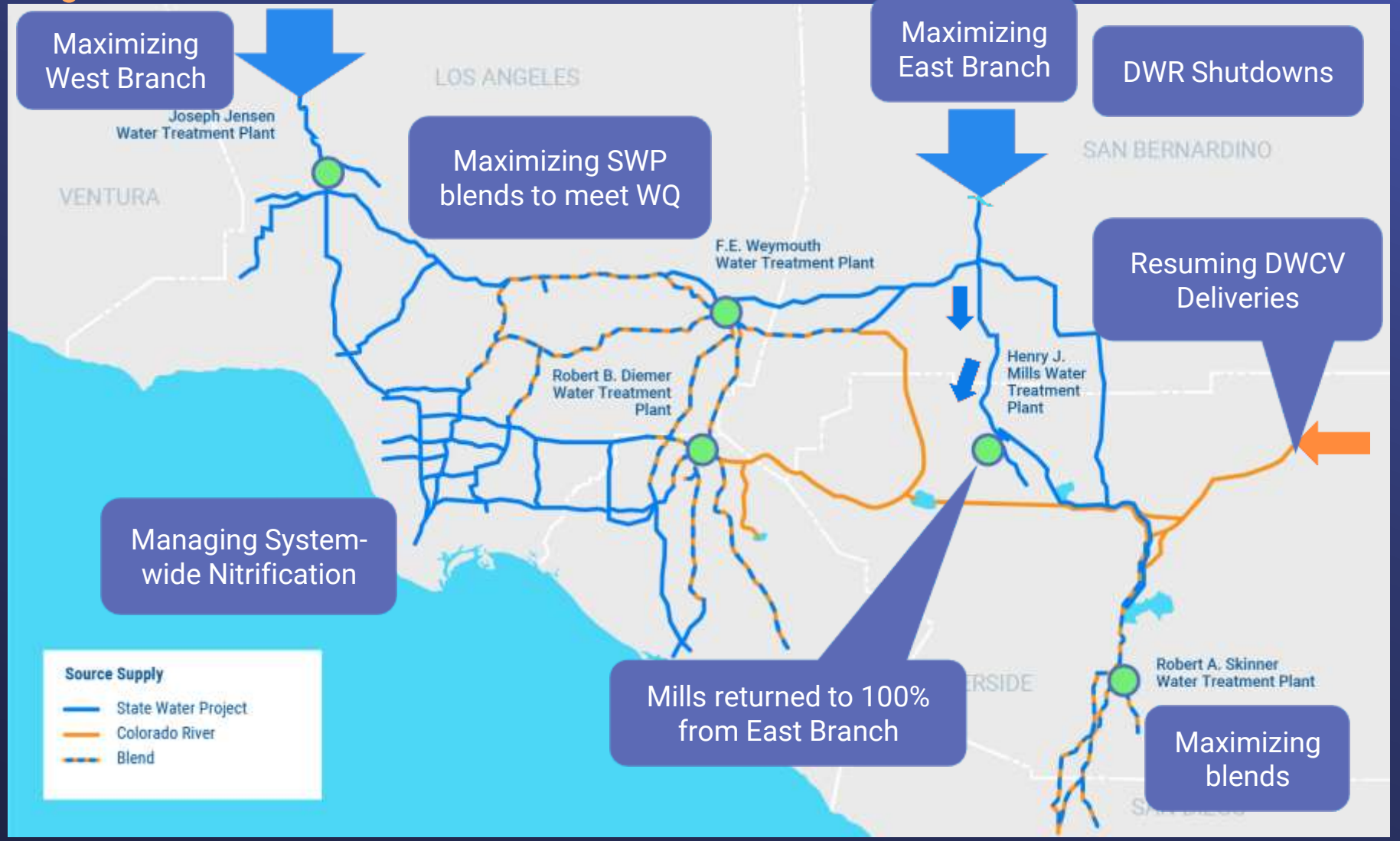


Significant Damage Sustained at Downstream
Whitewater Groundwater Replenishment Facility

Maximizing SWP Supplies while Balancing System Constraints

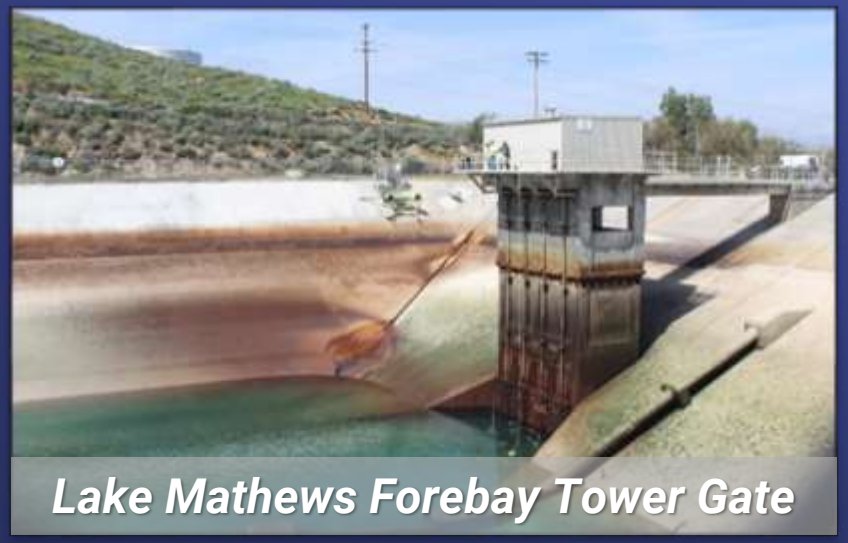
September-December Operations

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

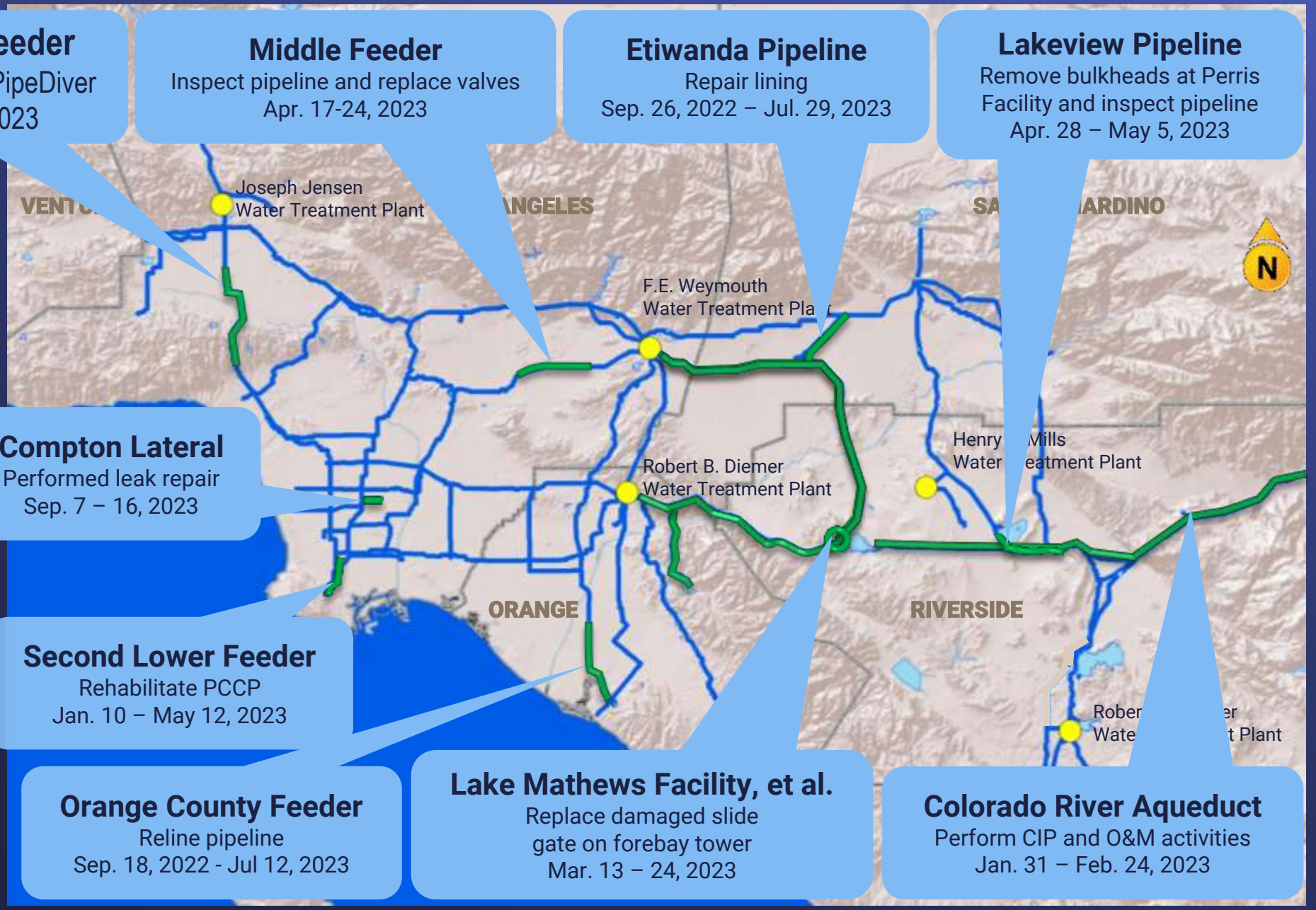
Key Shutdowns in 2023

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

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



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

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

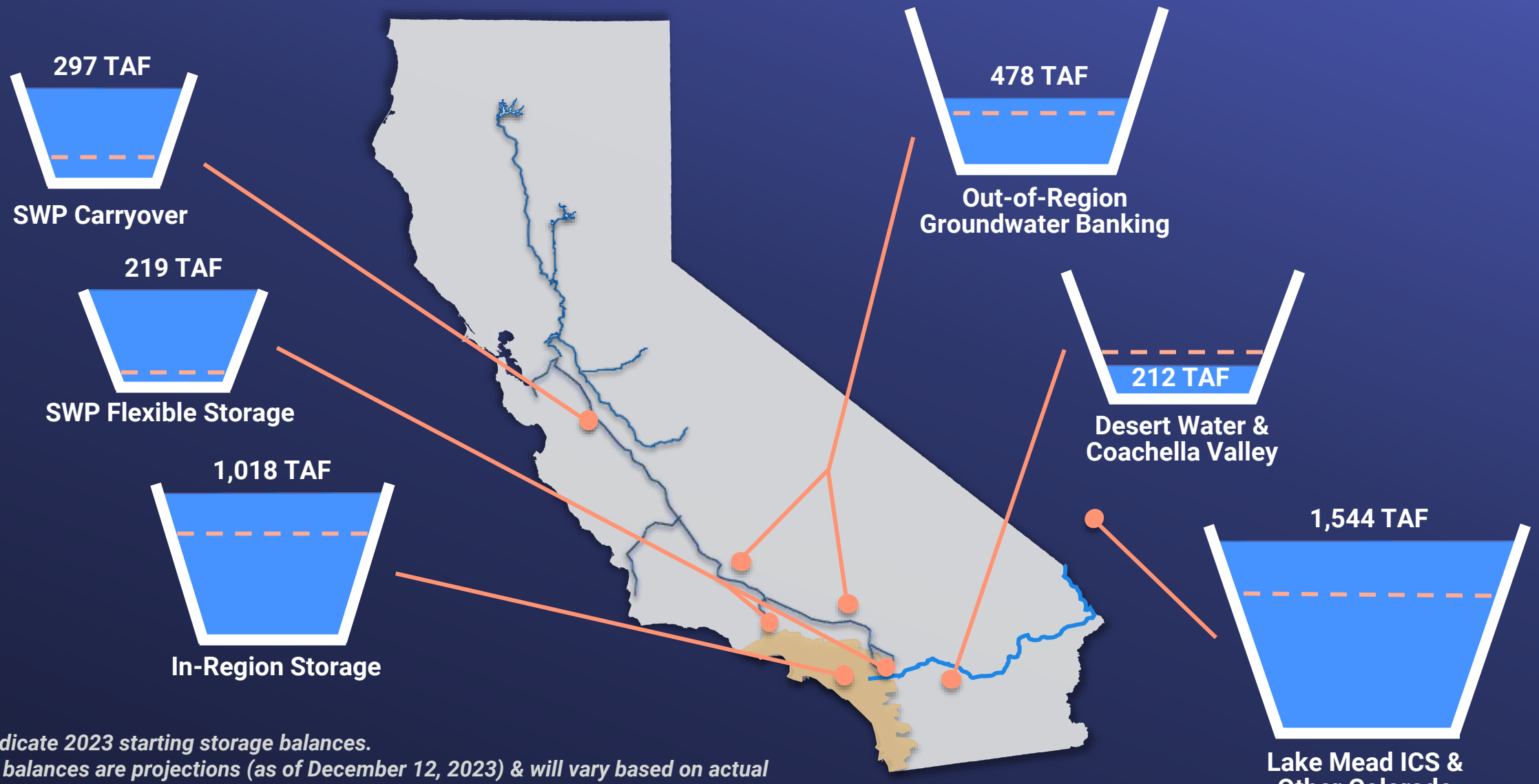
Orange County Feeder
Reline pipeline
Sep. 18, 2022 - Jul 12, 2023

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

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

For illustrative purposes only

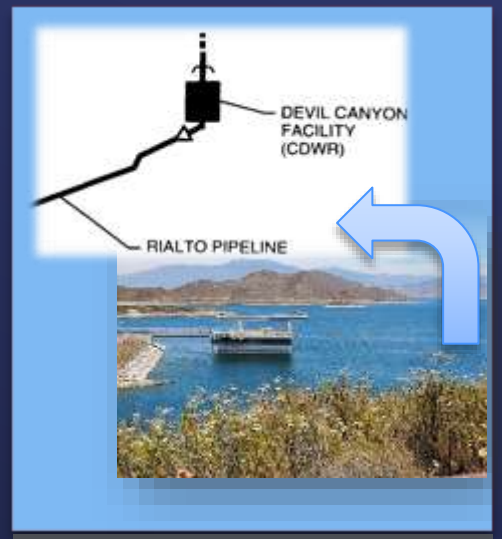
Metropolitan's 2023 Storage Actions: ~ 1.2 MAF Increase



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

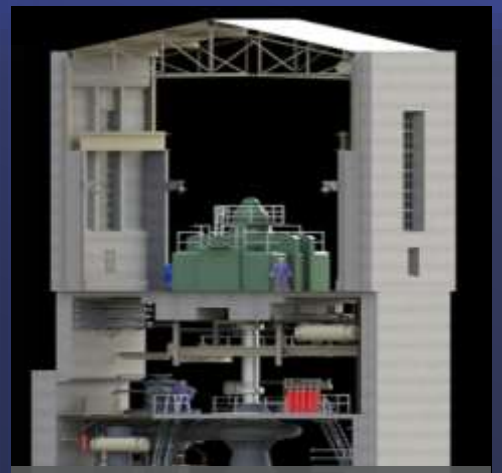
Regional Storage
Programs

PUREWATER
SOUTHERN CALIFORNIA

Success through Teamwork

Planning


Leading

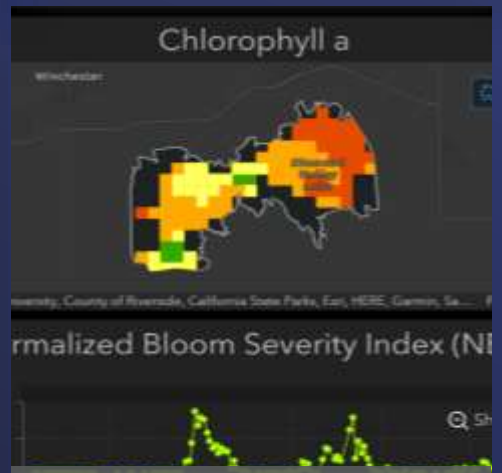

Engineering


Constructing


Operating


Maintaining

Partnering



Innovating

What will 2024 bring?

December 12, 2023

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

Engineering, Operations, & Technology Committee

Zero Emission Fleet Transition

Item 6c

January 8, 2024

Item 6c

Zero Emission Fleet Transition

Subject

Overview of fleet assets and transition to zero emission vehicles (ZEV)

Purpose

Metropolitan is transitioning its fleet vehicles to zero emission over the next several years. This update provides an overview of fleet assets, new regulatory requirements, and the transition plan including the implementation of charging infrastructure

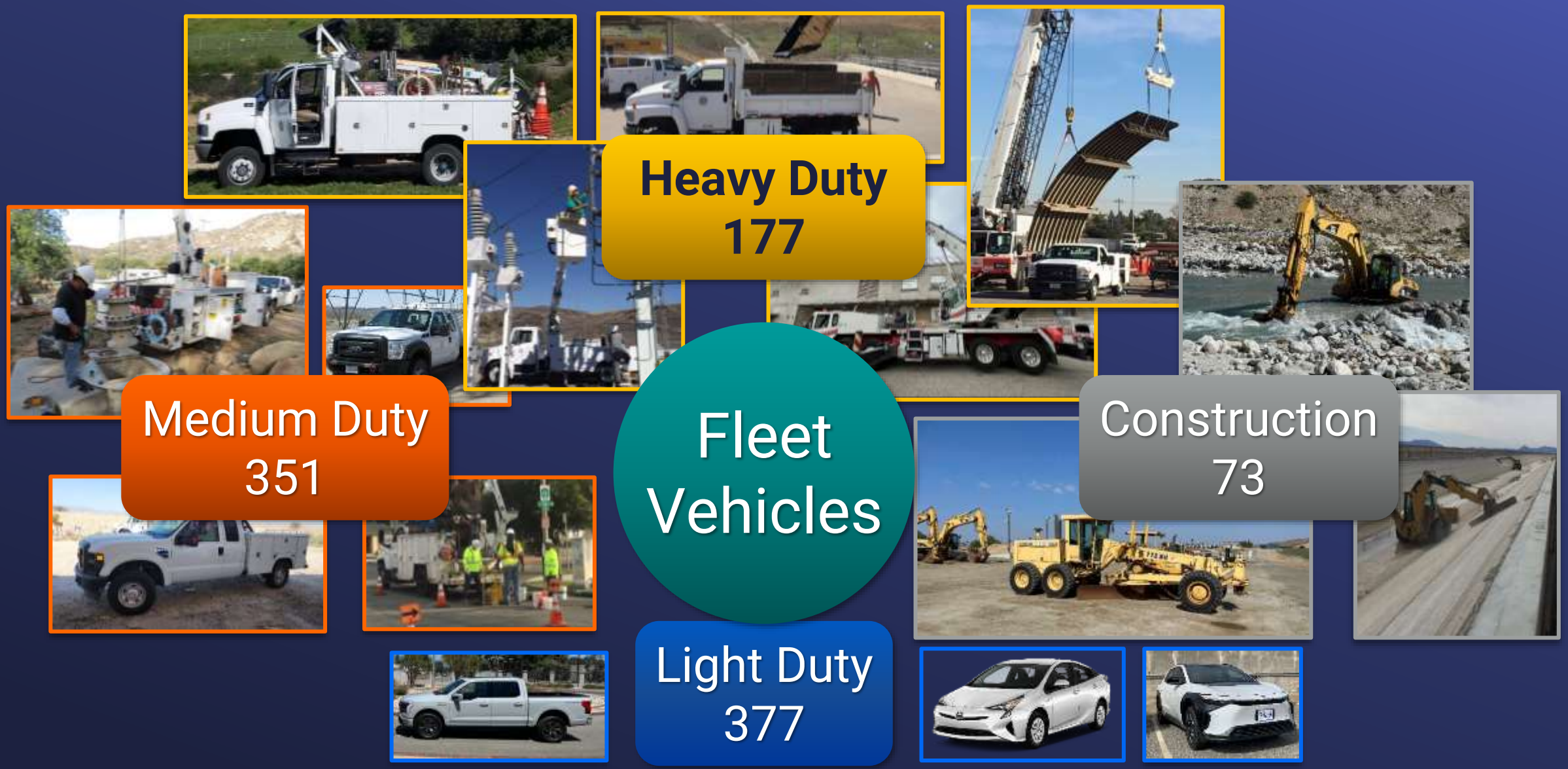
Next Steps

Future Board updates on ZEV transition and financing options

Metropolitan Fleet Service Area

- 1,200+ fleet assets
- 5,200 square mile service area & desert regions
- Across five counties
- Over 5,300 structures
- 320 miles of patrol roads

Diverse Pool of Fleet Assets



New CARB Regulations

Light-Duty Vehicles (377)

2026-2035 Increase to All ZE Sales

Medium-Duty Heavy-Duty Vehicles (528)

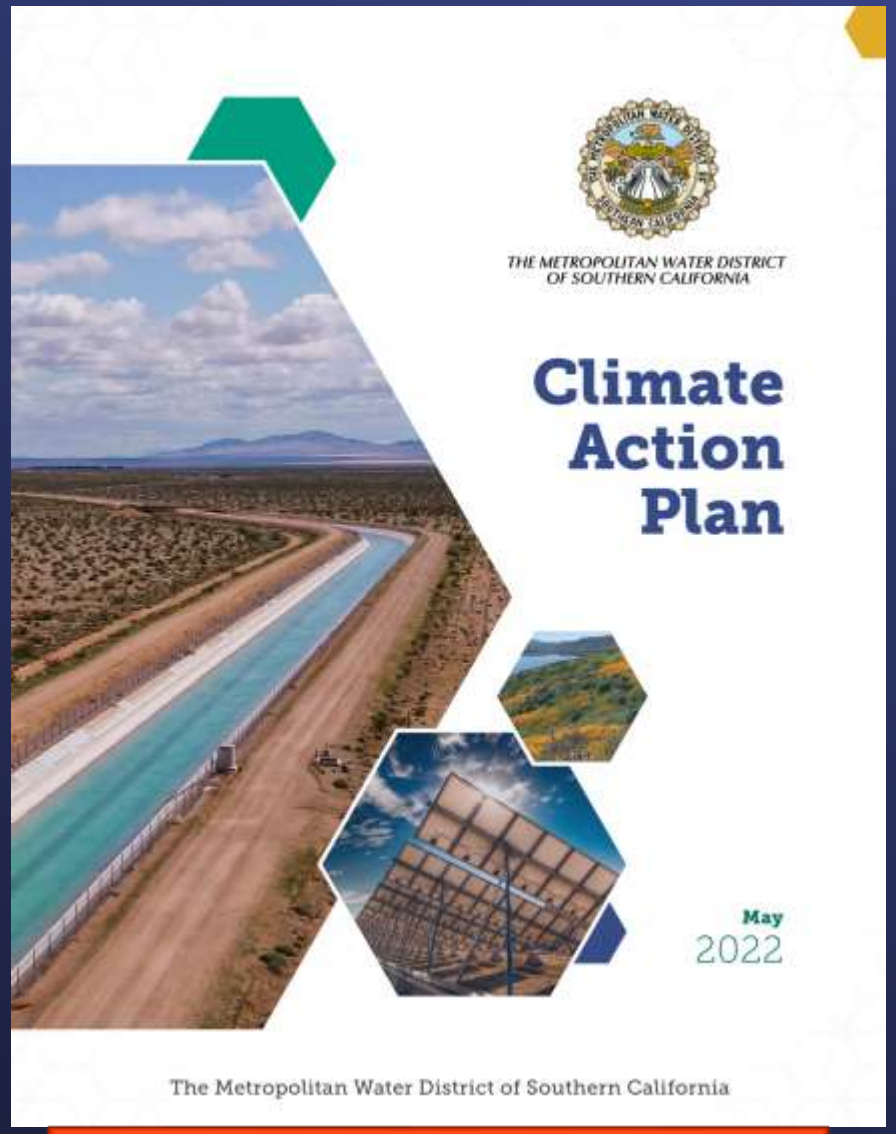
2024 - 50%; 2027-100% Public Fleet ZE Purchases

Diesel Construction Equipment (73)

2024-2028 Phaseout of 47 Units

Propane/Gas Forklifts (18)

2024-2031 Phaseout to ZE



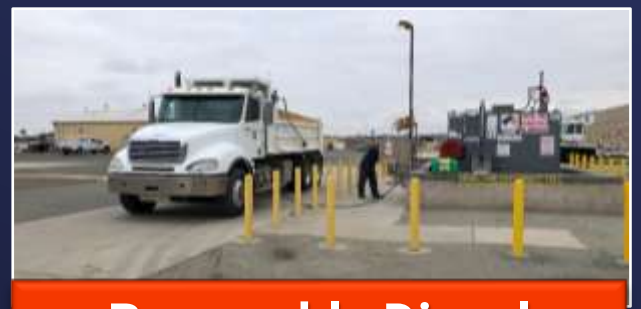
Board Adopted May 2022

Objectives

- Strengthen commitment to environmental sustainability
- Increase resiliency of operations
- Strategically achieve greenhouse gas (GHG) reduction goals
- Comply with CARB requirements

Actions Taken to Date

Ford Lightnings



Renewable Diesel

- Established Zero Emission Vehicle (ZEV) task force
  - Cross group collaboration on ZEV transition that includes SRI, SRT, Engineering, Finance, Admin Svc, & WSO
- Initiated “try before you buy” effort to evaluate implementations, gain market awareness and educate staff
- Completed vehicle & power needs inventory and market assessment
- Initiated CIP for EV infrastructure
- Created online fleet tool to screen ZE replacement vehicles
- Piloted renewable diesel in mid-2021 at Lake Mathews; available at all sites by end of 2022

Increase ZEV Awareness & Understanding

Members of ZEV Task Force

Demos and Trials

Pursuing Vouchers & Incentives

Metropolitan Fleet Assets - Types & Uses

- Variety of vehicles used for O&M & CIP
  - Medium duty 8,501 to 14,000 lbs.
  - Heavy duty 14,001+ lbs.
- Fitted to suit maintenance and operational needs
  - E.g., tools, cranes, weld machines, traffic signs
- Central to our ability to be resilient

Maintenance, Repairs, & Traffic Control



Shutdowns & Emergency Response

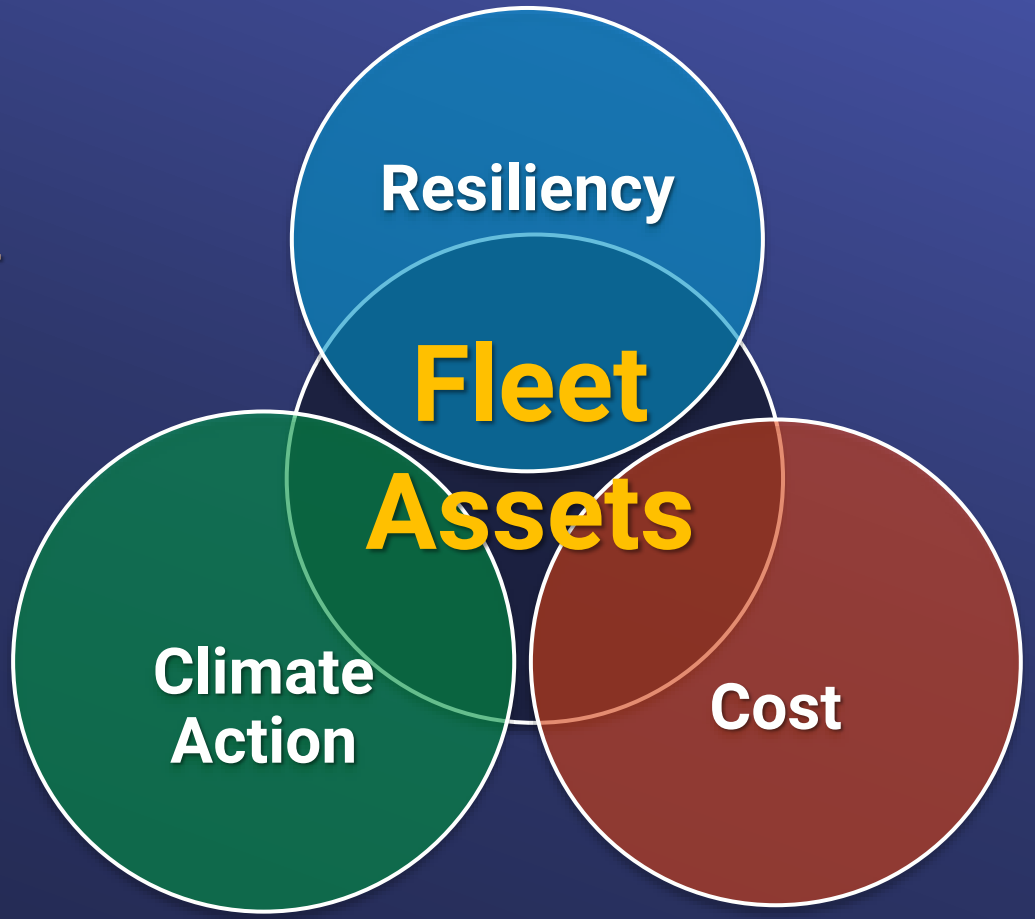


Patrolling & Support Ongoing Operations



ZEV Transition Plan & Challenges

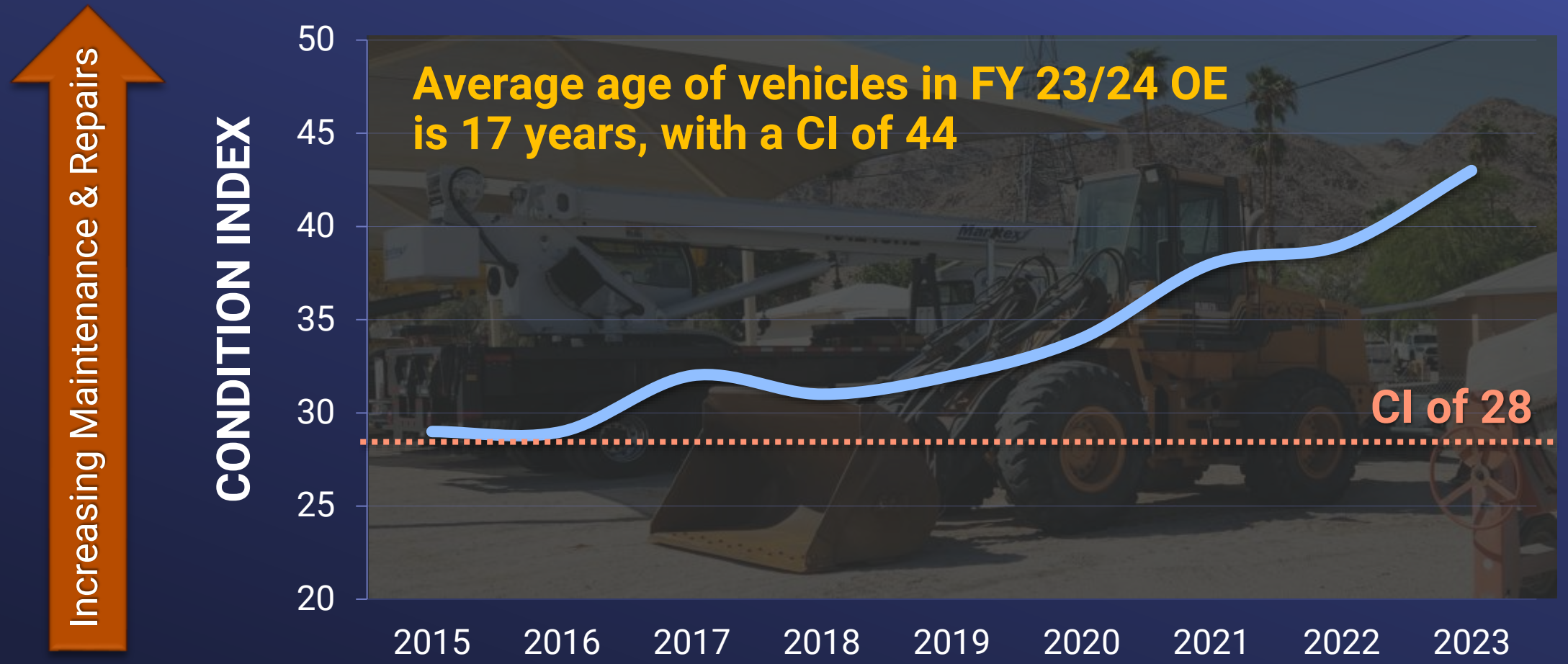
- Targeted ZEV transition
  - In town vehicles, low miles driven, and lower weight first
  - Pilot & evaluate emerging options for other use cases
- ZEV charging infrastructure
  - La Verne facilities & Union Station first
  - Interim charging at several sites to support targeted transition
- Replace critical high-mileage & aged medium/heavy-duty vehicles with more efficient ICE vehicles over next 3-4 years



ICE = Internal Combustion Engine

Fleet Operational Reliability & Resiliency

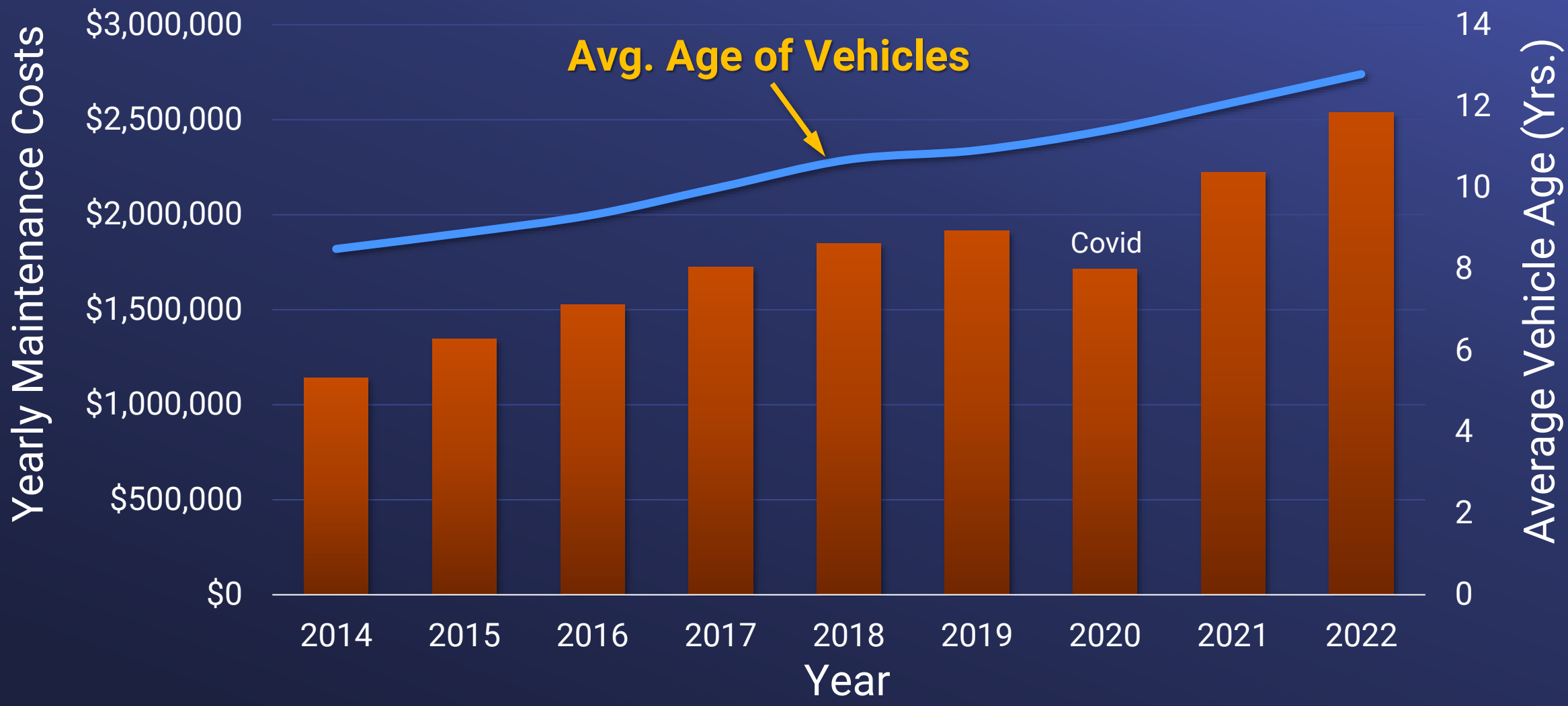
Condition Index (CI)* gauges a fleet asset's reliability and cost to maintain– typically, vehicles with CI of 28 or higher should be replaced



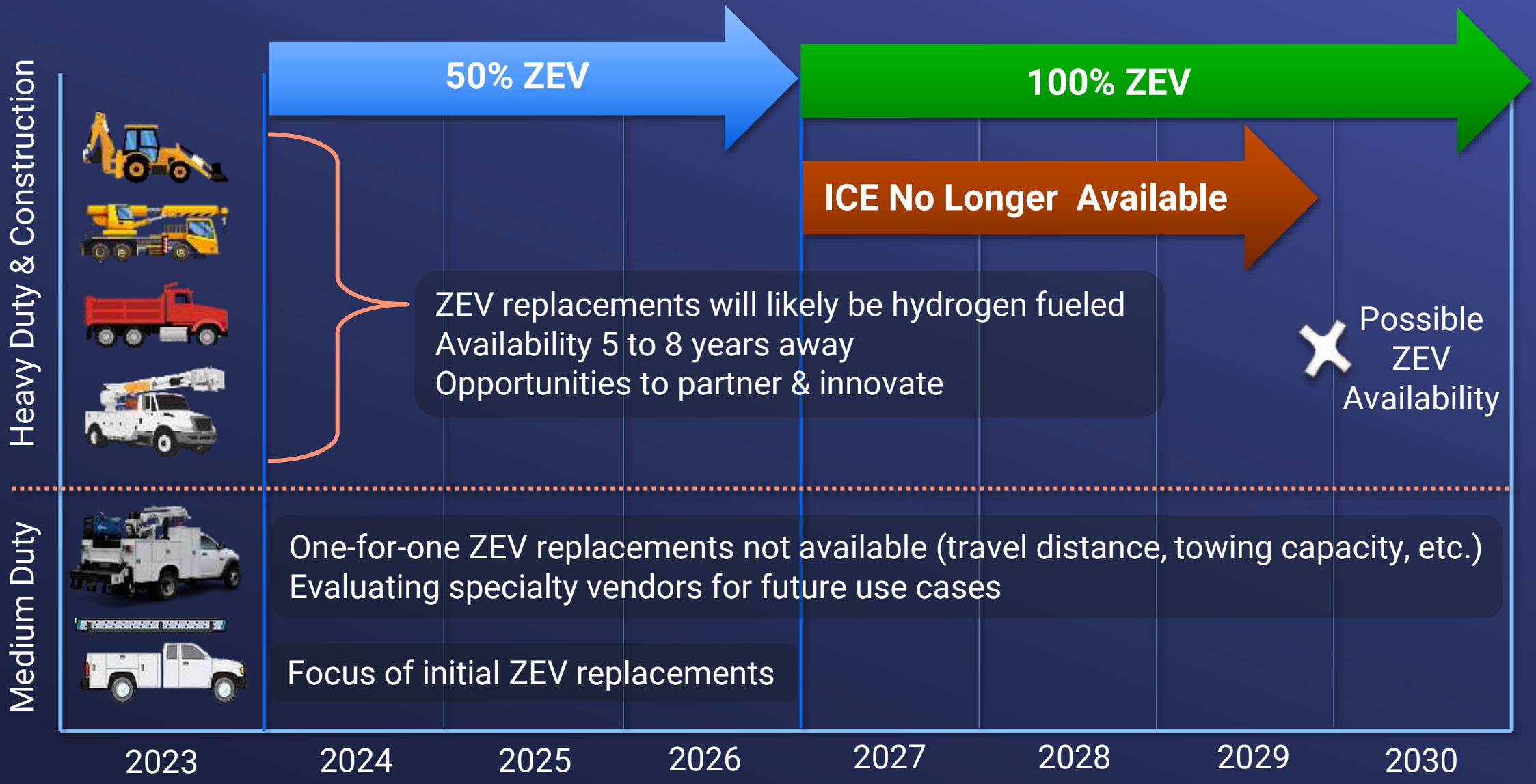
**CI is based on a vehicle's age, miles/hours, service severity, reliability, maintenance costs, condition, and utilization*

Fleet Operational Reliability & Resiliency

Aging assets have outdated emissions & cost more to maintain

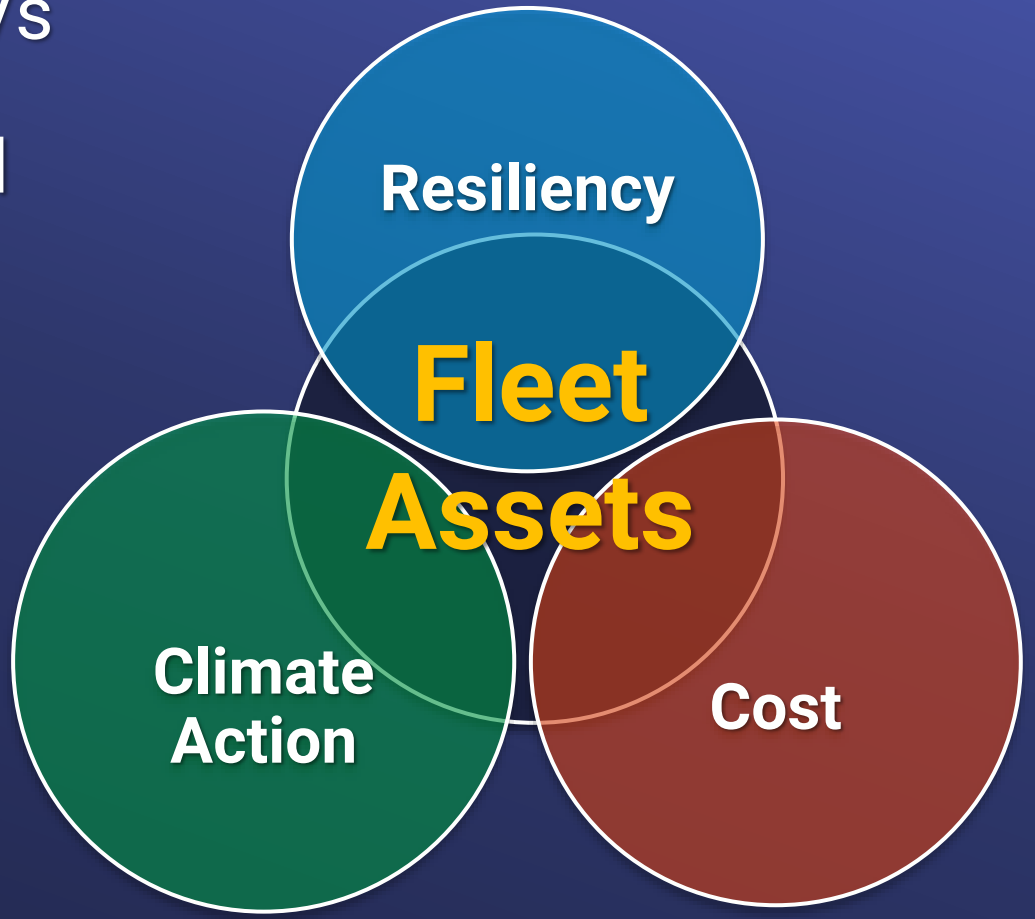


Regulatory Timeline and Impacts to Fleet Vehicles



ZEV Transition Plan & Budgetary Challenges

- High cost to renew and replace with ZEVs
- Critical more expensive OE reaching end of life (cranes, motor graders, etc.)
- Limited timeframe to act considering regulatory milestones
- Financial “bandwidth” needs to be expanded to meet needs
- Finance team evaluating options including debt financing



ZEV replacements generally cost 30% more

ZEV Infrastructure – Capital Project

- Purpose
  - Transition underway from fossil fuel-powered motor vehicles to electric/hydrogen vehicles
  - New “fueling stations” are required at multiple facilities
  - Current focus on electric vehicles

- EV Charging Infrastructure Components
  - Electrical components
  - Charging stations
  - Electrical demand management system

Initial Facilities for Assessment

- Union Station & La Verne
  - Consultant Design (Stantec)
  - Scope of Work
    - Develop conceptual site plans
    - Determine infrastructure needs
    - Locate charging stations & recommend types
    - Utility coordination & permitting
    - Evaluate safety upgrades
    - Develop an overall schedule & construction estimate

- RFQ for additional consultants to expedite design of other facilities

Going Forward

- Over 20 ZEVs proposed for FY 24/25 OE budget
- Continuing “Try before you buy” effort
- Continue employee outreach and education
- Taking advantage of incentives where possible
- Advance capital projects for charging infrastructure
- Looking to partner with industry & other agencies
- Continued updates to Board on ZEV transition and financing options

Summary & Closing Comments

- Staff committed to ZEV conversion while ensuring reliability
- Managing an aging fleet, regulatory timeline, and cost is a challenge
- Opportunities to innovate & partner with industry


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

Engineering, Operations, & Technology Committee

Nitrification Management

Item 6d

January 8, 2024

Item 6d

Nitrification Management

Subject

Update on nitrification in the treated water distribution system

Purpose

Provide background information on causes of nitrification, details of the 2023 nitrification event, and actions to minimize nitrification

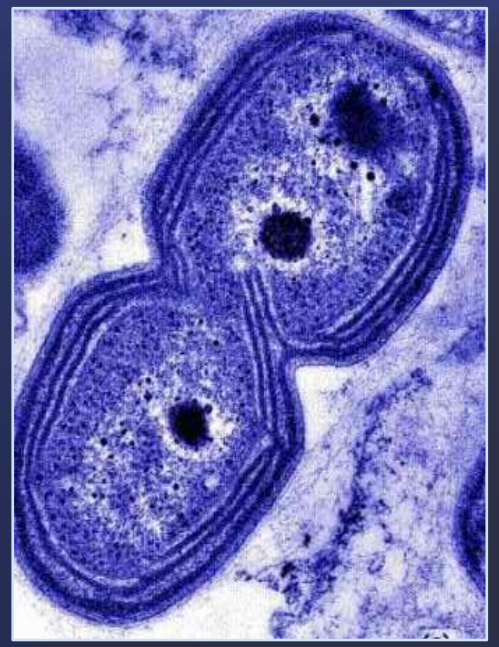
Next Steps

Assess actions and opportunities for improved nitrification management and control in the future

Nitrification Introduction

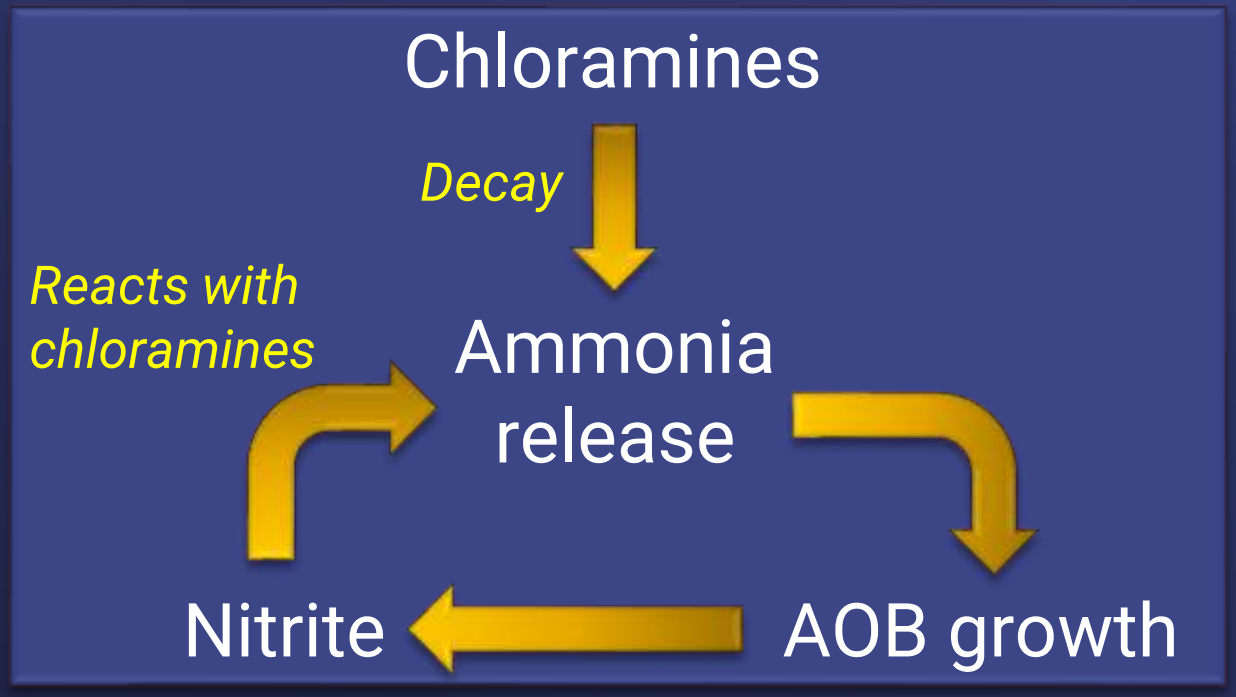
Background

- Nitrifying bacteria are always present in chloraminated systems
  - Sequentially convert ammonia to nitrite and nitrate
- Conditions that influence nitrification
  - Long detention times
  - Warm water
  - Excess free ammonia
  - Low or no disinfectant
  - Dead-end configurations
  - Poor circulation in reservoirs
  - Biofilm and sediment in pipes



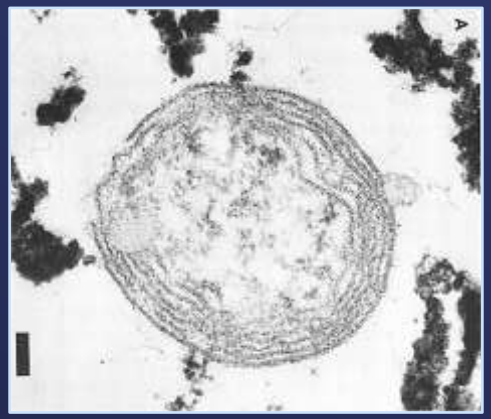
- *Naturally occurring bacteria*
- *Not contaminants, not pathogens*
- *Normally present in aquatic systems*

Potential Impacts of Nitrification on Water Quality

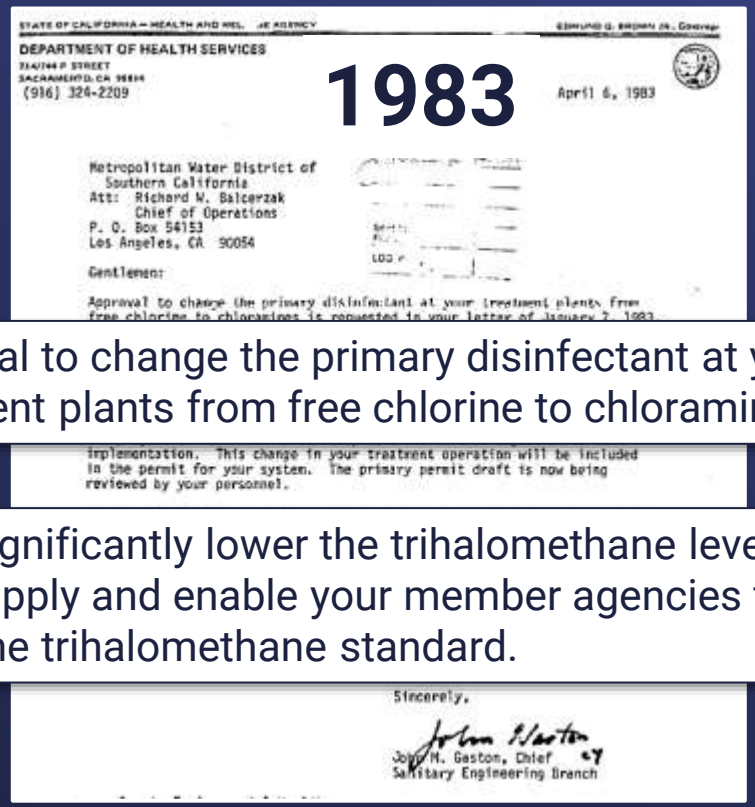


- Nitrite accumulation in the distribution system
- Chloramine decay
- Increase in bacterial growth (potentially coliforms)

AOB = Ammonia oxidizing bacteria



Introduction of Chloramines at Metropolitan



DEPARTMENT OF HEALTH SERVICES
(916) 324-2209

1983

April 6, 1983

Metropolitan Water District of
Southern California
Att: Richard N. Balcerzak
Chief of Operations
P. O. Box 54153
Los Angeles, CA 90054

Gentlemen:

Approval to change the primary disinfectant at your treatment plants from free chlorine to chloramines is requested in your letter of January 7, 1983

implementation. This change in your treatment operation will be included in the permit for your system. The primary permit draft is now being reviewed by your personnel.

Sincerely,

John M. Gaston, Chief
Sanitary Engineering Branch

Approval to change the primary disinfectant at your treatment plants from free chlorine to chloramines

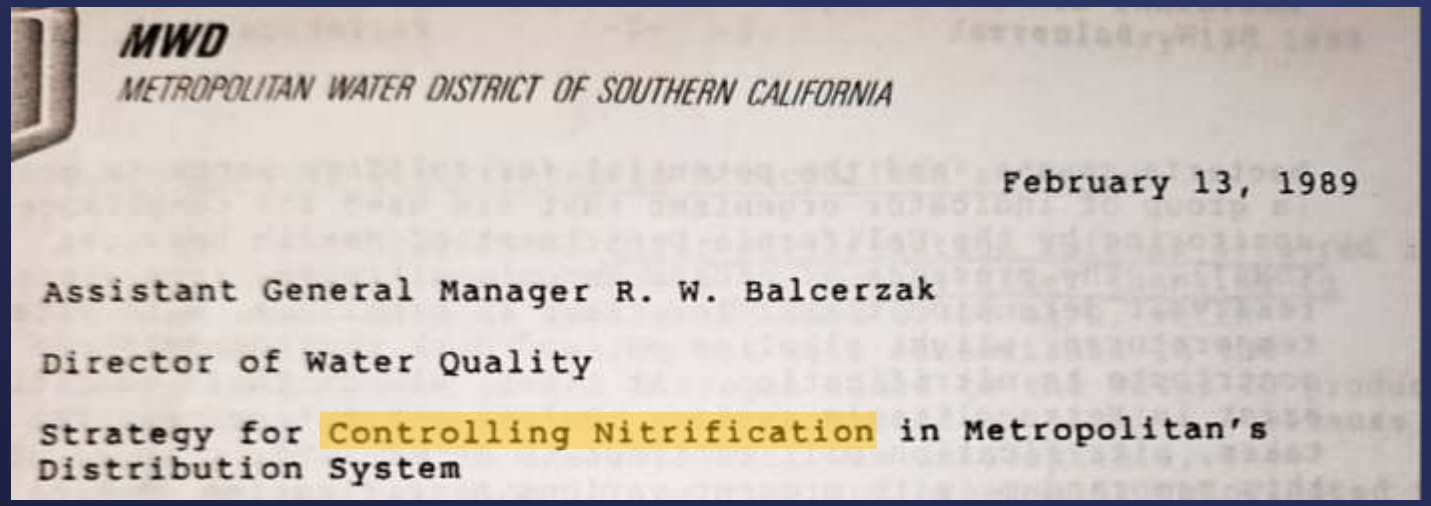
…will significantly lower the trihalomethane levels in your supply and enable your member agencies to meet the trihalomethane standard.

Metropolitan switched from free chlorine to chloramines as the primary disinfectant in June 1985

Nitrification is Not a New Phenomenon at Metropolitan

GM Report, January 1989

Nitrification. Staff will initiate a detailed investigation into the occurrence of nitrification in member agencies'/subagencies' systems. It is estimated that two to three months will be required to complete this investigation.



MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

February 13, 1989

Assistant General Manager R. W. Balcerzak

Director of Water Quality

Strategy for Controlling Nitrification in Metropolitan's Distribution System

Periodic nitrification episodes led to optimizing chloramine dosing over 13 years

	Chlorine residual	Cl_2 to NH_3 ratio
1985	1.5 mg/L	3:1
1989	1.5 mg/L	5:1
1994	1.7 mg/L	5:1
1998	2.5 mg/L	5:1

Early Research on Chloramines and Nitrification

RESEARCH ARTICLE | NOVEMBER 1988

Nitrifying Bacteria in a Chloraminated Drinking Water System

N. R. Ike; R. L. Wolfe; E. G. Means

Water Sci Technol (1988) 20 (11-12): 441-444.

Optimizing Chloramine Disinfection for the Control of Nitrification

N. I. Lieu, R. L. Wolfe, E. Means • Published 1 February 1993 • Chemistry • Journal American Water Works Association

Previous studies have shown that nitrification of chloraminated drinking water can have deleterious effects on water quality. These studies also showed that the cause of nitrification is the oxidation of ammonia (used to form

Ammonia-Oxidizing Bacteria in a Chloraminated Distribution System: Seasonal Occurrence, Distribution, and Disinfection Resistance

ROY L. WOLFE,* NANCY I. LIEU, GEORGE IZAGUIRRE, AND EDWARD G. MEANS

Metropolitan Water District of Southern California, 700 Moreno Avenue, La Verne, California 91750

Nitrification Control Strategies

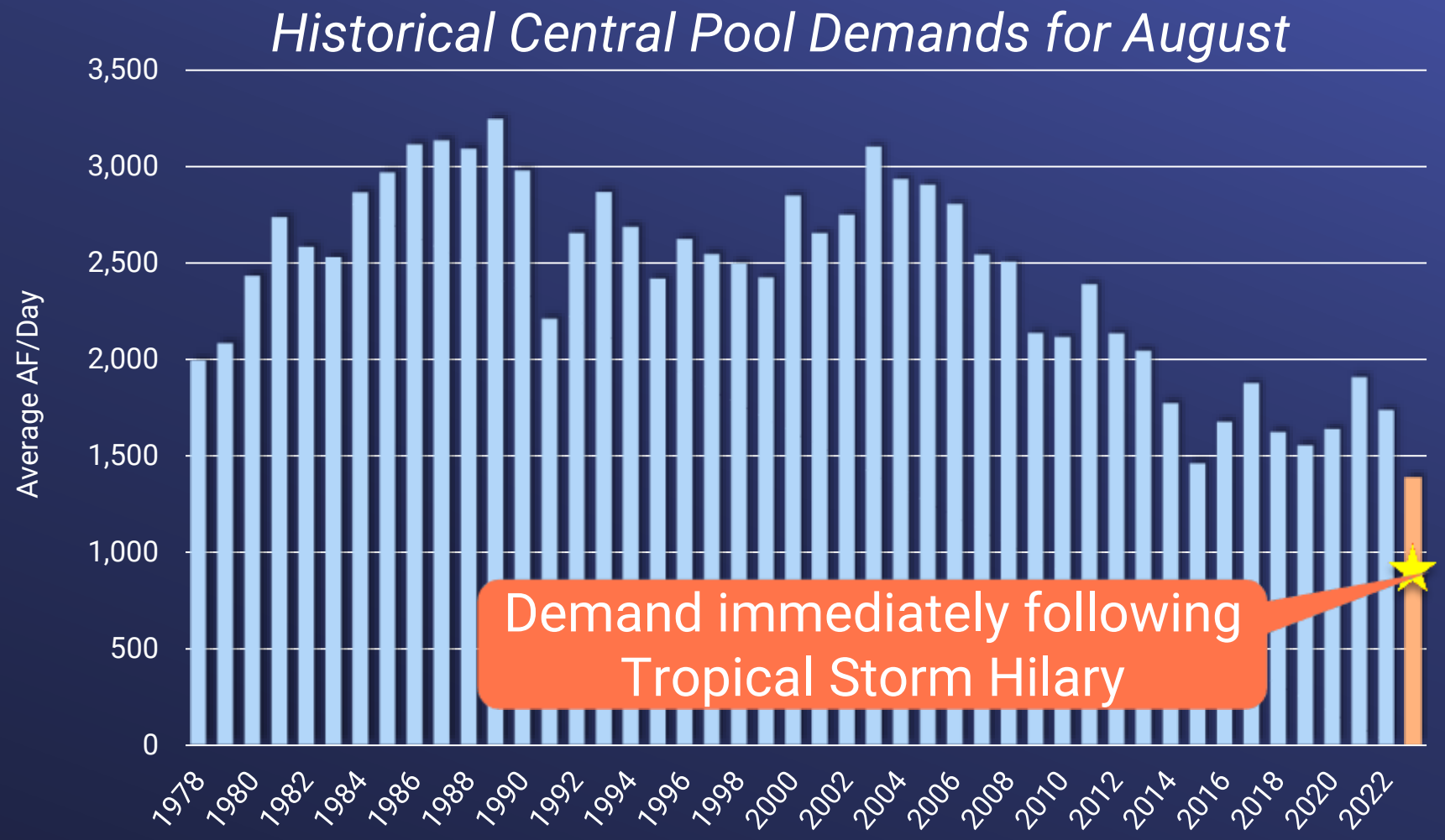
Preventing and Managing Nitrification

- Minimize free ammonia in the distribution system
- Maintain disinfectant residual throughout the distribution system
- Decrease water detention time
- Minimize stagnant or low-flowing water
- Flush impacted areas of the distribution system
- Shut down and disinfect impacted areas of distribution system
- Temporarily convert system to free chlorine

Record Low August Demands

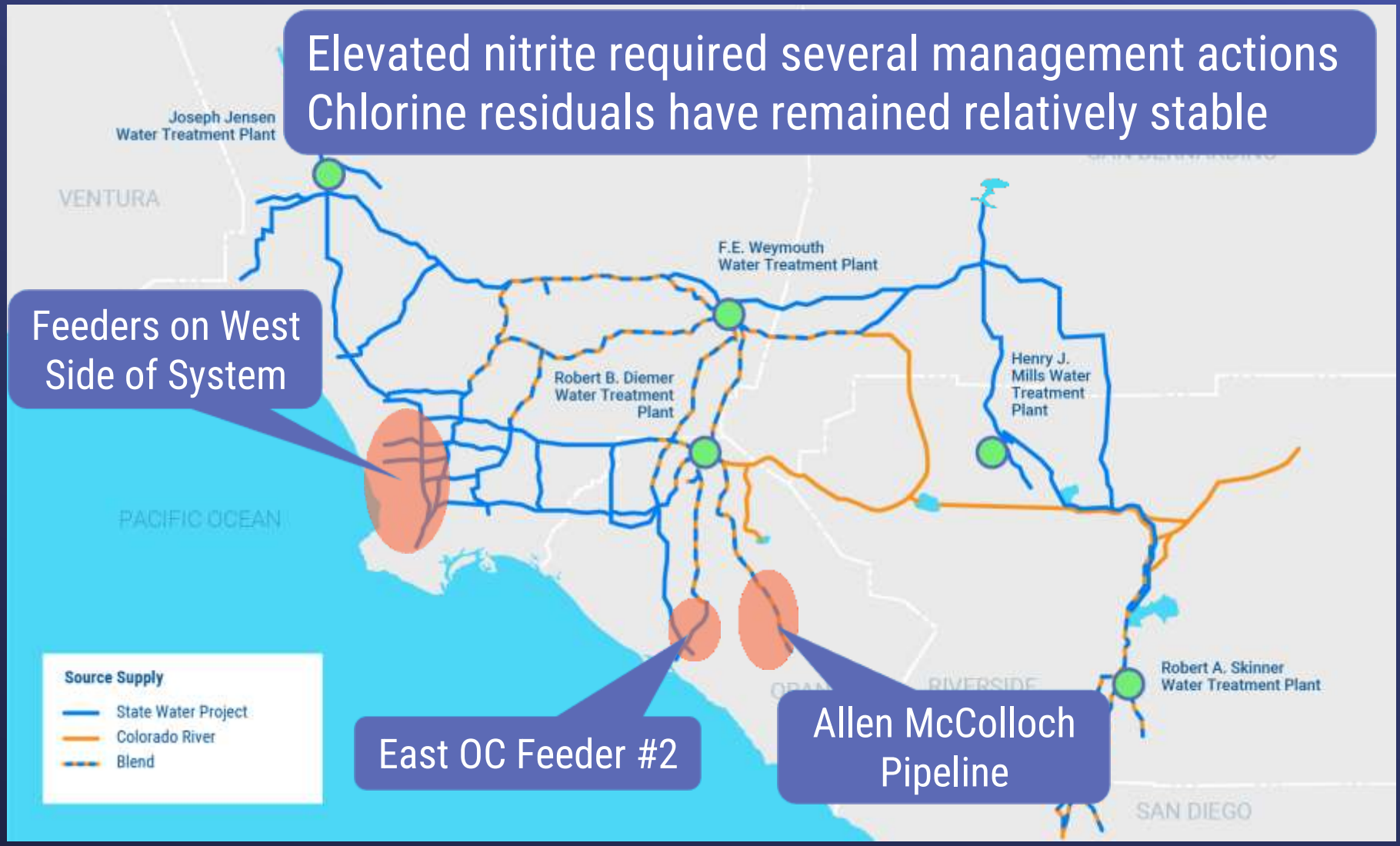
System Demand

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



Affected Areas in LA and Orange Counties

Nitrification
Summer/Fall 2023



Extensive Routine Monitoring

- Plant effluent and distribution system sites
  - Chlorine, Ammonia, Nitrite

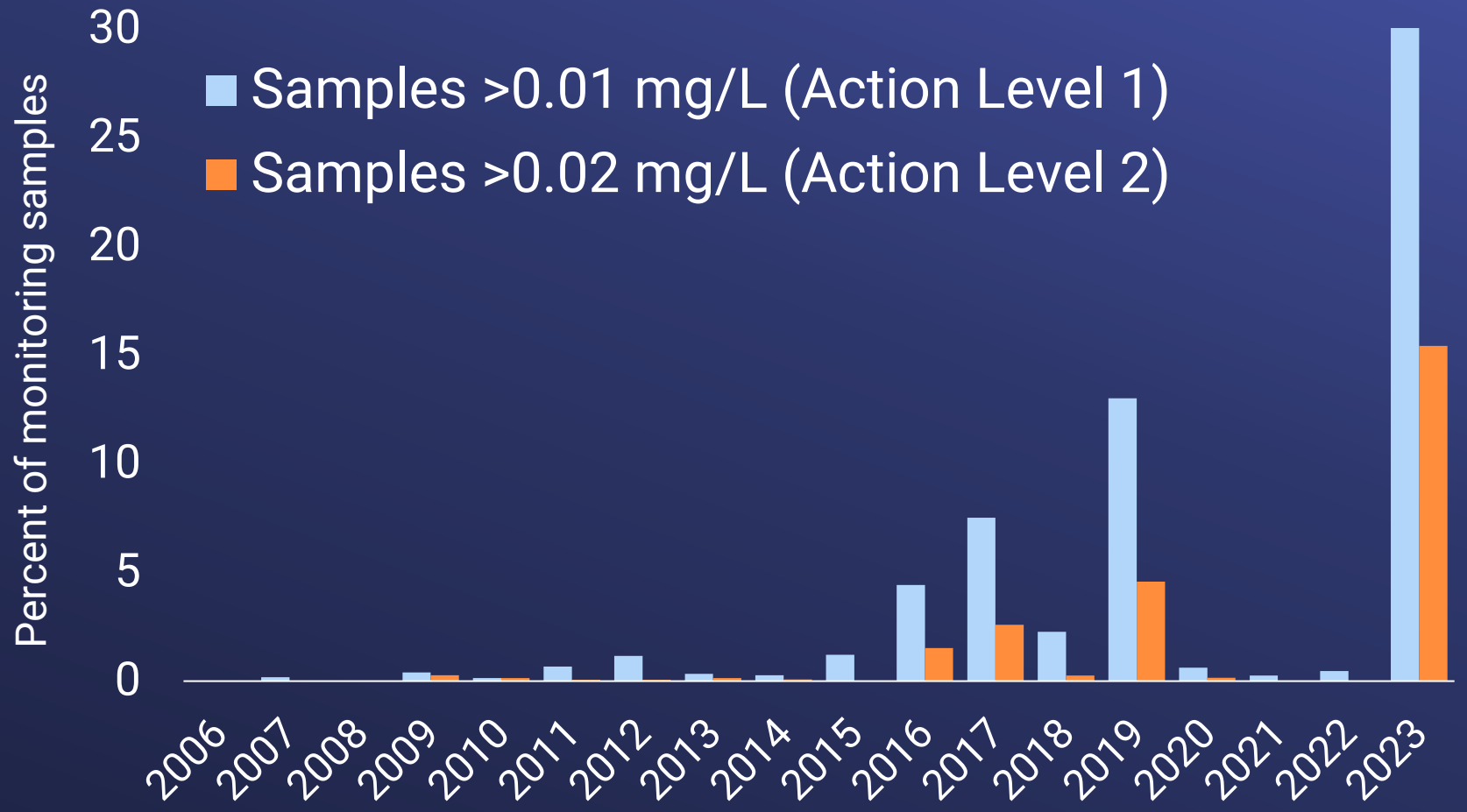
Nitrite Action Level 1*	Nitrite Action Level 2*
0.01 mg/L	0.02 mg/L

** Internal operational action levels, not regulatory limits*

- Low demand and higher temperatures during summer months led to elevated nitrite at various locations
- Tropical Storm Hilary on August 20 exacerbated nitrification event

Nitrite Monitoring

Historical Nitrification Events



Multiple Nitrification Management and Control Actions

50 sample locations
>1,700 samples

~100 staff
>21,000 hours

24 flushing locations
~14,000 AF

- Daily meetings of multiple teams to coordinate response and monitoring operations
- Operational changes to increase flow in affected areas
- Daily monitoring of water quality throughout the system
- Flushing pipelines started in late August in Orange County and west LA County

Nitrification Response

Multiple Nitrification Management and Control Actions

- Minimized free ammonia leaving treatment plants
- Increased pH at treatment plant effluents
- Reduced State Water Project blend from 80 percent to 25 percent at the Diemer plant
- Turned off ozone at Diemer Plant


THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Infrastructure Maintenance Activities in Your Community

ABOUT THE PROJECT

The Metropolitan Water District of Southern California is performing maintenance and flushing on one of our regional drinking water delivery pipelines in your community. This work will continue for the next few days to ensure we're providing high-quality, reliable water supplies.

SCHEDULE

Work is expected to continue through Friday, September 1.

Thank you for your patience.

PROJECT LOCATION

Work is occurring on Manhattan Beach Blvd. between Aviation Blvd and Redondo Ave.

WHAT TO EXPECT

You may notice the following:

- Water flowing on streets and localized floodin
- Metropolitan crews, vehicles, and equipment

WATER SUPPLY TO RESIDENCES AND BUSINESSES WILL NOT BE IMPACTED.

FOR MORE INFORMATION

CommunityRelations@mwdh2o.com

Rupam Soni: (213) 217-7262
Community Relations Team Manager

www.mwdh2o.com


nextdoor

Metropolitan Water District of Southern California
Community Relations Team Manager Rupam Soni • 25 Aug

Hi Neighbors,
You may have noticed flooding at the intersection of El Segundo Blvd. and Isis Ave. This is because The Metropolitan Water District of Southern California is flushing one of our large regional drinking water delivery pipes in this area. This flushing will continue for the next few days to ensure we're providing high-quality reliable water supplies. Our crews are onsite to monitor this work. Please note that water supply to residences and businesses will not be impacted as we complete this work. If you have any questions, please feel free to e-mail communityrelations@mwdh2o.com or call 213-217-7262.
Thank you for your patience!

Frequent Communications

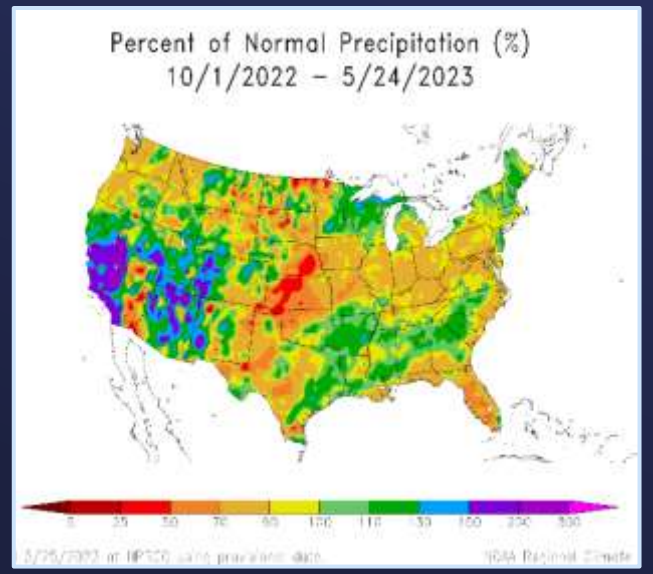
- Member Agency Managers Meeting
- General Manager update to Board
- Regular updates to affected Member Agencies
- Periodic updates to the SWRCB Division of Drinking Water
- Targeted outreach in impacted communities

Nitrification Update

January 2024

- Nitrite below action levels in majority of samples
  - Monitoring frequency reduced
- Chlorine residuals remained relatively stable throughout the event
- Pipeline flushing stopped
  - Mid-October in Orange County
  - Late November in west LA County
- SWP blend increased to 45 percent at Diemer plant (mid-December)
- Continuing to modify flow in affected areas
- Continued updates to impacted Member Agencies

Long-Term Nitrification Outlook



New Challenges May Lead to More Frequent Nitrification Events

- More frequent swings between wet and drought
  - More variable demand
  - Changes in source water quality
- Nitrification promoted by
  - Longer detention times due to lower system demand
  - Extended periods of warmer weather
- Metropolitan's facilities and pipelines designed for large volume, high flow conditions

Long-Term Nitrification Management & Control

Future Actions and Considerations

- Nitrification Taskforce
  - Develop a more proactive approach to nitrification control
  - Improved monitoring tools (e.g., online WQ monitoring, distribution system hydraulic modeling)
- Potential infrastructure improvements
  - Assess options and locations for chlorine booster stations in distribution system
  - Assess feasibility of reducing dead legs in system and opportunities for treated water recirculation
- Improved flushing operations
  - Assess opportunities for alternative uses of flushed water

Summary

Over 100 staff from 20 teams worked throughout the event to ensure reliable water supplies

- Managed 2023 nitrification event using a toolbox of actions and operational changes
- Staff working to develop long-term approaches to control and minimize nitrification
- Nitrification may become a more frequent issue when low demand coincides with warm weather
- Continued coordination with Member Agencies
  - Annual nitrification workshop in late Spring 2024


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

Engineering, Operations, & Technology Committee

Management Announcements and Highlights

Item 7a

January 8, 2024

Engineering Services

Update by Deven Upadhyay

Perris Valley Pipeline Project

- Tunnel Boring Machine Naming Event
  - 10AM January 25th
  - March Air Field Museum, Riverside
- Project Progress
  - Approximately 30% complete
  - Continuing construction on project's four shafts
  - Coordinating with Metrolink on construction under rail lines

Water System Operations

Update by Shane Chapman

Managing Initial Low SWP Allocation

Current Operational Conditions

Whitewater Bridge Demolished

- 2024 SWP Allocation at 10%
- CRA at 4-pump flow
- Deliveries to DWCV at 300 cfs
- SWP blend targets are 0% at Weymouth, Diemer, and Skinner
- Suspended Cyclic, CUP, CCOP, Banking deliveries
- December 2023 deliveries of 110 TAF were 2 TAF lower than December 2022

Maximizing future reliability

Protecting Drought Storage

San Luis Reservoir

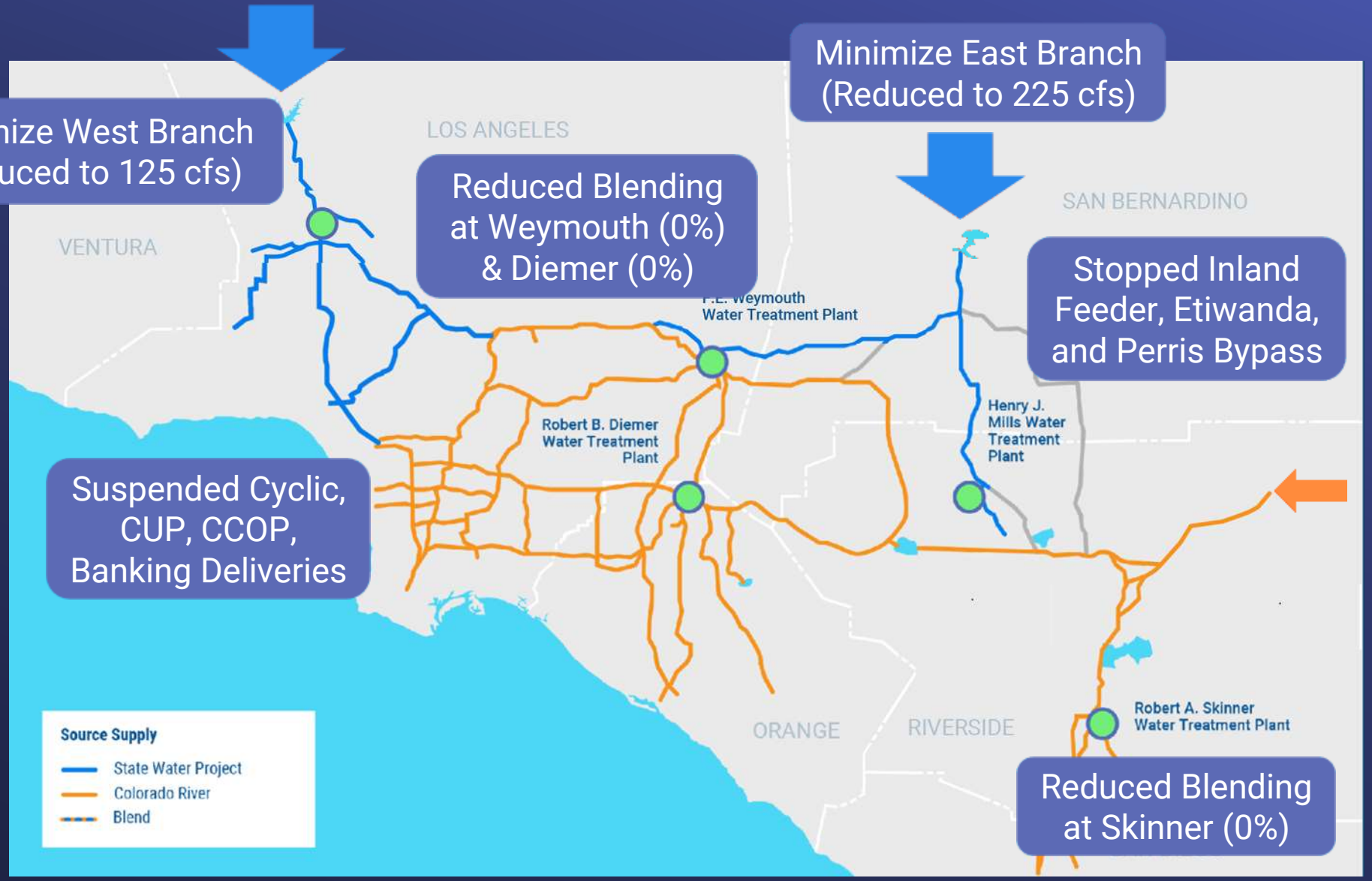
Preserving SWP Supplies with Low Initial Allocation

- Early 2024 operations based on lessons learned during last drought
  - Preserve Carryover supplies
  - Preserve Flex storage
  - Maintain a full DVL
- Position SWP supplies to meet SWP Dependent Area needs if dry conditions continue
- Increase use of SWP supplies as allocation increases

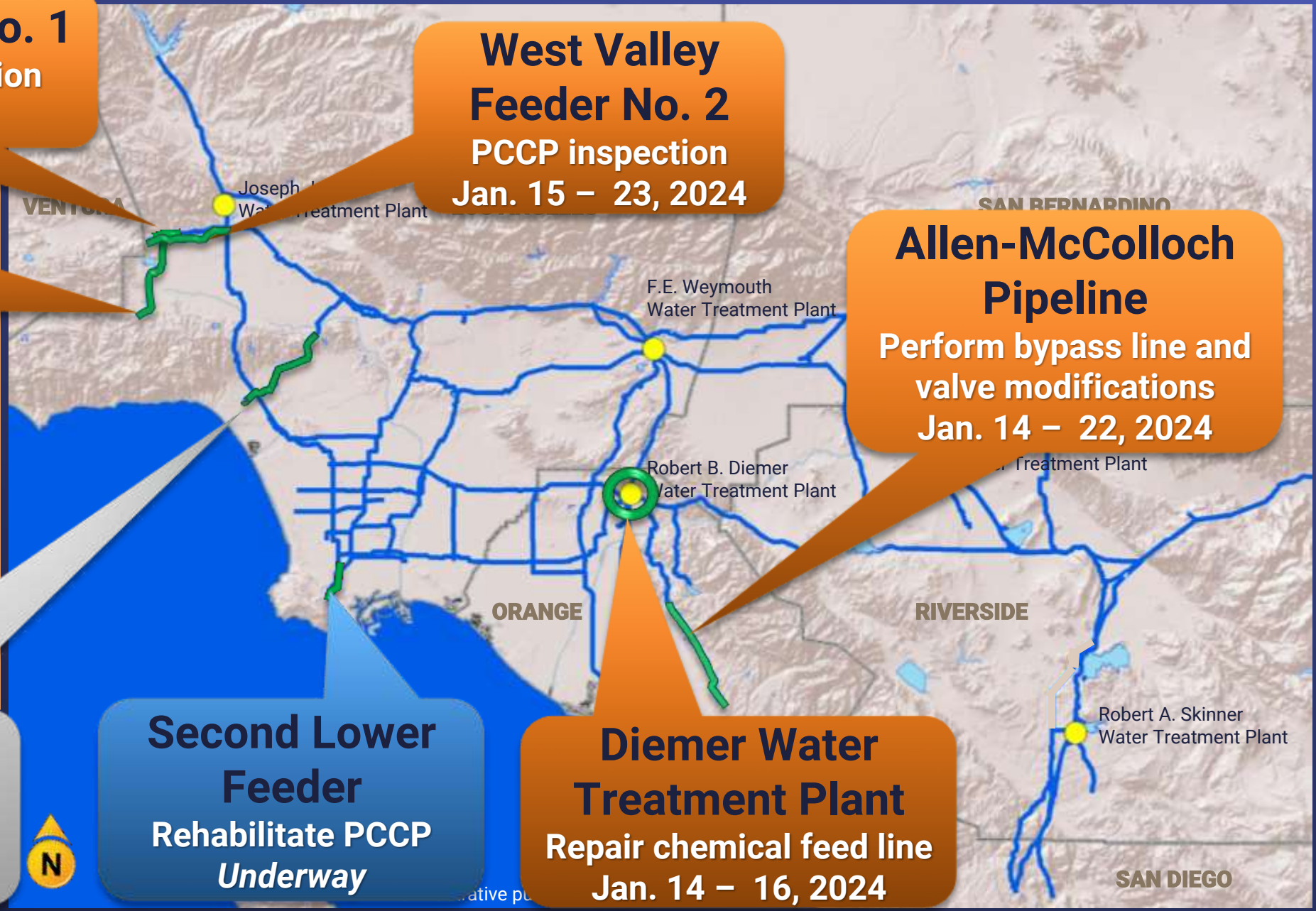
Flipped the System – Minimizing SWP

Early 2024 Operations

Minimizing SWP Supplies to Prepare for Possible Drought Sequence



Ensuring Continued System Reliability



West Valley Feeder No. 1
Support Calleguas inspection
Jan. 15 – 18, 2024

Calabasas Feeder
PCCP inspection
Jan. 15 – 26, 2024

West Valley Feeder No. 2
PCCP inspection
Jan. 15 – 23, 2024

Allen-McColloch Pipeline
Perform bypass line and valve modifications
Jan. 14 – 22, 2024

Santa Monica Feeder
Urgent meter repair for SMN-01
Recently Completed

Second Lower Feeder
Rehabilitate PCCP
Underway

Diemer Water Treatment Plant
Repair chemical feed line
Jan. 14 – 16, 2024

Quagga Mussel Monitoring

- Confirmed evidence of quagga mussel reproduction in SWP West Branch
  - Adult mussel discoveries in 2016, 2021, 2023
  - Veligers detected by microscopy at multiple locations in 2023
  - Calcium in SWP lower than CRA so may not see same level of proliferation or impact
- Continued monitoring and coordination with DWR, CDFW, and impacted Member Agencies
- Reviewing management and control options
- Ensuring raw water deliveries have no downstream impacts
- Update planned for February EO&T Committee meeting

Quagga Mussels in West Branch State Water Project

Castaic Lake, 2021

State Water Board Unanimously Approves DPR Regulations

Direct Potable Reuse

- Significant milestone and 10+ years in the making
- Most advanced standards in the nation for converting wastewater into purified drinking water
- Recognition of Metropolitan's leadership and contributions in advancing potable water reuse
  - Testimony supporting adoption of DPR regulations at State Water Board meeting on December 19
  - Extensive engagement, comments and recommendations throughout regulatory development process
- Regulations expected to be codified in early 2024

50th Anniversary of Water Quality Section

1974 - 2024

Original home of Water Quality, 1974

Pouring concrete for Water Quality Lab, 1983

Generations of Water Quality leadership

2024 – A year of celebration

1974 – Water Quality & Research Branch – 10 staff
1978 – Water Quality Branch – 27 staff
1986 – Water Quality Division – 56 staff

2000 – Water Quality Section – 116 staff
2024 – Water Quality Section – 108 staff

Information Technology

No update for this period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