THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

MWD MEETING AGENDA

E&O Committee
T. Smith, Chair
Vacant, Vice Chair
R. Apodaca
S. Blois
M. Camacho
D. De Jesus
L. Dick
S. Faessel
R. Lefevre
J. Morris
J. Murray Jr.
G. Peterson
H. Repenning
H. Williams

Engineering and Operations Committee

Meeting with Board of Directors *

November 8, 2021

11:30 a.m.

Monday, November 8, 2021 Meeting Schedule
09:00 a.m. - BOD Workshop
11:00 a.m. - Break
11:30 a.m. - E&O
01:00 p.m. - C&L
02:00 p.m. - WP&S

Teleconference meetings will continue through the end of the year. Live streaming is available for all board and committee meetings on mwdh2o.com (Click Here)

A listen only phone line is also available at 1-800-603-9516; enter code: 2176868#. Members of the public may present their comments to the Board on matters within their jurisdiction as listed on the agenda via teleconference only. To participate call (404) 400-0335 and enter Code: 9601962.

MWD Headquarters Building • 700 N. Alameda Street • Los Angeles, CA 90012

* 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 OTHER ITEMS -- ACTION ****

2. CONSENT CALENDAR OTHER ITEMS - ACTION

A. Approval of the Minutes of the Meeting of the Engineering and Operations Committee held October 11, 2021 — **21-589**

Attachments: 11082021 EO 2A Minutes

3. CONSENT CALENDAR ITEMS - ACTION

Zoom Online

7-2 Award a $1,477,000 contract to Minako America Corporation (dba Minco Construction) for replacement of ozone power supply units at the Joseph Jensen Water Treatment Plant and authorize an agreement with CDM Smith Inc. in an amount not to exceed $800,000 for engineering services to support the Jensen ozone generation system rehabilitation; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA **21-595**

Attachments: 11092021 EO 7-2 B-L
11092021 EO 7-2 Presentation.pdf

7-3 Award a $9.2 million contract to CSI Electrical Contractors, Inc. for Stage 2 electrical upgrades at the Henry J. Mills Water Treatment Plant; authorize: (1) granting of a permanent easement to Riverside Public Utilities; and (2) an increase of $830,000 to an agreement with Lee & Ro, Inc., for a new not-to-exceed amount of $1,927,000 for engineering support; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA **21-597**

Attachments: 11092021 EO 7-3 B-L
11092021 EO 7-3 Presentation.pdf

7-4 Adopt the CEQA determination that the proposed action has been previously addressed in the certified 2015 Final EIR and related CEQA documents; and award a $6,044,896.76 procurement contract to Northwest Pipe Company for steel pipe to rehabilitate a portion of the Etiwanda Pipeline **21-598**

Attachments: 11092021 EO 7-4 B-L
11092021 EO 7-4 Presentation.pdf

7-5 Award a $3,280,920 contract to J.F. Shea, Construction, Inc. for lining of the Cholla Wash cut-and-cover conduit at Mile Marker 126 on the Colorado River Aqueduct; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA **21-599**

Attachments: 11092021 EO 7-5 B-La REVISED redlined.pdf
11092021 EO 7-5 Presentation.pdf

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

4. OTHER BOARD ITEMS - ACTION

None

5. BOARD INFORMATION ITEMS

None

6. COMMITTEE ITEMS

a. Overview of Planned Facility Upgrades at La Verne Site **21-620**

Attachments: 11082021 EO 6a Presentation.pdf

b. Salinity Management Update **21-621**

Attachments: 11082021 EO 6b Presentation.pdf

7. MANAGEMENT REPORTS

a. Water System Operations Manager's Report **21-618**

Attachments: 11082021 EO 7a Presentation.pdf

b. Engineering Services Manager's Report **21-619**

Attachments: 11082021 EO 7b Presentation.pdf

8. FOLLOW-UP ITEMS

None

9. FUTURE AGENDA ITEMS

10. 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. Agendas for the meeting of the Board of Directors may be obtained from the Board Executive Secretary. This committee will not take any final action that is binding on the Board, even when a quorum of the Board is present.

Writings relating to open session agenda items distributed to Directors less than 72 hours prior to a regular meeting are available for public inspection at Metropolitan's Headquarters Building and on Metropolitan's Web site http://www.mwdh2o.com.

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 AND OPERATIONS COMMITTEE

October 11, 2021

Chair Smith called the teleconference meeting to order at 10:00 a.m.

Members present: Chair Smith, Directors Apodaca, Blois, Camacho (entered after roll call), De Jesus, Dick, Faessel, Lefevre, Morris, Peterson, Repenning, and Williams

Members absent: Director Murray

Other Board members present: Directors Abdo, Ackerman, Atwater, Cordero, Dennstedt, Erdman, Fellow, Goldberg, Gray, Hawkins, Jung, Kurtz, Luna, McCoy, Pressman, Record, and Tamaribuchi

Committee staff present: Bednarski, Hagekhalil, Parsons, Scully, Upadhyay, Word and Yamasaki

1. OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO ADDRESS THE COMMITTEE ON MATTERS WITHIN THE COMMITTEE'S JURISDICTION

1. Anne-Marie Otey, LA/OC Building and Construction Trades Council – In support of Item 6a
2. Rob Lablaise, Southwest Regional Council of Carpenters – In support of Item 6a
3. Ernesto Pantoja, Laborers Local 300 – In support of Item 6a
4. Lauren Ahkiam, Los Angeles Alliance for New Economy – In support of Item 6a
5. Nicole Heyl, Resident of Los Angeles – In support of Item 6a
6. George Bocanegra, Southwest Regional Council of Carpenters – In support of Item 6a
7. Caty Wagner, Sierra Club California – Commented on Item 7-5 and in support of Item 6a
8. Tommy Favaae, International Brotherhood of Electrical Workers – In support of Item 6a
9. Brittany Rubicgrek, Orange County Resident – In support of Item 6a
10. Gretchen Newsom, International Brotherhood of Electrical Workers – In support of Item 6a
11. Chad Boggio, Council Representative Los Angeles / Orange Counties Building and Construction Trades – In support of Item 6a
12. Hailey Pottinger, Resident of Los Angeles – In support of Item 6a
13. Sean-Keoni Ellis, United Association Local 230 – In support of Item 6a
14. Tom Lemmon, Business Manager San Diego County Building and Construction Trades Council – In support of Item 6a
15. Eduardo Mazariegos, Rate Payer City of Los Angeles – In support of Item 6a
16. Bill Perez, Riverside and San Bernardino Building and Construction Trades Council – In support of Item 6a
17. Joshua Medrano, Boards of Ventura, Santa Barbara & San Luis Obispo Counties Building and Construction Trades Council – In support of Item 6a

CONSENT CALENDAR OTHER ITEMS – ACTION

2. CONSENT CALENDAR OTHER ITEMS – ACTION

A. Approval of the Minutes of the Meeting of the Engineering and Operations Committee held September 13, 2021.

3. CONSENT CALENDAR ITEMS – ACTION

7-2	Subject:	Award a $3,815,000 contract to Creative Home dba Chi Construction to replace the wastewater system at the Lake Mathews facility; the proposed action is in furtherance of a project that was previously determined to be exempt or otherwise not subject to CEQA
	Presented by:	No presentation given
	Motion:	Award a $3,815,000 contract to Creative Home dba Chi Construction for Lake Mathews Site Wastewater System Replacement.
7-3	Subject:	Authorize an agreement with Helix Environmental Planning, Inc., in an amount not to exceed $2.8 million, to prepare environmental documentation for the Regional Recycled Water Program and an agreement with Stantec Consulting Services Inc., in an amount not to exceed $6.5 million for engineering and technical studies to support the environmental planning phase of the Program; the General Manager has determined that the proposed action is not subject to CEQA
	Presented by:	Gloria Lai-Bluml, Unit Manager, Engineering Services
	Motion:	a. Authorize an agreement with Helix Environmental Planning, Inc., in an amount not to exceed $2.8 million for preparation of environmental documentation for the Regional Recycled Water Program; and b. Authorize an agreement with Stantec Consulting Services Inc., in an amount not to exceed $6.5 million for engineering and technical studies to support environmental planning phase activities of the Regional Recycled Water Program.
7-4	Subject:	Award a $282,390 contract to AME Builders, Inc. for replacement of the roof on the Vehicle Maintenance and Warehouse Building at the Jensen Water Treatment Plant; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA
	Presented by:	No presentation given

Motion: Award a $282,390 contract to AME Builders, Inc. for replacement of the roof on the Vehicle Maintenance and Warehouse Building at the Jensen plant.

The following Directors provided comments or asked questions:

1. Peterson
2. Goldberg

7-5 Subject: Authorize the General Manager to enter into an agreement with the Arizona Department of Water Resources and the Central Arizona Water Conservation District to support the development of the Regional Recycled Water Program; the General Manager has determined that the proposed action in exempt or otherwise not subject to CEQA

Presented by: Matt Hacker, Sr Resource Specialist, Water Resource Management

Motion: Authorize an agreement with the Arizona Parties to support the development of the Regional Recycled Water Program.

The following Directors provided comments or asked questions:

1. Lefevre
2. Peterson
3. Goldberg
4. Fellow
5. Repenning
6. Cordero

Staff responded to the Directors' comments or questions.

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

The vote was:

Ayes:	Directors Apodaca, Blois, Camacho, De Jesus, Dick, Faessel, Lefevre, Morris, Peterson, Repenning, Smith, and Williams
Noes:	None
Abstentions:	None
Absent:	Director Murray

The motion for Items 2A, 7-2, 7-3, 7-4 and 7-5 passed by a vote of 12 ayes, 0 noes, 0 abstentions, and 1 absent.

END OF CONSENT CALENDAR ITEMS

4. OTHER BOARD ITEMS – ACTION

None

5. BOARD INFORMATION ITEMS

None

6. COMMITTEE ITEMS

a. Subject: Project Labor Agreements Update

Presented by: Doaa Aboul-Hosn, Engineer, Engineering Services

Ms. Aboul-Hosn reported on the following:

- Highlights from the April E&O Presentation
- Follow up items
- Director's Questions - April E&O Presentation
- Contractor organization feedback
- Potential approaches to PLA implementation
- Next steps

b. Subject: Update on Drought Mitigation Actions

Presented by: Keith Nobriga, Section Manager, Water System Operations

Mr. Nobriga reported on the following:

- Current and proposed operational actions and projects in response to extraordinary drought
- Project concepts to expand water delivery flexibility to SWP constrained areas
- Upcoming board actions on additional drought mitigation projects

The following Directors provided comments or asked questions:

1. Blois
2. Faessel
3. Repenning
4. Goldberg
5. Cordero
6. Abdo
7. Dick
8. Blois
9. Tamaribuchi
10. Gray

11. Blois
12. Peterson

Staff responded to the Directors' comments or questions.

c. Subject: Salinity Management Update

Item deferred to Next Month

7. MANAGEMENT REPORTS

a. Subject: Water System Operations Manager's report

Presented by: Brent Yamasaki, Water System Operations, Group Manager

Mr. Yamasaki reported on the following:

- Current operational conditions - maximize Colorado River water deliveries
- Emergency Management Program improvements
- Response to September earthquake in Carson

b. Subject: Engineering Services Manager's report

Presented by: John Bednarski, Engineering Services Group, Chief Engineer and Group Manager

Mr. Bednarski reported on the following:

- Correction reporting of recent board items
- Project updates, including temporary storage for PCCP valves at Lake Mathews
- Engineering and Operations staff partnering efforts

8. FOLLOW-UP ITEMS

None

9. FUTURE AGENDA ITEMS

None

Next meeting will be held on November 8, 2021.

Meeting adjourned at 12:19 p.m.

Tim Smith
Chair

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

11/9/2021 Board Meeting

7-2

Subject

Award a $1,477,000 contract to Minako America Corporation (dba Minco Construction) for replacement of ozone power supply units at the Joseph Jensen Water Treatment Plant and authorize an agreement with CDM Smith Inc. in an amount not to exceed $800,000 for engineering services to support the Jensen ozone generation system rehabilitation; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

Ozone is used as the primary disinfectant at Metropolitan's five water treatment plants. Reliable operation of the ozonation system is essential for Metropolitan to meet drinking water regulations and address treatment challenges resulting from periodic water supply events. The existing ozone power supply units (PSUs) at the Joseph Jensen Water Treatment Plant (Jensen plant) have reached the end of their service life and need to be replaced. The procurement of the replacement PSUs was authorized through a board action in February 2020, and the units are scheduled for delivery in December 2021. This action awards a construction contract for installation of the new ozone PSUs at the Jensen plant, and authorizes a consulting agreement for engineering services to support the rehabilitation of the Jensen ozone generation system.

Details

Background

The Jensen plant was placed into service in 1972 with an initial capacity of 400 million gallons per day (mgd) and expanded to its current capacity of 750 mgd in the 1990s. Located in Granada Hills, the Jensen plant normally treats water from the West Branch of the State Water Project and delivers it to Metropolitan's Central Pool and to service areas on the west side of the distribution system.

Metropolitan employs ozone as the primary disinfectant at each of its water treatment plants to substantially reduce the formation of disinfection byproducts for compliance with the United States Environmental Protection Agency's Disinfectants and Disinfection Byproducts Rule. Ozone pre-disinfection also controls taste and odor-causing compounds and algal toxins. The ozonation process involves numerous equipment items and support systems, including high-voltage PSUs, ozone generators, cooling system, ozone destruct system, ozone contactors, programmable logic controllers, liquid oxygen system, and safety and water quality monitoring equipment.

The ozone generation system at the Jensen plant was originally placed into operation in 2005. Five ozone generators and five PSUs were originally installed to reliably treat up to 750 mgd. While the currently available ozone generation system components are suitable for operation in the short-term, the existing ozone PSUs and generator dielectrics have reached the end of their service life and require replacement to maintain the plant's long-term operational reliability. The original PSUs' electrical components are no longer manufactured or supported by the original equipment manufacturer, Suez Treatment Solutions, Inc. (formerly Ozonia North America). Further, new ozone PSUs will operate more efficiently than the older models and will no longer require chilled cooling water.

Staff is currently evaluating the benefits of reducing the maximum treatment capacity of the Jensen plant. As part of this assessment, staff has determined that only four ozone generators would be needed to accommodate the

reduced capacity scenarios that are currently being evaluated. In February 2020, Metropolitan's Board awarded a procurement contract for four PSUs and four sets of generator dielectrics to rehabilitate the ozone generation system at the Jensen plant. Manufacture of the equipment has been completed, and delivery is scheduled for December 2021.

Final design activities to replace the four ozone PSUs and perform required modifications to the associated electrical, control, and cooling water systems. This design work has been completed, and staff recommends moving forward with construction at this time.

Staff has initiated a second stage of this project to evaluate the physical condition and performance of the rest of the ozone subsystems, including oxygen feed gas, nitrogen, generator cooling water, and diffusion systems. This study will assess the capacity and reliability of Jensen's ozonation system and determine whether existing components can be refurbished or will need replacement for long-term operational reliability. To conduct this assessment, a consulting agreement for engineering services to support the rehabilitation of the Jensen ozone generation system is recommended at this time.

In accordance with the April 2020 action on the biennial budget for Fiscal Years 2020/21 and 2021/22, the General Manager will authorize staff to proceed with the actions described herein, pending board award of the construction contract and authorization of the engineering services agreement described below. Based on the current CIP expenditure forecast, funds for the work to be performed pursuant to the subject contracts during the current biennium are available within the Capital Investment Plan Appropriation for Fiscal Years 2020/21 and 2021/22 (Appropriation No. 15517). Funds required for work to be performed pursuant to the subject contract after Fiscal Year 2021/22 will be budgeted within the Capital Investment Plan Appropriation for Fiscal Years 2022/23 and 2023/24. This project has been reviewed in accordance with Metropolitan's CIP prioritization criteria and was approved by Metropolitan's CIP evaluation team to be included in the Treatment Plant Reliability Program.

Jensen Ozone PSUs Replacement – Construction

The scope of the construction contract includes sequential removal of five PSUs and installation of four new Metropolitan-furnished PSUs; installation of associated electrical power distribution equipment, instrumentation and control equipment, high-voltage cables, and communication components; and modifications of the cooling water system.

In addition to the above, Metropolitan forces will install dedicated fiber-optic signal wiring and conduit from the ozone master control panel to each PSU; modify the plant's Supervisory Control and Data Acquisition system; replace ozone generator dielectrics; provide field support for equipment start-up and testing, shutdown, and tie-in coordination; and salvage of PSU internal components. Finally, the PSU manufacturer, Suez Treatment Solutions, will perform start-up and testing and will provide field assistance during equipment installation under an existing procurement contract.

A total of $3.98 million is required to perform the construction phase activities. In addition to the amount of the contract, other funds to be allocated include $615,000 for construction inspection; $670,000 for Metropolitan force activities described above; $120,000 for submittals review and responding to requests for information; $230,000 for technical support during construction and commissioning activities and preparation of record drawings by CDM Smith as discussed below; $460,000 for contract administration, environmental monitoring, and project management; and $408,000 for remaining budget.

In addition to the above, the allocated funds also include $570,000 for a comprehensive assessment of the Jensen plant's ozone generation system by CDM Smith, as described below, and $80,000 for needed support by Metropolitan staff to complete the ozone evaluation study. **Attachment 1** provides the allocation of required funds.

Award of Construction Contract (Minco Construction)

Specifications No. 2001 for the Jensen PSU Replacement project was advertised for bids on August 13, 2021. As shown in **Attachment 2**, one bid was received and opened on September 23, 2021. The bid from Minako America Corporation (dba Minco Construction) in the amount of $1,477,000 complies with the requirements of the specifications. The engineer's estimate was $2.16 million. Based on a survey conducted among prospective

bidders, staff concluded that other firms may have decided not to submit bids due to the region's current active construction market. Several prospective bidders indicated that their resources are committed to completing ongoing construction projects. For this contract, Metropolitan established a Small Business Enterprise participation level of at least 25 percent of the bid amount. Minco Construction is a certified SBE firm and thus achieves 100 percent SBE participation. The subcontractors for this contract are listed in **Attachment 3**.

This action awards a $1,477,000 contract to Minako America Corporation (dba Minco Construction) to replace the ozone PSUs at the Jensen plant.

As described above, construction management and inspection will be performed by Metropolitan staff. The total cost of construction for this project is $6.31 million, which includes $4.16 million for the pre-purchased equipment, $1,477,000 for the contract, and $670,000 for Metropolitan forces, materials, and supplies. Engineering Services' performance metric target range for inspection of projects with construction greater than $3 million is 9 to 12 percent. For this project, the performance metric goal for inspection is 9.8 percent of the total construction cost.

Engineering Services (CDM Smith Inc.) – New Agreement

CDM Smith conducted final design to replace the Jensen plant's ozone PSUs under an existing on-call agreement. As the engineer of record, CDM Smith is recommended to provide technical support during construction of the ozone PSU replacement and perform a comprehensive assessment of the ozone generation system at the Jensen plant. CDM Smith was prequalified through a competitive process via Request for Qualifications No. 1215, and the firm has extensive experience in evaluation and design of ozone generation systems, including design of the ozone facilities at the Skinner and Diemer plants.

Planned activities for CDM Smith during construction include reviewing submittals and field test data; responding to requests for information from the contractor; witnessing start-up testing and commissioning of equipment; and preparing record drawings. Other activities to support the rehabilitation of the Jensen ozone generation system include field investigation of physical condition and performance of the existing process and associated equipment, as well as technical workshops with plant staff; analysis of operational data; evaluation and recommendation of system improvements; and development of a technical memorandum.

This action authorizes an agreement with CDM Smith Inc. for a not-to-exceed amount of $800,000 to provide engineering services to support Jensen ozone generation system rehabilitation. For this agreement, Metropolitan has established a Small Business Enterprise participation level of 25 percent. CDM Smith has agreed to meet this level of participation. The planned subconsultants for this agreement are Beyas & Patel, Inc., Process Applications, Inc., and TJC and Associates, Inc.

Alternatives Considered

During final design of the ozone PSU replacement, staff considered whether to utilize Metropolitan forces to replace the PSUs or hire a contractor to perform the work. The analysis concluded that specialized crews and operating equipment are required to handle high-voltage equipment, operate fire alarm and fire doors, and remove and reinstall the existing custom-designed steel window system at Jensen's ozone generation building. Metropolitan forces do not routinely perform this type of work. Consequently, staff recommends the use of a specialized contractor to replace the ozone PSUs at the Jensen plant.

Summary

This action awards a $1,477,000 contract to Minako America Corporation (dba Minco Construction) for replacement of ozone PSUs at the Jensen plant, and authorize a new agreement with CDM Smith Inc. for a not-to-exceed amount of $800,000 for engineering services to support the rehabilitation of Jensen's ozone generation system. See **Attachment 1** for the Allocation of Funds, **Attachment 2** for the Abstract of Bids, **Attachment 3** for the listing of Subcontractors, and **Attachment 4** for the Location Map.

Project Milestone

June 2023 – Completion of ozone PSU replacement at the Jensen plant

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

By Minute Item 51895, dated February 11, 2020, the Board awarded a contract to procure power supply units and dielectrics for Jensen's ozone generation system.

By Minute Item 51963, dated April 14, 2020, the Board appropriated a total of $500 million for projects identified in the Capital Investment Plan for Fiscal Years 2020/21 and 2021/22.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action involves 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 includes the replacement and reconstruction of existing structures and facilities where the new structure will be located on the same site and as the structure replaced and will have the same purpose and capacity as the structure replaced. Accordingly, the proposed action qualifies under Class 1 and Class 2 Categorical Exemptions (Sections 15301 and 15302 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

Board Options

Option #1

a. Award a $1,477,000 contract to Minako America Corporation (dba Minco Construction) for replacement of ozone power supply units at the Jensen plant.
b. Authorize an agreement with CDM Smith Inc. in the amount not to exceed $800,000 for engineering services to support Jensen ozone generation system rehabilitation.

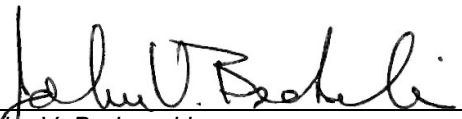
Fiscal Impact: Expenditure of $4.63 million in capital funds. Approximately $1.5 million will be incurred in the current biennium and have been previously authorized.
Business Analysis: This option will enhance the operational reliability of the ozone generation system at the Jensen plant.

Option #2

Do not proceed with the project at this time.
Fiscal Impact: Extended storage cost for pre-purchased equipment
Business Analysis: This option would forgo an opportunity to enhance the operational reliability of the Jensen plant. Ozone PSUs would be replaced individually as they fail. An extended outage of the ozone disinfection system could occur if multiple PSUs were to fail at the same time.

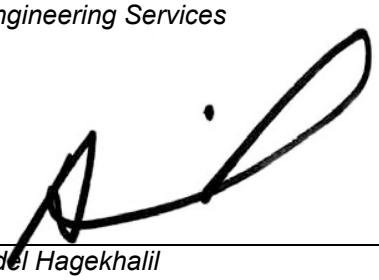
Staff Recommendation

Option #1



10/13/2021

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



10/26/2021

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Abstract of Bids

Attachment 3 – Subcontractors for Low Bidder

Attachment 4 – Location of Map

Ref# es12680571

Allocation of Funds for Jensen Ozone Generation System Rehabilitation

	Current Board Action (Nov. 2021)
Labor	
Studies & Investigations	$ 80,000
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	460,000
Submittals Review & Record Drwgs.	120,000
Construction Inspection & Support	615,000
Metropolitan Force Construction	650,000
Materials & Supplies	20,000
Incidental Expenses	-
Professional/Technical Services	-
CDM Smith	800,000
Right-of-Way	-
Equipment Use	-
Contracts	-
Minako America Corp. dba Minco Construction	1,477,000
Remaining Budget	408,000
Total	**$ 4,630,000**

The total amount expended to date to rehabilitate the Jensen plant's ozone generation system is approximately $5.9 million. The total estimated cost to complete the project, including the amount appropriated to date and funds allocated for the work described in this action is $10.6 million.

The Metropolitan Water District of Southern California

Abstract of Bids Received on September 23, 2021, at 2:00 P.M.

Specifications No. 2001
Jensen Ozone Power Supply Units Replacement

The work consists of removal of five ozone generator power supply units (PSU) and installation of four Metropolitan-furnished PSUs; and removal, modification, or installation of associated electrical power distribution and control system, instrumentation and control equipment, cooling water system, high voltage cables, control and communication modules.

Engineer's estimate: $2,160,000

Bidder and Location	Total	SBE $	SBE %	Met SBE[1]
Minako America Corporation dba Minco Construction Gardena, CA	**$1,477,000**	**$1,477,000**	**100%**	**Yes**

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

The Metropolitan Water District of Southern California

Subcontractors for Low Bidder

Specifications No. 2001
Jensen Ozone Power Supply Units Replacement

Bidder's name: Minako America Corporation dba Minco Construction

Subcontractor and Location
Fire Pro, LLC Whittier, CA
Accessible Consulting Engineers Corona, CA
Rainbow Glazing, Inc. Fullerton, CA

Distribution System
N
CASTAIC LAKE
Foothill Feeder
Jensen Water Treatment Plant
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
SILVERWOOD LAKE
VENTURA COUNTY
LOS ANGELES COUNTY
Upper Feeder
LIVE OAK RESERVOIR
Rialto Pipeline
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

Jensen Ozone Generation System Rehabilitation

Engineering and Operations Committee
Item 7-2
November 8, 2021

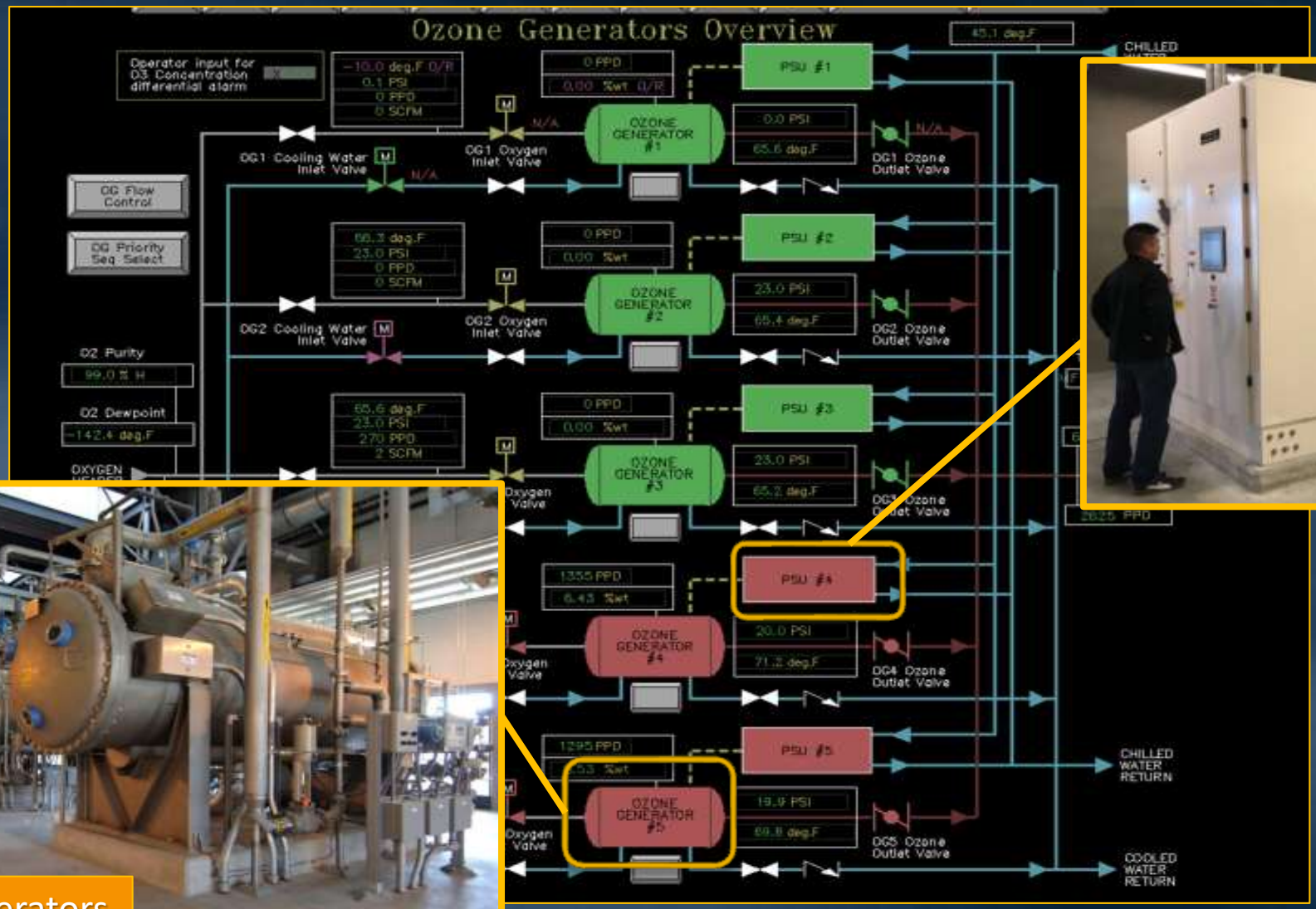
Current Action

- Award a $1,477,000 contract to Minako America Corporation (dba Minco Construction) to replace ozone power supply units at the Jensen plant
- Authorize an agreement with CDM Smith Inc. in amount not to exceed $800,000 for engineering services to support the rehabilitation of the Jensen ozone generation system

Distribution System

Jensen Plant

Jensen Ozone Generation System



Power Supply Unit

Ozone Generators

Jensen Ozone Generation System

Ozone Destruct Units

Nitrogen Compressor

Liquid Oxygen Facility

Ozone System Rehabilitation

- Placed in operation in 2005
- Five ozone generators and power supply units (PSUs) originally installed for 750 mgd – units are obsolete
- PSU replacement
  - Feb. 2020 Board action awarded contract to procure new PSUs & generator dielectrics
  - Custom-designed PSUs
  - Equipment delivery: Dec. 2021

New Power Supply Unit

Jensen Ozone PSU – Components

Disconnect Switch with Fuses

Blowers

Cooling Water & Feed Section

Power Stage

Heat Exchangers

High Voltage Transformer

Alternatives Considered

- Metropolitan forces to replace the PSUs
  - Requires specialized crews & operating equipment
    - Install high-voltage equipment
    - Operate & manage Ozone PSU room's fire alarm & door system
    - Remove & reinstall Ozone building's custom-designed window system
- Selected option
  - Utilize contractor with necessary resources & licenses to perform specialty work

Scope of Work - Contractor

- Remove existing PSUs
- Install Metropolitan-furnished PSUs
- Install associated electrical, instrumentation & control, and communication equipment
- Modify the cooling water system
- Provide support for PSU start-up & testing

Scope of Work

- Metropolitan
  - Install new fiber optic signal wiring and conduit to each PSU
  - Modify plant's SCADA system
  - Coordinate shutdown and tie-in
  - Provide construction inspection & submittal review
  - Provide project mgmt. & contract admin.
- Consultant/Vendor
  - Suez Treatment Solutions (PSU Manufacturer) – Provide start-up, testing & field assistance under existing procurement contract
  - CDM Smith Inc. – Provide support during construction & commissioning; & preparation of record drawings under new agreement

Bid Results

Specifications No. 2001

Bids Received	September 23, 2021
No. of Bidders	1
Sole Bidder	Minako America Corp. dba Minco Construction
Sole Bid	$1,477,000
Engineer's estimate	$2,160,000
SBE Participation*	100%

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

CDM Smith Inc.
New Agreement

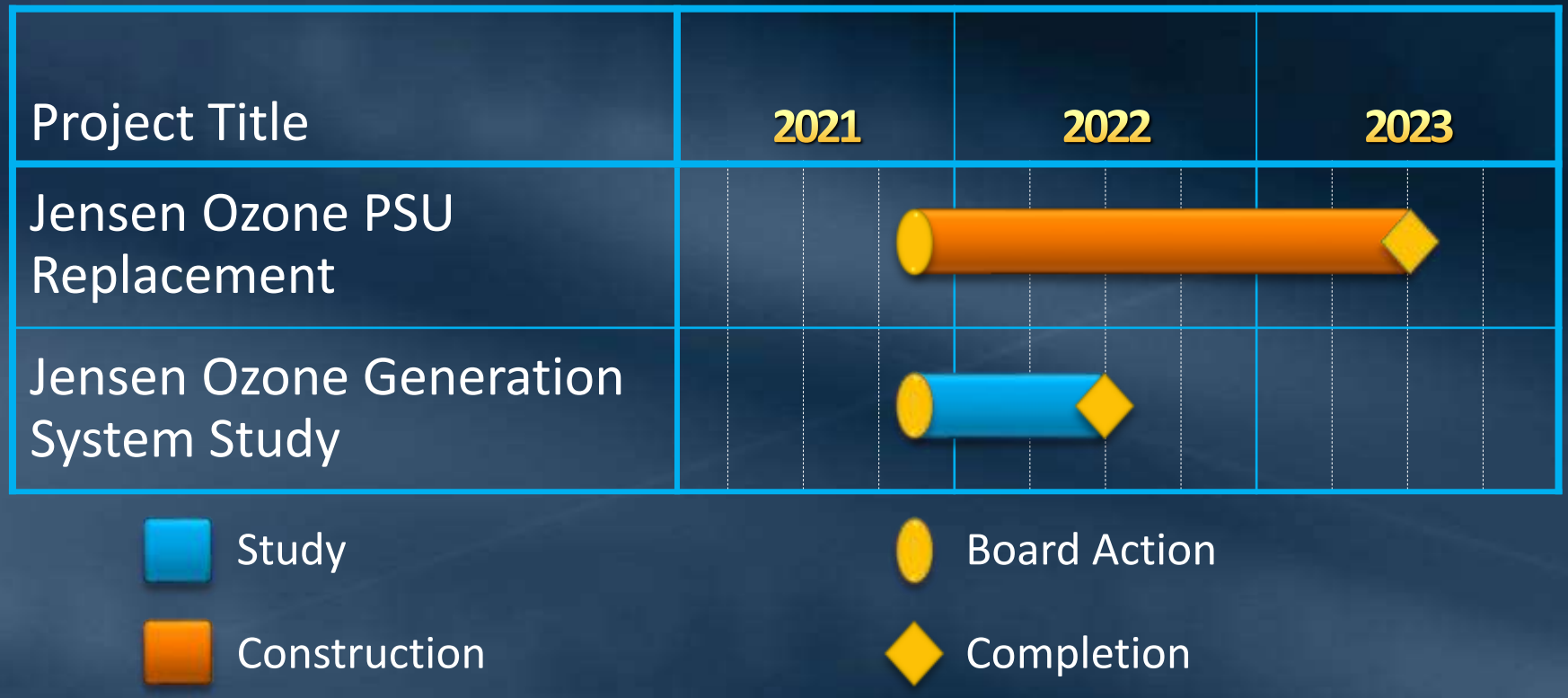
- Prequalified through competitive process via RFQ No. 1215
- Engineer of Record – final design of Jensen Ozone PSU Replacement
- Scope of Work
  - Construction support for Jensen ozone PSU replacement
    - Submittal review & field test data; respond to RFIs; support equipment start-up, testing & commissioning; & prepare record drwgs.
  - Comprehensive assessment of the Jensen ozone system
- SBE participation level: 25%
- NTE amount: $800,000

Allocation of Budgeted Funds

Contract	
Minako America Corp. dba Minco Construction	$1,477,000
Metropolitan Labor	
Studies & Investigations	80,000
Program mgmt. & contract admin.	460,000
Submittal review & record drwgs.	120,000
Construction inspection	615,000
Force construction	650,000
Materials & Supplies	20,000
Professional Services	
CDM Smith Inc.	800,000
Remaining Budget	408,000
Total	$4,630,000

Total Construction Cost: $6.31 M

Project Schedule



Board Options

- Option #1
  a. Award a $1,477,000 contract to Minako America Corporation (dba Minco Construction) for replacement of ozone power supply units at the Jensen plant.
  b. Authorize an agreement with CDM Smith Inc. in the amount not to exceed $800,000 for engineering services to support Jensen ozone generation system rehabilitation.
- Option #2
  - Do not proceed with the project at this time.

Staff Recommendation

- Option #1

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
1928

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

11/9/2021 Board Meeting

7-3

Subject

Award a $9.2 million contract to CSI Electrical Contractors, Inc. for Stage 2 electrical upgrades at the Henry J. Mills Water Treatment Plant; authorize: (1) granting of a permanent easement to Riverside Public Utilities; and (2) an increase of $830,000 to an agreement with Lee & Ro, Inc., for a new not-to-exceed amount of $1,927,000 for engineering support; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

The original electrical components at the Henry J. Mills Water Treatment Plant (Mills plant) were installed in 1978. While they have been maintained over this time, deterioration through long-term use makes them increasingly difficult to maintain and repair. Improved backup capability is needed as failure of a single electrical device or service could impact the treatment plant operation. Additionally, the plant's electrical system is powered by a single electrical feed from the local utility. Implementing this dual-feed electrical supply to the Mills plant is consistent with the approach that has been taken at Metropolitan's other four treatment plants to ensure operational reliability.

This action awards a construction contract for electrical upgrades at the Mills plant to enhance redundancy, safety, and water delivery reliability, and authorizes an amendment to an existing consulting agreement to provide technical support during construction. Staff also recommends granting a permanent easement to Riverside Public Utilities (RPU) on Metropolitan-owned property for installation of a second, incoming 12 kilovolt (kV) electrical service to the Mills plant.

Details

Background

The Mills plant was placed into service in 1978 and is currently rated to treat 220 million gallons per day. The plant normally treats water from the East Branch of the State Water Project and delivers it to two member agencies in Riverside County. The plant is located in the city of Riverside.

The Mills plant receives power from a single 12 kV power line from RPU. The incoming 12 kV power is stepped down to medium voltage (4.16 kV) at the main plant switchgear and is then distributed to unit power centers for further distribution to process equipment. The principal components of the Mills plant's electrical system were installed during the plant's original construction and after more than 40 years of continuous operation have reached the end of their service life. Replacement parts for the existing equipment are no longer manufactured and are difficult to obtain. As the equipment continues to age, its ability to operate in a safe and reliable manner diminishes. Rehabilitating the existing 4.16 kV switchgear will improve the plant's reliability and enhance worker safety. At Metropolitan's other treatment plants, upgrades to each plant's electrical service have been made such that the power utility provides redundant power paths to the water treatment plant. This "dual-feed" electrical supply capability addresses the power utility's need to perform maintenance on its systems, as well as providing an alternative electrical source to the plant in the event that the primary source fails. Providing a backup power source in this manner from RPU will enhance the overall treatment reliability of the Mill's plant, reduce the risk of unplanned electrical outages, and allow Metropolitan and RPU to isolate equipment for required maintenance without impacting water delivery.

In January 2014, Metropolitan's Board authorized final design of the Mills plant's electrical upgrades to replace aging equipment and improve reliability. In August 2017, the Board awarded a construction contract for the Stage 1 electrical upgrades, which replaced obsolete breakers, provided a backup unit power center to critical plant processes, and redistributed power feed to the chemical feed systems. This work was completed in February 2020.

The Stage 2 electrical upgrades will add a second incoming 12 kV service from RPU, reconfigure the existing 4.16 kV switchgear, and replace the standby generator switchgear and the emergency generator programmable logic controller (PLC). These upgrades will provide needed redundancy for critical components of the plant's electrical system. Stage 3 upgrades will install climate controls at electrical buildings, modify electrical accessways, replace digital metering modules for all motor control centers, and add fiber-optic cabling. Final design of the Stage 2 upgrades is now complete, and staff recommends award of a construction contract at this time. Staff will return to the Board to award a construction contract for the Stage 3 electrical upgrades at a later date.

In accordance with the April 2020 action on the biennial budget for Fiscal Years 2020/21 and 2021/22, the General Manager will authorize staff to proceed with the actions described herein, pending board award of the construction contract and authorization of the agreements described below. Based on the current Capital Investment Plan (CIP) expenditure forecast, funds for the work to be performed pursuant to this action during the current biennium are available within the CIP Appropriation for Fiscal Years 2020/2021 and 2021/22 (Appropriation No. 15517). Funds required for work to be performed pursuant to the subject contract after Fiscal Year 2021/22 will be budgeted within the Capital Investment Plan Appropriation for Fiscal Years 2022/23 and 2023/24. This project has been reviewed in accordance with Metropolitan's CIP prioritization criteria and was approved by Metropolitan's CIP evaluation team to be included in the Treatment Plant Reliability Program.

Mills Electrical Upgrades, Stage 2 – Construction

The scope of the construction contract for the Stage 2 electrical upgrades at the Mills plant includes reconfiguration of the plant's 4.16kV main switchgear and replacement of the standby generator switchgear; replacement of existing emergency generator control panels and generator PLC; and expansion of the existing switchgear building to accommodate the new equipment. The contract includes milestones and constraints to minimize disruption to the operating treatment facilities during construction. All work will be sequenced in coordination with plant operations and outage schedules.

Metropolitan force construction will include Supervisory Control and Data Acquisition (SCADA) system integration, equipment start-up and testing, installation of temporary electrical systems, and electrical system shutdowns and switchovers. Three full-plant shutdowns and at least 15 partial outages of unit power centers, motor control centers, and electrical panels are needed to switch over to the new electrical equipment. During these outages, Metropolitan staff will de-energize the plant's 4.16 kV electrical equipment while the contractor upgrades the plant's main switchgear and standby generator switchgear.

A total of $17.2 million is required for this work. Besides the amount of the contract and $270,400 for RPU to complete the second 12 kV incoming service, other allocated funds include $1,989,000 for Metropolitan force construction, as described above; $265,000 for materials used for Metropolitan force activities, such as the remote terminal units for SCADA system integration and hookups for temporary generators; $1,630,000 for construction management and inspection; $595,000 for submittals review and record drawing preparation by Metropolitan staff; $830,000 for technical support during construction by the design firm, Lee & Ro, Inc., as discussed below; $1,100,000 for contract administration, environmental monitoring, permitting, and project management; and $1,320,600 for the remaining budget.

Award of Construction Contract (CSI Electrical Contractors, Inc.)

Specification No. 1990 for Stage 2 electrical upgrades at the Mills plant was advertised for bids on August 5, 2021. As shown in **Attachment 2**, two bids were received and opened on September 15, 2021. The low bid from CSI Electrical Contractors, Inc. in the amount of $9,200,000 complies with the requirements of the specifications. The other bid was $11.59 million, while the engineer's estimate was $10.1 million. For this contract, Metropolitan established a Small Business Enterprise (SBE) participation level of at least 25 percent of

the bid amount. CSI Electrical Contractors, Inc. is committed to meet this level of participation. The subcontractors for this contract are listed in **Attachment 3**.

This action awards a $9.2 million contract to CSI Electrical Contractors, Inc. to construct Stage 2 electrical upgrades at the Mills plant.

As described above, construction management and inspection will be performed by Metropolitan staff. Based on historical experience with electrical upgrade projects at Metropolitan's other water treatment plants, planning and execution of plant shutdowns require extensive interaction and close coordination between Metropolitan inspectors, operation staff, and the contractor. As three around-the-clock full-plant shutdowns and more than fifteen partial outages are required to complete this construction, the performance metric goal for inspection for this project is approximately 13.9 percent of the total construction cost. Engineering Services' performance metric target range for inspection of projects with construction greater than $3 million is 9 to 12 percent. The total cost of construction for this project is $11.72 million, which includes the total contract amount ($9.2 million for CSI and $270,400 for RPU) and Metropolitan force activities ($2.254 million).

Grant of a Permanent Easement to Riverside Public Utilities

A new installation service agreement with RPU to provide utility services to the Mills plant will be executed under the General Manager's authority within Metropolitan's Administrative Code (Section 8122, paragraph d, "Contracts for Utility Services"). Under this agreement, RPU will design all transmission facilities, construct approximately 600 feet of 12 kV transmission line, and energize the service. The estimated cost for RPU to deliver a new utility power to the Mills plant is $270,400.

RPU will own and operate the transmission system that extends utility power to the Mills plant. As a result, Metropolitan must grant a permanent easement to RPU on Metropolitan-owned property for installation of the 12 kV electrical service and RPU-furnished equipment inside the outdoor high-voltage switchyard. Staff has determined that the easements will not interfere with Metropolitan's operational activities. The easement is subject to Metropolitan's paramount rights and is terminable if RPU discontinues use of the property. Design and construction plans for the planned improvements within the easement area are subject to Metropolitan's prior review and approval. Board authorization for the permanent easement is required because the term of the real property interest to be conveyed exceeds five years and does not contain Metropolitan's standard conditions for easement.

This action would authorize the General Manager to grant a permanent easement to RPU to extend a second incoming 12 kV service to the Mills plant. The requested easement would accommodate Metropolitan's key project objectives to improve power reliability at the Mills plant by providing RPU with easement rights to access and maintain its electrical equipment.

Technical Support During Construction (Lee & Ro, Inc.) – Amendment to Agreement

Lee & Ro, Inc. performed final design of Stage 2 electrical upgrades under a board-authorized agreement. As the engineer of record, Lee & Ro, Inc. is recommended to provide technical support during the construction phase of the project. Planned activities include responding to requests for information from the contractor; advising staff on technical issues as they may arise; and assisting with start-up and testing.

This action authorizes an increase of $830,000 to an existing agreement with Lee & Ro, Inc., for a new not-to-exceed total of $1,927,000 to provide technical support during construction of Stage 2 electrical upgrades at the Mills plant. For this agreement, Metropolitan established a SBE participation level of 25 percent. Lee & Ro, Inc. is an SBE firm, and thus achieves 100 percent SBE participation for this work. The sole subconsultant planned for this agreement is Swift Lee Office.

Alternatives Considered

Early in the design process, staff considered completing all electrical work under one large construction contract. However, this approach required an extended design period, which would have delayed critical work and impacted plant operations. Instead of one contract, the upgrades have been prioritized and staged into smaller work packages. The first stage contract addressed critical electrical system components such as obsolete breakers that were nearing the end of their service life, provided a backup unit power center, and redistributed the power feed to chemical feed systems and pumps. The second stage contract, which is the subject of this action, will

improve redundancy and reliability of the plant by adding a second incoming 12 kV service from RPU and upgrading the plant's main switchgear and standby generator switchgear. The Stage 3 upgrade contract will install climate controls at electrical buildings, modify electrical accessways, replace digital metering modules for all MCCs, and add fiber-optic cabling for improved monitoring. The selected alternative will expedite completion of the most critical work and reduce impact to plant operations.

Summary

This action awards a $9.2 million contract to CSI Electrical Contractors, Inc. for the Stage 2 electrical upgrades at the Mills plant and authorizes an increase to an agreement with Lee & Ro, Inc. for technical support. See **Attachment 1** for the Allocation of Funds; **Attachment 2** for the Abstract of Bids; **Attachment 3** for the listing of Subcontractors for Low Bidder; and **Attachment 4** for the Location Map. The action also authorizes the granting of a permanent easement to Riverside Public Utilities for installation of a second, incoming 12 kV electrical service to the Mills plant.

Project Milestone

December 2024 – Completion of construction for Mills Plant Stage 2 electrical upgrades

Policy

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

Metropolitan Water District Administrative Code Section 8122(d): Contracts for Utility Services

Metropolitan Water District Administrative Code Section 8230: Grants of Real Property Interests

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

By Minutes Item 49644, dated January 2014, the Board authorized final design of the initial stage of electrical upgrades at the Mills plant.

By Minute Item 51963, dated April 14, 2020, the Board appropriated a total of $500 million for projects identified in the Capital Investment Plan for Fiscal Years 2020/21 and 2021/22.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed actions are categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed actions include the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving no expansion of existing or former use. In addition, the proposed actions involve the replacement or reconstruction of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have substantially the same purpose and capacity as the structure replaced. The proposed actions also include the construction and location of limited numbers of new, small facilities or structures; installation of small new equipment and facilities in small structures; and the conversion of existing small structures from one use to another where only minor modifications are made in the exterior of the structure. Further, the proposed actions involve minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, or scenic trees. Accordingly, the proposed actions qualify under Class 1, Class 2, Class 3, and Class 4 Categorical Exemptions (Sections 15301, 15302, 15303, and 15304 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

Board Options

Option #1

a. Award a $9.2 million contract to CSI Electrical Contractors, Inc. for Stage 2 electrical upgrades at the Mills plant.
b. Authorize the General Manager to grant permanent easement to Riverside Public Utilities.
c. Authorize an increase of $830,000 to the agreement with Lee & Ro, Inc. for a new not-to-exceed amount of $1,927,000.

Fiscal Impact: Expenditure of $17.2 million in capital funds. Approximately $6 million will be incurred in the current biennium and have been previously authorized.
Business Analysis: This option will enhance the reliability and operating efficiency of the Mills plant.

Option #2

Do not proceed with the project at this time.
Fiscal Impact: None
Business Analysis: This option would forego an opportunity to enhance the operational reliability and worker safety and reduce the risk of unplanned outages at the Mills plant.

Staff Recommendation

Option #1

10/14/2021
John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

10/25/2021
Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Abstract of Bids

Attachment 3 – Subcontractors for Low Bidder

Attachment 4 – Location Map

Ref# es12682932

Allocation of Funds for Mills Electrical Upgrades, Stage 2

	Current Board Action (Nov. 2021)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt., envir. monitoring, & contract admin.)	1,100,000
Submittals Review & Record Drwgs.	595,000
Construction Inspection & Support	1,630,000
Metropolitan Force Construction	1,989,000
Materials & Supplies	180,000
Incidental Expenses	85,000
Professional/Technical Services	-
Lee & Ro, Inc.	830,000
Right-of-Way	-
Equipment Use	-
Contracts	-
CSI Electrical Contractors, Inc.	9,200,000
Riverside Public Utiltities	270,400
Remaining Budget	1,320,600
Total	**$ 17,200,000**

The total amount expended to date on the Mills Electrical Upgrades, Stage 2 is approximately $1.3 million. The total estimated cost to complete the Stage 2 electrical upgrades, including the amount appropriated to date and current funds requested, is approximately $18.5 million.

The Metropolitan Water District of Southern California

Abstract of Bids Received on September 15, 2021 at 2:00 P.M.

Specifications No. 1990
Mills Electrical Upgrades, Stage 2

The work consists of adding supporting infrastructure for an incoming 12kV service; upgrading the plant's 4,160V main switchgear and replacing the standby generator switchgear; replacing existing emergency generator control panels and generator PLC; installing new conduits, ductbanks and access holes; and expanding the switchgear building.

Engineer's estimate: $10,100,000

Bidder and Location	Total	SBE Amount	SBE %	Met SBE[1]
CSI Electrical Contractors, Inc. Santa Fe Springs, CA	**$9,200,000**	**$2,321,810**	**25%**	**Yes**
Helix Electric, Inc. San Diego, CA	$11,590,000	-	-	-

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

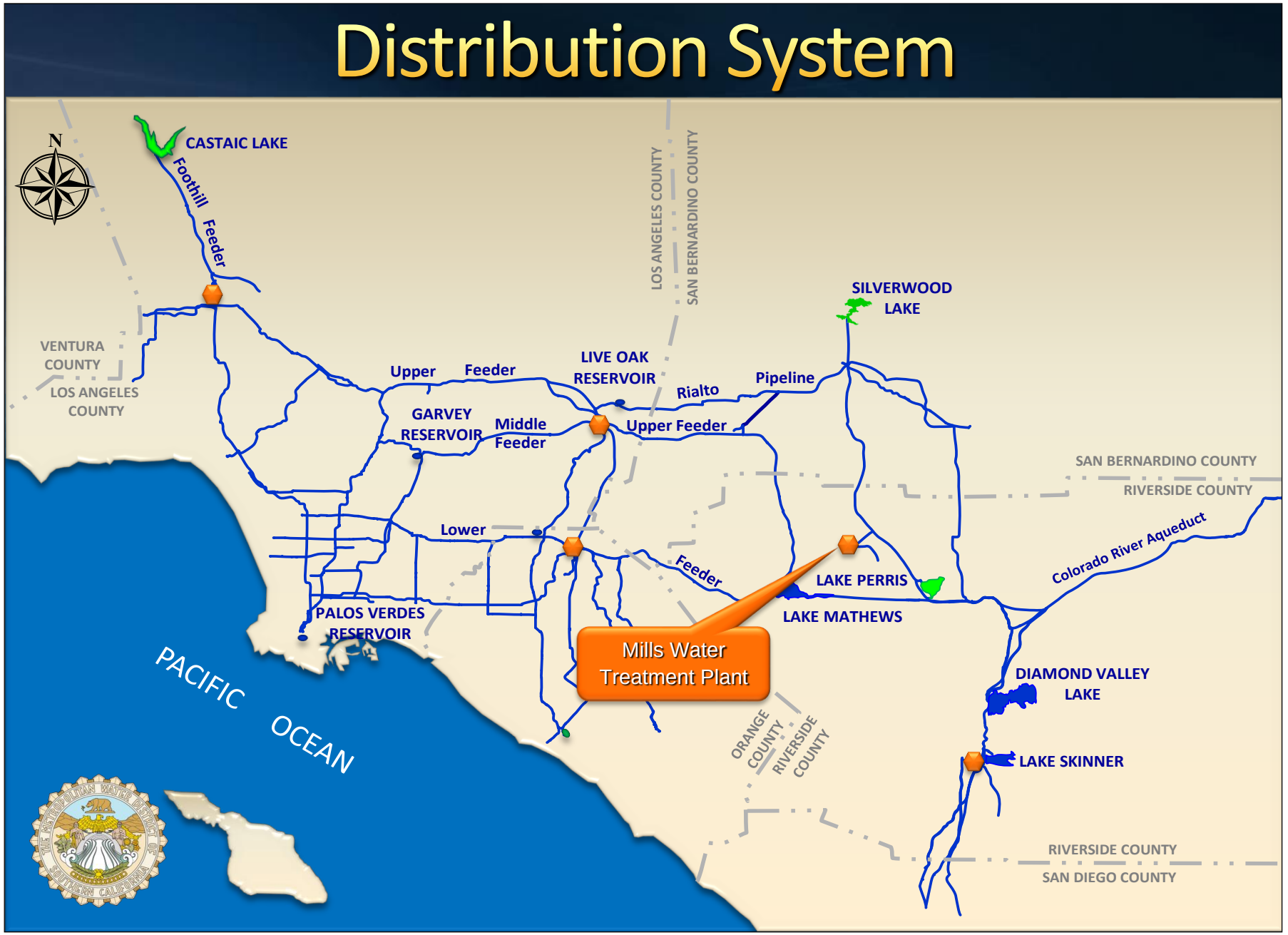
The Metropolitan Water District of Southern California

Subcontractors for Low Bidder

Specifications No. 1990
Mills Electrical Upgrades, Stage 2

Low bidder: CSI Electrical Contractors, Inc.

Subcontractor and Location
Pyramid Building & Engineering Hesperia, CA
Industrial High Voltage Torrance, CA
Castlerock Environmental Inc. Santa Fe Springs, CA
HALCO Testing Services Los Angeles, CA
Johnson Controls Fire Protection Santa Fe Springs, CA


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

Mills Plant Electrical Upgrades

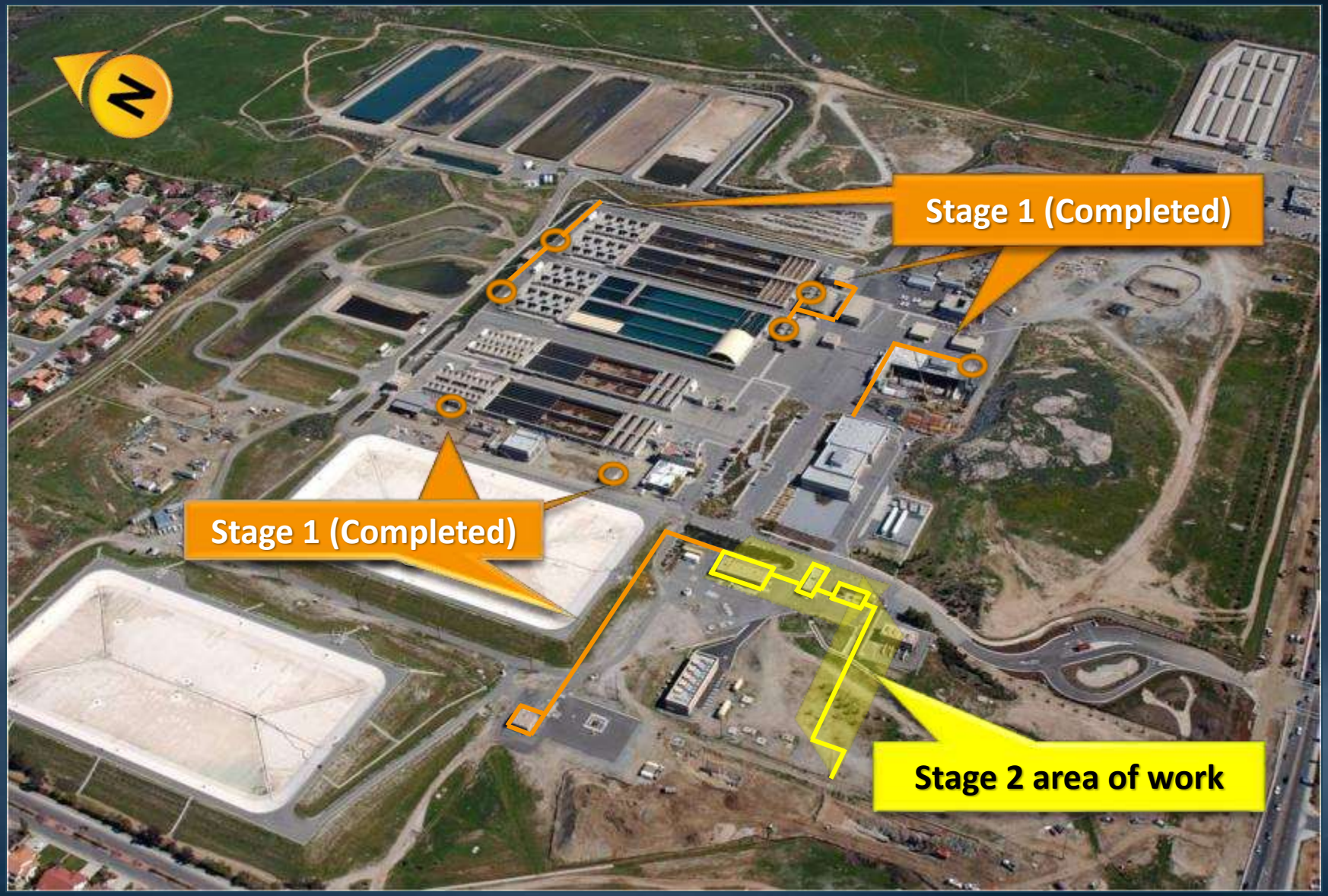
Engineering and Operations Committee
Item 7-3
November 8, 2021

Current Action

- Award a $9.2 million contract to CSI Electrical Contractors, Inc. for Stage 2 electrical upgrades at the Mills plant
- Authorize granting of a permanent easement to Riverside Public Utilities
- Authorize an increase of $830,000 to an agreement with Lee & Ro, Inc., for a new not-to-exceed amount of $1,927,000

Distribution System

Mills Plant



Electrical Upgrades

- Background
  - Aging equipment difficult to maintain & repair
  - Plant's electrical system is powered by a single electrical feed from the local utility
  - Plant vulnerable to shutdown caused by single point of failure
- Objectives
  - Improve reliability & safety
  - Replace aging equipment
  - Provide backup systems

Mills Plant Existing RPU High-Voltage Switchyard

Jensen Plant Switchyard Repair - Example

Alternatives Considered

- Complete all electrical work under one large construction contract
  - Extended design period which would have delayed critical work and impact plant operations
- Selected alternative
  - Staged contracts expedited completion of the most critical work and reduced impact to plant operations

Scope of Work – Contractor/Utility

- CSI Electrical Contractors, Inc.
  - Expand existing high-voltage switchyard & switchgear building
  - Expand and reconfigure plant's 4.16 kV main switchgear
  - Replace standby generator switchgear
  - Install ductbanks & accessways
- Riverside Public Utilities (RPU)
  - Install RPU-furnished equipment inside the outdoor high-voltage switchyard
  - Energize a second incoming 12 kV electrical service to the Mills plant

Jensen Plant Switchgear Building - Example

Scope of Work – Metropolitan

- Provide field inspection, coordinate shutdown & utility power outages
- Perform SCADA system integration
- De-energize equipment for shutdowns, testing & switchover
- Keep plant in service by temporary electrical systems

Testing & Switchover

SCADA Testing

Temporary Power

Existing Agreement – Lee & Ro, Inc.

- Competitively Selected & Engineer of Record
- Scope of Work
  - Review submittals
  - Respond to RFIs
  - Prepare record drawings
- SBE/DVBE participation level - 100%
- Increased amount - $830,000
- NTE - $1.927 M

Bid Results

Specifications No. 1990

Bids Received	September 15, 2021
No. of Bidders	2
Low Bidder	CSI Electrical Contractors, Inc.
Low Bid	$9,200,000
Other Bid	$11,590,000
Engineer's estimate	$10,100,000
SBE Participation*	25%

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

Agreement with Riverside Public Utilities (RPU)

- Metropolitan Board Approval Required for Easement
  - Real property interest to be conveyed exceeds five years & does not contain Metropolitan's standard conditions for easement
  - Provide easement rights to access, install, & maintain electrical equipment
- Installation of Second 12kV Electrical Service
  - RPU agreement amount: $270,400
  - All customer-requested improvements are performed via a project-specific contract

Allocation of Budgeted Funds

Contracts/Agreements	
CSI Electrical Contractors, Inc.	$9,200,000
Riverside Public Utilities	270,400
Metropolitan Labor	
Construction inspection	1,630,000
Force construction	1,989,000
Submittals review & record drwgs.	595,000
Program mgmt. & contract admin.	1,100,000
Professional Services	
Lee & Ro, Inc.	830,000
Materials & Equipment	265,000
Remaining Budget	1,320,600
	Total: $17,200,000

Total construction cost: $11.72 M

Project Schedule

Board Options

- Option #1
  a. Award a $9.2 million contract to CSI Electrical Contractors, Inc. for Stage 2 electrical upgrades at the Mills plant.
  b. Authorize the General Manager to grant permanent easement to Riverside Public Utilities.
  c. Authorize an increase of $830,000 to the agreement with Lee & Ro, Inc. for a new not-to-exceed amount of $1,927,000.
- Option #2
  - Do not proceed with the project at this time.

Staff Recommendation

- Option #1

THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

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

11/9/2021 Board Meeting

7-4

Subject

Adopt the CEQA determination that the proposed action has been previously addressed in the certified 2015 Final EIR and related CEQA documents; and award a $6,044,896.76 procurement contract to Northwest Pipe Company for steel pipe to rehabilitate a portion of the Etiwanda Pipeline

Executive Summary

Internal inspections of the Etiwanda Pipeline have identified that approximately 40 percent of the cement mortar lining in the northern portion of the pipeline has fallen off or become delaminated from the steel pipe cylinder. A three-stage approach to relining the pipeline was implemented, with Stage 1 completed in December 2014 and Stage 2 in March 2017. Installation of steel liner pipe is required to rehabilitate the remaining portions of the pipeline under Stage 3 of this project. To achieve the planned construction schedule of mid-2022, staff recommends awarding a procurement contract for 1,300 feet of steel liner pipe at this time. This procurement contract award will ensure the timely fabrication and delivery of the pipe for the upcoming construction contract to rehabilitate the final section of the Etiwanda Pipeline.

Details

Background

The Etiwanda Pipeline, constructed in 1993, conveys untreated water from the Rialto Pipeline to the Upper Feeder by way of the Etiwanda Power Plant. The northern reach of this 6.4 mile-long, 144-inch diameter pipeline, conveys high-pressure water approximately 5.4 miles to the Etiwanda Power Plant. From the power plant, the southern portion of the line continues for one mile to an interconnection with the Upper Feeder. The pipeline is located within the cities of Fontana and Rancho Cucamonga.

The Etiwanda Pipeline allows Metropolitan to generate power from the high-pressure flows available in the northern portion of the line. Under peak flow conditions, annual revenues from the Etiwanda Power Plant have reached $8.3 million. The Etiwanda Pipeline also provides flexibility in conveying untreated water from the East Branch of the State Water Project to the F. E. Weymouth Water Treatment Plant.

During an internal inspection conducted in 2008, staff discovered that approximately 40 percent of the northern portion of the line has missing or delaminated mortar lining. The mortar lining provides a protective barrier to the steel pipe sections and effectively eliminates internal corrosion of the steel. At the present time, the structural integrity of the pipeline remains sound; however, the loss of mortar lining has exposed the pipeline to accelerated rates of corrosion to the interior portions of the steel pipe.

Staff and third-party pipeline experts conducted extensive investigations into the cause of the lining damage. The primary cause is believed to be the daily internal pressure fluctuation within the pipeline resulting from power generation at the Etiwanda Power Plant. This fluctuation of internal pressure likely produced stress cracking in the mortar lining. In addition, the seasonal variation in availability of State Water Project supplies resulted in prolonged periods when the pipeline was removed from service, creating drying and shrinkage cracks which exacerbated the situation. For this application, staff determined that the most reliable, cost-effective approach was removal of the mortar coating, rehabilitation of the steel pipe cylinder where needed, and application of a polyurethane lining.

In 2009, Metropolitan initiated a three-stage approach to relining the Etiwanda Pipeline. The first stage of relining construction, covering a 2,800-foot portion of the pipeline, was completed in December 2014. In June 2015, Metropolitan's Board authorized final design of the remaining two stages of relining, certified the final EIR for the project, and adopted a Mitigation Monitoring and Reporting Program (MMRP) for the work. The second stage of relining construction, covering an additional 13,200-foot portion of the pipeline, was completed in March 2017. The third and final stage also has a total length of approximately 13,200 feet. While the earlier relining efforts were able to proceed with only moderate weld repairs of the steel pipeline itself, inspections have shown that the third stage has significant corrosion and will require the installation of approximately 1,300 feet of new internal steel pipe in addition to polyurethane lining of the entire length.

Design activities for the Stage 3 relining contract is scheduled to be completed in early 2022. Staff recommends moving forward with pipe procurement at this time in order to receive delivery of the new steel liner in time for installation during a planned 2022 shutdown of the pipeline. Construction will involve installing the steel liner that is the subject of this board action and will be awarded under a future board action in 2022.

In accordance with the April 2020 action on the biennial budget for Fiscal Years 2020/21 and 2021/22, the General Manager will authorize staff to proceed with the procurement of steel liner pipe to rehabilitate a portion of the Etiwanda Pipeline, pending board award of the procurement contract described below. Based on the current CIP expenditure forecast, funds for the work to be performed pursuant to the subject contracts during the current biennium are available within the Capital Investment Plan Appropriation for Fiscal Years 2020/21 and 2021/22 (Appropriation No. 15521). Funds required for work to be performed pursuant to the subject contract after Fiscal Year 2021/22 will be budgeted within the Capital Investment Plan Appropriation for Fiscal Years 2022/23 and 2023/24. This project has been reviewed in accordance with Metropolitan's CIP prioritization criteria and was approved by Metropolitan's CIP evaluation team to be included in the Distribution System Reliability Program.

Etiwanda Pipeline Relining, Stage 3 – Procurement

The scope of the procurement contract includes furnishing 1,300 feet of 136-inch to 145-inch-diameter welded steel pipe, associated fittings, and accessories.

A total of $6,800,000 is required to perform this work. In addition to the amount of the contract, the allocated funds include $259,000 for factory fabrication inspection and functional testing; $67,000 for Metropolitan force to receive, offload, and place steel pipe for storage at the Etiwanda Reservoir; $64,000 for submittals review, technical support, and responding to manufacturer requests for information; $95,000 for contract administration and project management; and $270,103.24 for remaining budget.

Attachment 1 provides the allocation of required funds. The total estimated cost to complete Stage 3 of the Etiwanda Pipeline Relining, including the amount appropriated to date, funds allocated for the work described in this action, and all future actions, is expected to range between $28.5 million and $30.0 million. Approximately $275,000 has been expended to date on Stage 3 of the Etiwanda Pipeline Relining.

Award of Procurement Contract (Northwest Pipe Company)

Specifications No. 2011 for furnishing 1,300 feet of welded steel pipe and fittings to rehabilitate a portion of the Etiwanda Pipeline was advertised for bids on September 9, 2021. As shown in **Attachment 2**, two bids were received and opened on October 13, 2021. Due to the specialized nature and the limited number of pipe fabricators, no Small Business Enterprise participation level was established for this contract. The bid from Northwest Pipe Company in the amount of $6,044,896.76, 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 a survey of vendors, ranged from $3.2 million to $3.6 million. Staff investigated the difference between the budgetary range estimate and the low bid. The key differences are attributed to increased costs for steel due to global shortages and supply chain issues, compounded by high demand for pipe in the country, which limited contractor bids. Proceeding with a contract at this time will enable completion of the final stage of the Etiwanda Pipeline rehabilitation with minimal operational impacts, despite a prolonged shutdown, as a result of an anticipated low State Water Project allocation.

This action awards a $6,044,896.76 procurement contract to Northwest Pipe Company to furnish 1,300 feet of welded steel pipe and fittings to rehabilitate a portion of the Etiwanda Pipeline.

Alternatives Considered

During planning and design of this project, staff considered rehabilitating the deteriorated, thinner-walled portions of the Etiwanda Pipeline with multiple steel plates welded to the pipeline. This approach would reinforce the pipeline, but heat from welding numerous steel plates to the pipe would likely damage the pipe's exterior coating. Also, placing and welding heavy steel plates would be more difficult and take more time to construct than installing full sections of steel pipe, resulting in a longer shutdown period and higher costs. The installation of welded steel pipe was selected as the recommended means to protect the Etiwanda Pipeline, since it is a proven method to reliably, efficiently, and cost-effectively rehabilitate damaged portions of pipeline.

Staff also considered having the contractor fabricate and install the steel liner as part of their overall construction contract. A thorough analysis of the overall project schedule indicated that the steel pipe fabrication would increase the contract length and impact shutdown logistics. The recommended action allows Metropolitan to procure the steel pipe in a timely manner and complete the project in late-2022.

Summary

This action awards a procurement contract to Northwest Pipe Company, in an amount not to exceed $6,044,896.76 to furnish 1,300 feet of welded steel pipe and fittings to rehabilitate a portion of the Etiwanda Pipeline. See **Attachment 1** for the Allocation of Funds, **Attachment 2** for the Abstract of Bids, and **Attachment 3** for the Location Map.

Project Milestones

April 2022 – Board award of steel pipe installation contract

May 2022 – Delivery of steel pipe

Policy

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

Metropolitan Water District Administrative Code Section 8140: Competitive Procurement

By Minute Item 50154, dated June 9, 2015, the Board authorized final design to rehabilitate the Etiwanda Pipeline.

By Minute Item 51963, dated April 14, 2020, the Board appropriated a total of $500 million for projects identified in the Capital Investment Plan for Fiscal Years 2020/21 and 2021/22.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The environmental effects of the funding, design, construction and operation of the proposed project were evaluated in the Etiwanda Pipeline North Relining Project Final Environmental Impact Report (SCH No. 2014081047), which was certified by the Board on June 9, 2015. The Board also adopted the Findings of Fact (Findings), the Statement of Overriding Considerations, the MMRP, and the project itself. The procurement contract would not result in significant adverse impacts beyond those impacts already disclosed in the Final EIR. Hence, the previous environmental documentation acted on by the Board in conjunction with the proposed action fully complies with CEQA and the State CEQA Guidelines. Accordingly, no further CEQA documentation is necessary for the Board to act on the proposed action.

CEQA determination for Option #2:

None required

Board Options

Option #1

Award a $6,044,896.76 contract to Northwest Pipe Company to furnish 1,300 feet of welded steel pipe and fittings to rehabilitate a portion of the Etiwanda Pipeline.

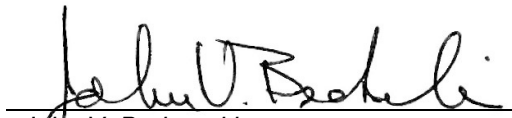
Fiscal Impact: Expenditure of $6.8 million in capital funds. Approximately $2,500,000 will be incurred in the current fiscal year and has been previously authorized.
Business Analysis: This option will improve the operational reliability of the Etiwanda Pipeline.

Option #2

Do not proceed with this project at this time.
Fiscal Impact: None
Business Analysis: This option will forego an opportunity to improve the operational reliability of the Etiwanda Pipeline, which may lead to costly urgent repairs.

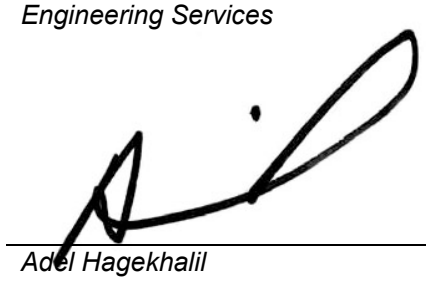
Staff Recommendation

Option #1



10/14/2021

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



10/25/2021

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Abstract of Bids

Attachment 3 – Location Map

Ref# es12682815

Allocation of Funds for Etiwanda Pipeline Relining Stage 3

	Current Board Action (Nov. 2021)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	95,000
Submittals Review & Record Drwgs.	64,000
Fabrication Inspection & Support	259,000
Metropolitan Force Construction	67,000
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Equipment Use	-
Contracts	-
Northwest Pipe Company	6,044,896.76
Remaining Budget	270,103.24
Total	**$ 6,800,000**

The total amount expended to date for Phase 3 relining of the Etiwanda Pipeline is approximately $275,000. The total estimated cost to complete this project, including the amount appropriated to date, funds allocated for the work described in this action, and future construction costs are anticipated to range from $28.5 million to $30.0 million.

The Metropolitan Water District of Southern California

Abstract of Bids Received on October 13, 2021 at 2:00 P.M.

Specifications No. 2011

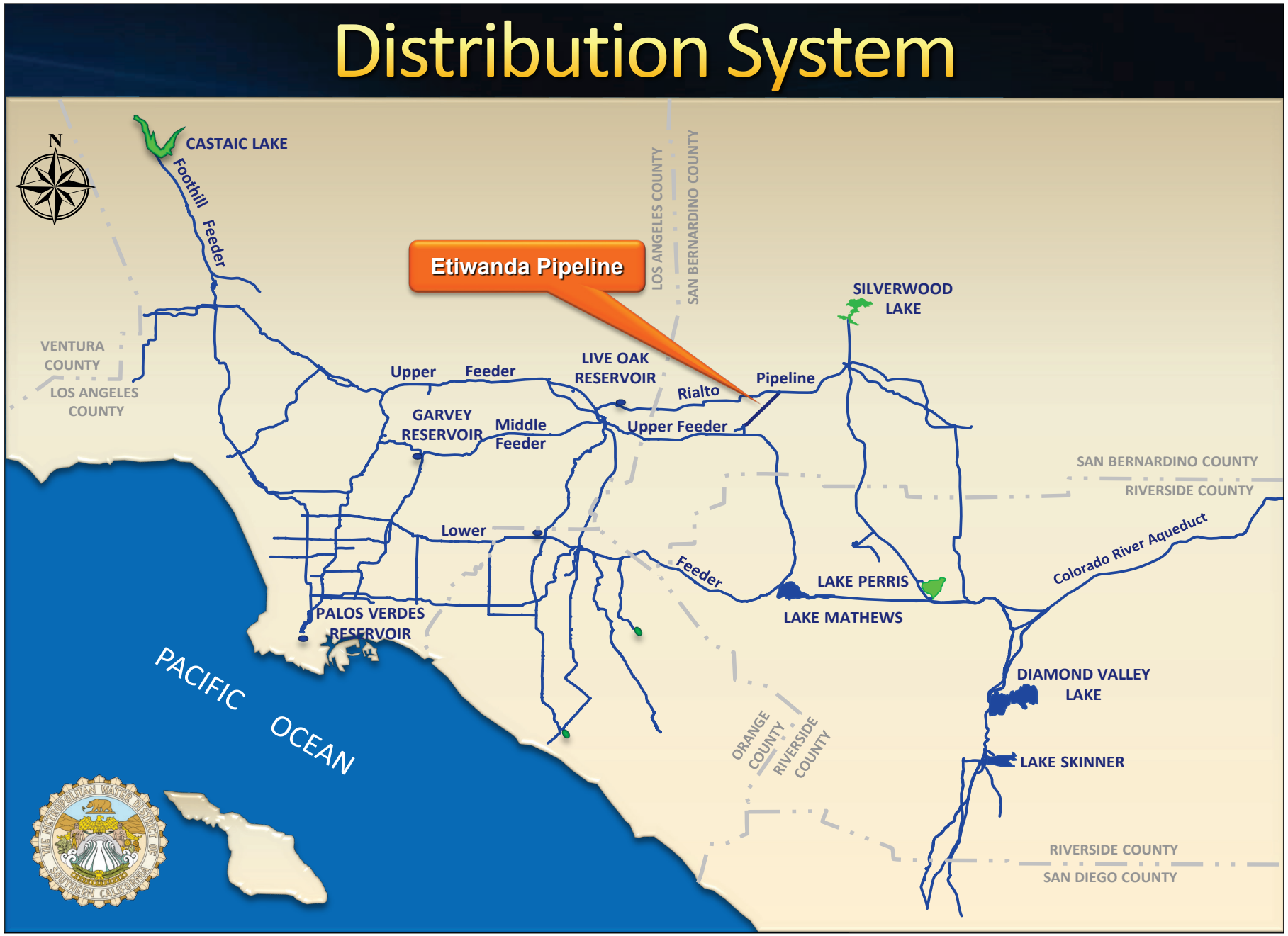
Etiwanda Pipeline Relining, Stage 3

The work consists of furnishing 1,300 feet of 136-inch to 145-inch diameter steel pipe to rehabilitate a portion of the Etiwanda Pipeline.

Budgetary estimate: $3.2 million to $3.6 million

Bidder and Location	Total[1]
Northwest Pipe Company Adelanto, Ca	$6,044,896.76
TPG Pressure, Inc. dba Thompson Pipe Group Pressure Grand Prairie, TX	$12,072,944.00

[1] A SBE (Small Business Enterprise) participation level was not established for this contract.


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

Etiwanda Pipeline Relining

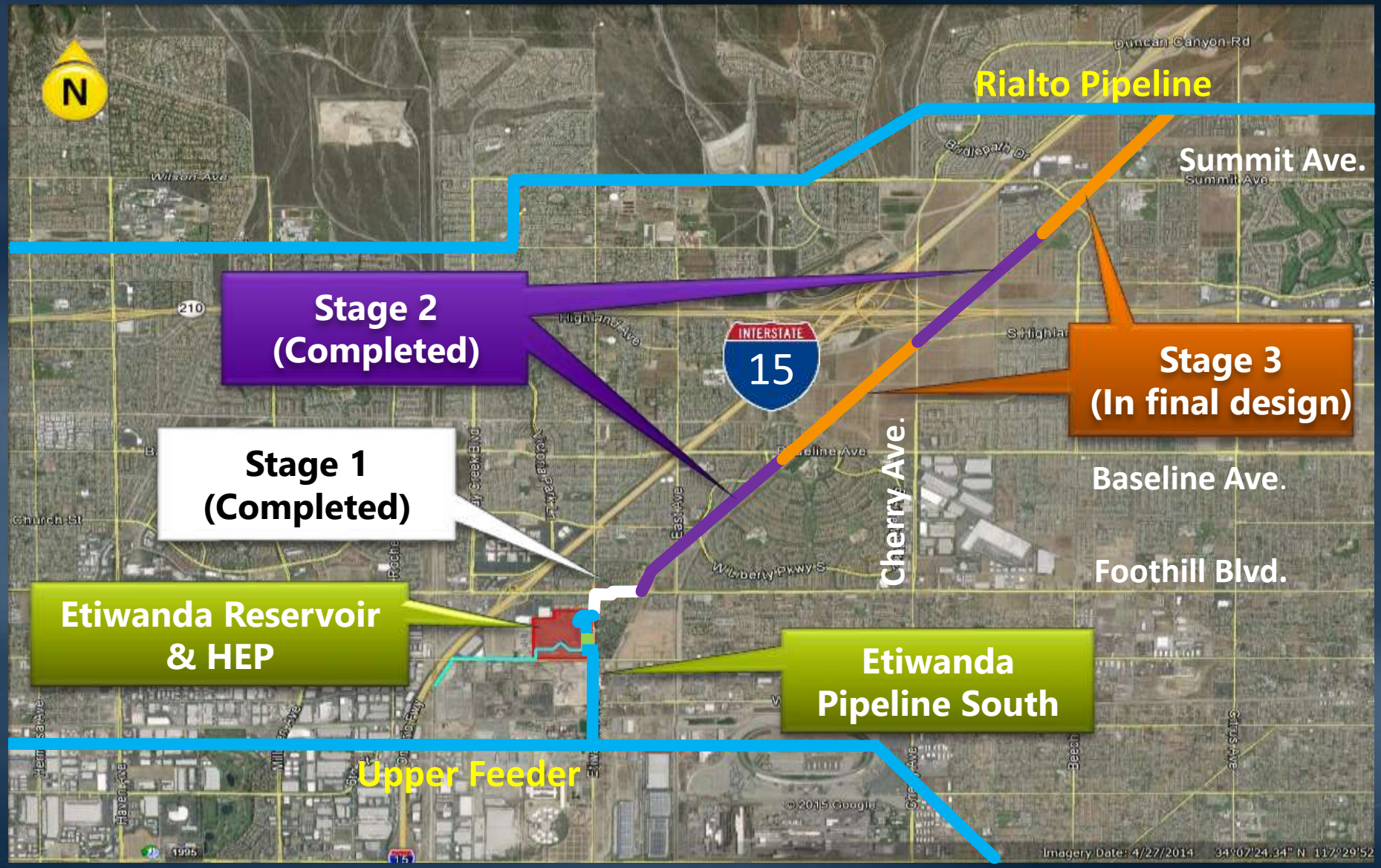
Engineering and Operations Committee
Item 7-4
November 8, 2021

Current Action

- Award a $6,044,896.76 procurement contract to Northwest Pipe Company for steel pipe to rehabilitate a portion of the Etiwanda Pipeline

Distribution System

Location Map



Background

- Etiwanda Pipeline – 144-inch diameter steel pipe
- Pipeline operations
  - Extreme fluctuating pressures
  - Long periods of dryness
- Inspections – Approximately 40% of mortar lining had fallen or delaminated from pipe
- Investigations determined pipeline structurally sound, however vulnerable to accelerated corrosion

Pipe Corrosion

Polyurethane Lining

Etiwanda Pipeline – Stage 3

- Relines 2.5 miles of pipeline divided into two 1.25-mile-long segments
- Reline with polyurethane coating
- Install up to 1,300 feet of new steel liner in significantly corroded area
- Current Action – award pipe fabrication contract
- Design for construction contract is underway

Removing Mortar Lining

Applying Polyurethane Lining

Alternatives Considered

- Installation Contractor Supplies Pipe
  - Increases contract duration by up to 7 months
  - Limits flexibility to schedule the rehabilitation work
- Selected Alternative - Metropolitan supplies pipe
  - Provides pipe in a timely manner
  - Provides flexibility to schedule award of follow-on construction contract based on SWP supply availability

Scope of Work

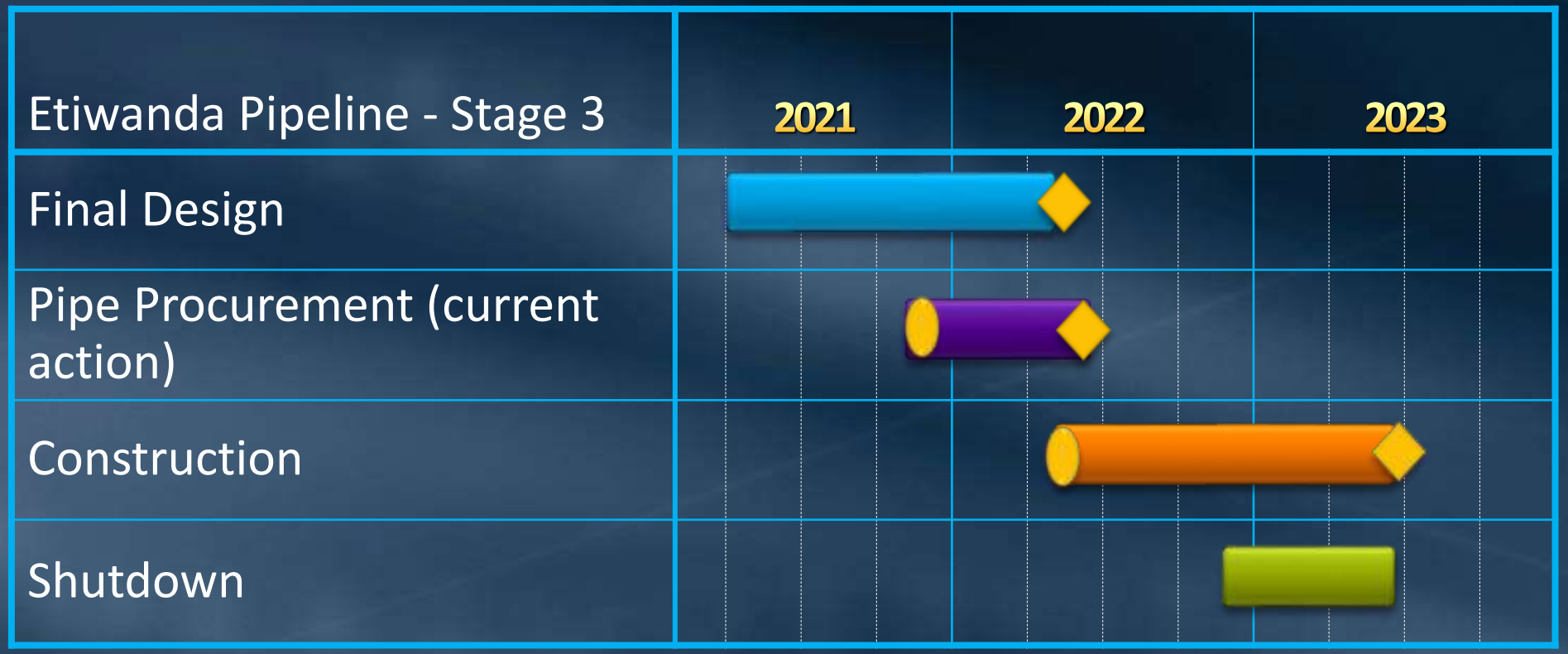
- Contractor
  - Furnish 1,300 feet of steel pipe
  - Deliver pipe to Etiwanda Reservoir
- Metropolitan
  - Submittal review
  - Factory fabrication inspection
  - Off-load and store pipe
  - Contract administration & project management

Bid Results

Specifications No. 2011

Bids received:	October 13, 2021
No. of bidders:	2
Low bidder:	Northwest Pipe Company
Low bid:	$6,044,896.76
Second bid:	$12,072,944
Estimated range of bids:	$3.2 M to $3.6 M

Project Schedule



Board Options

- Option #1
  - Award a $6,044,896.76 contract to Northwest Pipe Company to furnish 1,300 feet of welded steel pipe and fittings to rehabilitate a portion of the Etiwanda Pipeline.
- Option #2
  - Do not proceed with this project at this time.

Staff Recommendation

- Option #1

THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

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

11/9/2021 Board Meeting

7-5

Subject

Award a $3,280,920 contract to J.F. Shea, Construction, Inc. for the lining of the Cholla Wash cut-and-cover conduit at Mile Marker 126 on the Colorado River Aqueduct; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

The Cholla Wash cut-and-cover conduit epoxy lining project has been developed as a pilot project to determine the potential to maximize flows in the Colorado River Aqueduct (CRA) conveyance system. This project will line approximately 500 feet of the Cholla Wash conduit. Staff will subsequently collect data during 2022 aqueduct operations to determine if epoxy lining increases the hydraulic carrying capacity of the conduit. A successful pilot project may lead to more extensive use of the epoxy lining in other portions of the aqueduct. This action awards a construction contract to epoxy line the Cholla Wash cut-and-cover conduit located at Mile Marker 126 within the CRA conveyance system.

Details

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, 97 miles of tunnels, 61 miles of canals, 29 miles of siphons, and 55 miles of conduits. The aqueduct was constructed in the late 1930s and was placed into service in 1941.

Each of the five pumping plants has nine main pumps. These pumps were installed in several phases over time to meet increasing water demands. In 1959, when all pumps were installed, the hydraulic capacity of the CRA totaled 1,605 cubic feet per second (cfs). In 1962, Metropolitan initiated a program to increase the capacity of the CRA pumps. Pump unit performance was improved by enlarging the impeller diameters and modifying the angle of the vanes at the impeller discharge. At the present time, the hydraulic capacity of the CRA pumps is approximately 1,800 cfs.

The CRA conveyance system is routinely and thoroughly cleaned during the annual shutdown in February to ensure that delivery capabilities of the aqueduct system are maintained. However, with warmer aqueduct temperatures, biological fouling of concrete surfaces decreases velocity due to increased friction, which results in higher water elevations. When the aqueduct is operating at maximum capacity, it becomes challenging to manage flows with these higher water elevations, especially in those portions of the aqueduct that are either open canals or buried siphons. The higher water elevation reduces hydraulic freeboard and can result in water spill in canal sections and potential over-pressurization of enclosed conduits. When these conditions occur, staff is required to conduct more frequent patrols to monitor the freeboard and system flow, increase maintenance (scraping and cleaning), and add chlorine to reduce biological fouling of concrete surfaces that reduce flows.

As a pilot project, staff plans to install epoxy lining within the 16-feet-high and 22.5-feet-wide Cholla Wash cut-and-cover conduit. The enclosed cut-and-cover conduits are unreinforced concrete horseshoe-shaped structures placed upon an invert slab. Due to the unreinforced nature of this and other siphons, staff closely monitors water surface elevations in the siphons when maximum aqueduct flows are being delivered. Since the siphons are unreinforced, it is important to avoid pressurizing the siphon under maximum water flow conditions. It is anticipated that the epoxy lining will provide smoother wall surfaces and allow increased water flow through

these sections with lower water surface elevation, thereby avoiding the pressurization of the siphons. The demonstration project will enable staff to evaluate the effectiveness of the epoxy liner, assess the amount of surface preparation necessary to apply the liner, and confirm application sequence and concrete repair timing, since this work can only be performed during a shutdown of the CRA system. Lessons learned from the demonstration project will be applied to future lining projects. Staff recommends the award of a construction contract now for the work to take place during the upcoming February 2022 CRA shutdown.

In accordance with the April 2020 action on the biennial budget for Fiscal Years 2020/21 and 2021/22, the General Manager will authorize staff to proceed with the lining, pending board authorization as described below. Based on the current Capital Investment Plan (CIP) expenditure forecast, funds for the work to be performed pursuant to this action during the current biennium are available within the Appropriation for Fiscal Years 2020/21 and 2021/22 (Appropriation No. 15517). This project has been reviewed in accordance with Metropolitan's CIP prioritization criteria and was approved by Metropolitan's CIP evaluation team to be included in the CRA Reliability Program.

CRA Cholla Wash Cut-and-Cover Conduit Lining – Construction

The scope of the construction contract for the conduit lining includes: (1) epoxy lining of an approximately 500 linear feet section; (2) surface preparation; (3) concrete crack repairs; and (4) installation of a temporary ventilation system to support construction activities. Metropolitan force activities will include shutting down the aqueduct pumping system, dewatering and re-watering the aqueduct, and providing contractor access into the conduit.

A total of $4.5 million has been budgeted for this work; besides the amount of the contract, other allocated funds include $350,000 for construction management and inspection; $200,000 for Metropolitan force activities as described above; $165,000 for Metropolitan staff to review submittals, respond to requests for information, provide technical support, and prepare record drawings; $210,000 for contract administration, environmental monitoring, project management and 3-D survey of the remaining unlined portion of the conduit to capture existing conditions; and $294,080 for remaining budget.

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

Specifications No. 2016 for the lining of the CRA Cholla Wash cut-and-cover conduit was advertised for bids on September 2, 2021. As shown in **Attachment 2**, 2 bids were received and opened on October 12, 2021. One bidder did not meet licensing requirements and was deemed non-responsive. The second low bid from J.F. Shea Construction, Inc. in the amount of $3,280,920 complies with the requirements of the specifications. The engineer's estimate was $2 million. Staff attributes the difference between the engineer's estimate and the second low bid on the contractor's anticipation of extensive abrasive blasting, crack repair and surface preparation required to apply the epoxy lining. As a result, the contractor would be required to expend additional labor, time, and materials to prepare the surface for the epoxy lining. For this contract, Metropolitan established a Small Business Enterprise participation level of at least 5 percent of the bid amount. J.F. Shea Construction, Inc. has committed to meet this level of participation. The subcontractors for this contract are listed in **Attachment 3**. This action awards a $3,280,920 contract to J.F. Shea Construction, Inc. for the lining of the Cholla Wash cut-and-cover conduit on the CRA.

The total cost of construction for this project is $3,480,920, which includes the amount of the contract ($3,280,920), and Metropolitan force activities ($200,000). Engineering Services' goal for inspection of projects with construction greater than $3 million is 9 to 12 percent. For this project, the anticipated cost of inspection is approximately 10.1 percent of the total construction cost.

Alternatives Considered

In light of the higher than expected bids, staff considered cancelling the project. However, staff identified important project benefits with awarding a contract at this time. By performing this work on a relatively short length of the siphon, staff will be able to confirm the production rates and efficiencies of the lining process prior to commencing the full-scale effort. Additionally, staff will perform detailed 3-D surveys of the remaining length of the siphon to capture the existing as-is interior wall condition, which will reduce risks and costs of future contracts.

Various liner products were evaluated and considered for this demonstration project, such as polyurethane, polyester, vinyl, and different types of epoxies. The epoxy liner was selected because it can be easily applied to concrete surfaces in moist and damp conditions and provides a smooth finish and long-term durability after its final application. The demonstration project will validate these results. The demonstration project will also verify the liner application required procedures and sequencing, which will help staff plan the future lining projects in a cost-effective and efficient manner.

Summary

This action awards a $3,280,920 contract to J.F. Shea Construction, Inc. for the lining of the CRA Cholla Wash cut-and-cover conduit on the CRA. See **Attachment 1** for the Allocation of Funds, **Attachment 2** for the Abstract of Bids, **Attachment 3** for the listing of Subcontractors for Low Bidder, and **Attachment 4** for the Location Map.

Project Milestone

April 2022 – Completion of lining at the Cholla Wash conduit

Policy

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

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

By Minute Item 51963, dated April 14, 2020 the Board appropriated a total of $500 million for projects identified in the Capital Investment Plan for Fiscal Years 2020/21 and 2021/22.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. In particular, the proposed action consists of repair and maintenance of existing public facilities with negligible or no expansion of existing or former use and no possibility of significantly impacting the physical environment. Accordingly, this proposed action qualifies as a Class 1 Categorical Exemption (Section 15301 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

Board Options

Option #1

Award $3,280,920 contract to J.F. Shea Construction, Inc. for the lining of Cholla Wash cut-and-cover conduit along the Colorado River Aqueduct.

Fiscal Impact: $4.5 million in capital funds. All costs will be incurred in the current fiscal year and have been previously authorized.

Business Analysis: This option will improve operational efficiency and enhance CRA reliability of the conveyance system.

Option #2

Do not proceed with the project at this time.

Fiscal Impact: None

Business Analysis: This option would forego an opportunity to improve the reliability of the CRA.

Staff Recommendation

Option #1

10/14/2021

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

10/25/2021

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds
Attachment 2 – Abstract of Bids
Attachment 3 – Subcontractors for Low Bidder
Attachment 4 – Location Map

Ref# es12685072

Allocation of Funds for CRA Cholla Wash Cut-and-Cover Conduit Lining

	Current Board Action (Nov. 2021)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	210,000
Submittals Review & Record Drwgs.	165,000
Construction Inspection & Support	350,000
Metropolitan Force Construction	200,000
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Right-of-Way	-
Equipment Use	-
Contracts	-
J.F. Shea Construction, Inc.	3,280,920
Remaining Budget	294,080
Total	**$ 4,500,000**

The total amount expended to date for the CRA Cholla Wash Cut and Cover Conduit Lining is approximately $67,000. The total estimated cost to complete this project, including the amount appropriated to date and funds allocated for the work described in this action, is $4.6 million.

The Metropolitan Water District of Southern California

Abstract of Bids Received on October 12, 2021, at 2:00 P.M.

Specifications No. 2016
Colorado River Aqueduct
CRA Cholla Wash Cut and Cover Conduit Lining

The work consists of applying an epoxy lining to approximately 500 linear feet of a large horseshoe-shaped concrete conduit, surface preparation and repair of the conduit prior to lining, and temporary ventilation.

Engineer's estimate: $2,000,000

Bidder and Location	Total	SBE $	SBE %	Met SBE[1]
Hartman Walsh Painting Co. Saint Louis, MO[2]	$1,968,984	–	–	–
J.F. Shea Construction, Inc. Walnut, CA	**$3,280,920**	~~**$1,998,000**~~**$256,000**	**8%**	**Yes**

[1] Small Business Enterprise (SBE) participation level established at 5% for this contract.
[2] Non-responsive bid

The Metropolitan Water District of Southern California

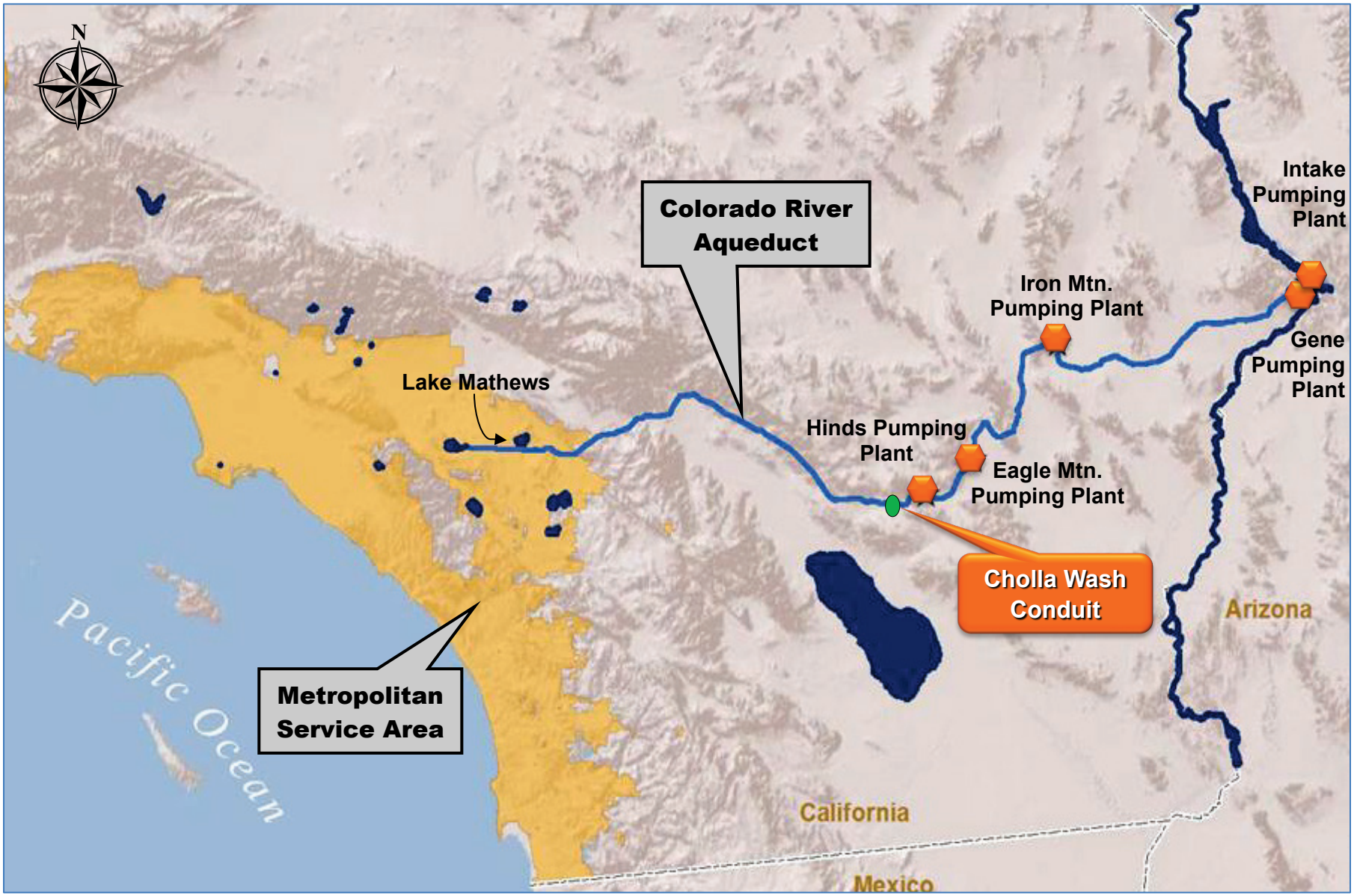
Subcontractors for Low Bidder

Specifications No. 2016
Colorado River Aqueduct
CRA Cholla Wash Cut-and-Cover Conduit Lining

Low bidder: J.F. Shea Construction, Inc.

Subcontractor and Location
F.D. Thomas, Inc. Central Point, CA

Location Map



Colorado River Aqueduct Cholla Wash Cut-and-Cover Conduit Lining

Engineering and Operations Committee
Item 7-5
November 8, 2021

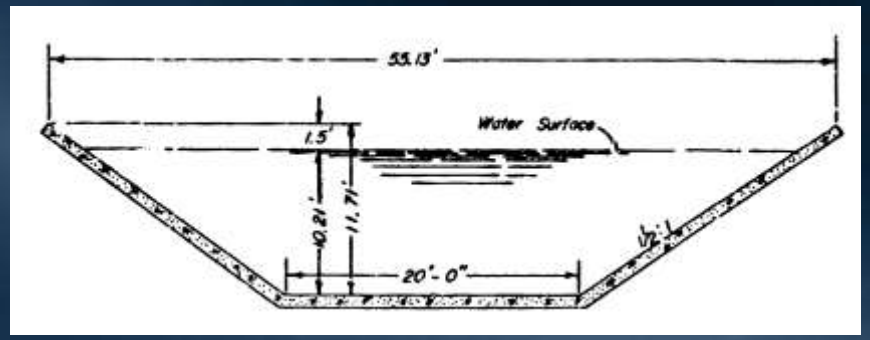
Current Action

- Award $3,280,920 contract to J.F. Shea Construction, Inc. for lining the Cholla Wash cut-and-cover conduit at Mile Marker 126 on the Colorado River Aqueduct

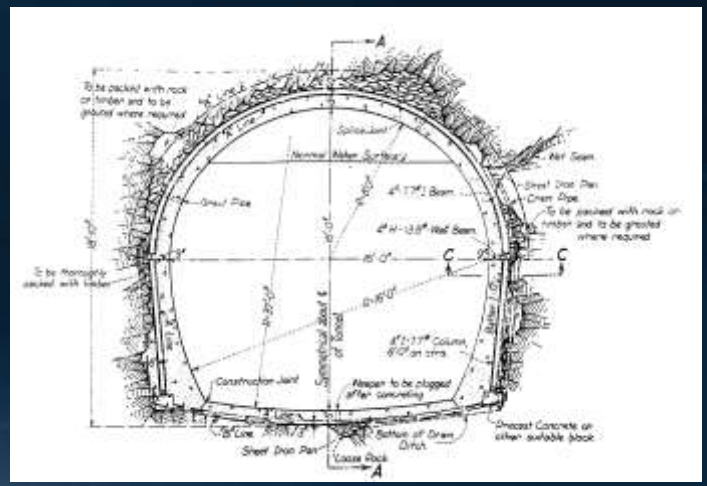
Location Map

Background

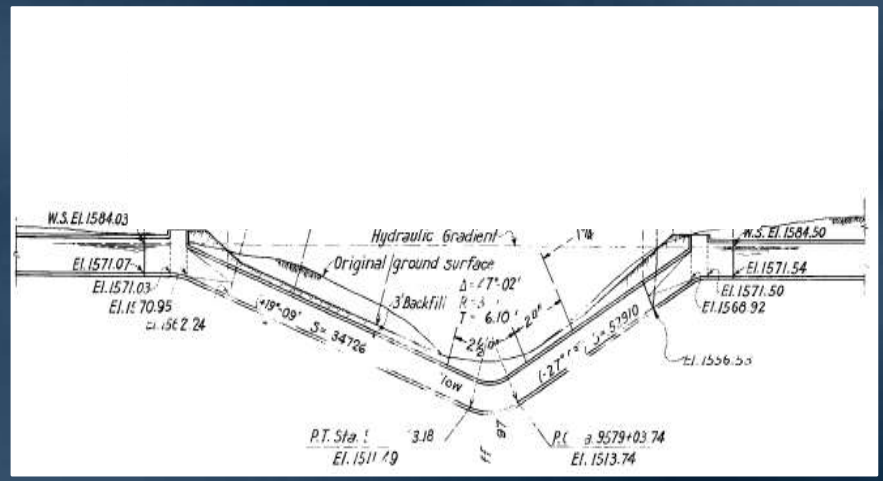
- Conveyance System – 242 total miles
  - 63 miles of open canal
  - 55 miles of cut-and-cover conduit
  - 29 miles of siphons
  - 92 miles of tunnels
  - 4 reservoirs
- Conveyance Capacity
  - Original – 1605 cfs
  - Current – 1800 cfs



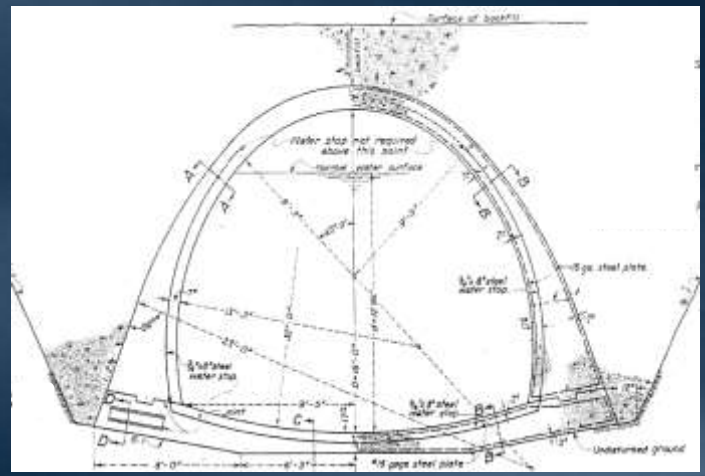
Canal (Typ.)



Tunnel (Typ.)



Siphon (Typ.)



Cut-and-Cover Conduit (Typ.)

Conveyance System – Cleaning

- Routine system cleaning to maintain flow capacity
- Operating at max capacity requires
  - Frequent monitoring
  - Regular maintenance (scraping/cleaning)
  - Chlorine applications

Tunnel Cleaning

Canal Cleaning

Canal Scraping

Chlorine Application

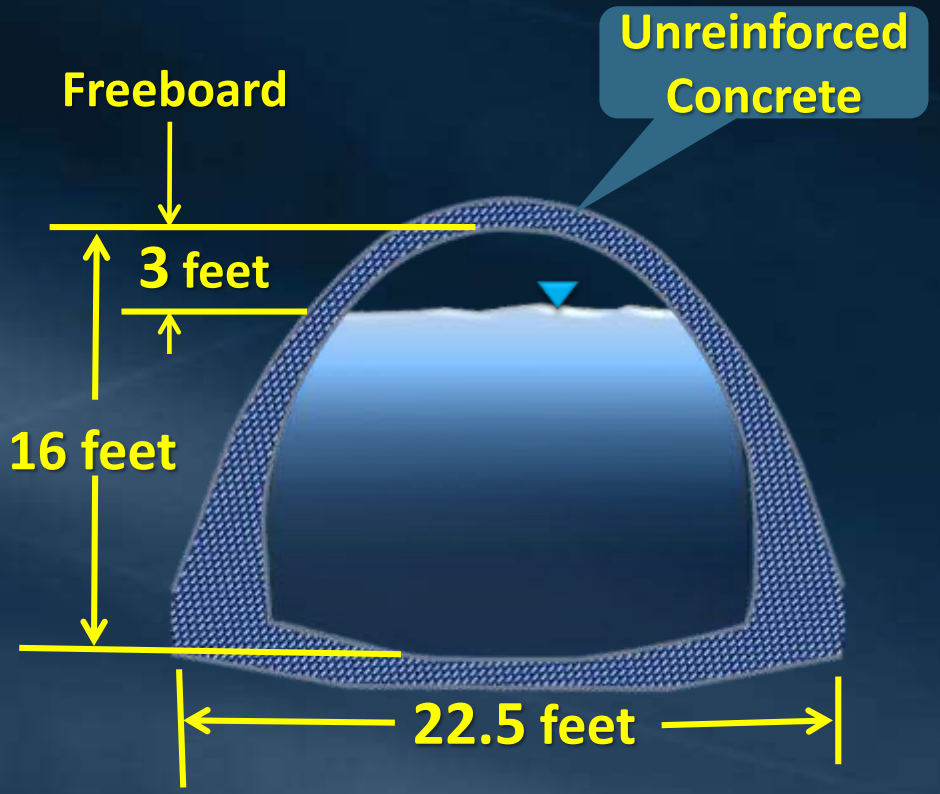
Conveyance System – High Water Flows

- High aqueduct flows observed despite routine system cleaning
- High aqueduct flows potentially cause:
  - Elevated water levels & reduced hydraulic freeboard
  - Potential water overtopping in canal sections
  - Potential pressurization of buried conduits

Canal Overtopping

Cholla Wash Cut-and-Cover Conduit

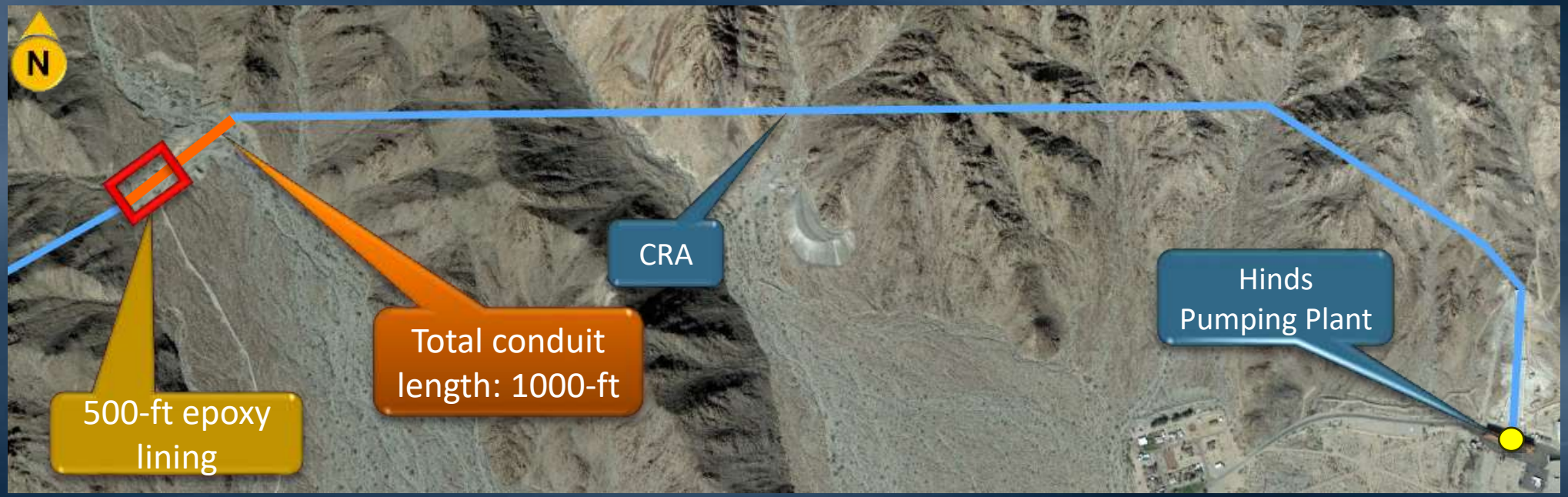
- Concrete horse-shoe shaped structure
  - No steel reinforcement in conduit
  - Originally designed for open-channel water surface flows
  - Avoid pressurizing conduits
- Application of epoxy lining to interior of conduit
  - Demonstration project
  - Provides for smoother wall surfaces
  - Potentially allows for open-channel water surfaces under high flow conditions



Cut-and-Cover
16-ft Conduit

Contractor Scope

- Install temporary ventilation system
- Prepare conduit surfaces
- Repair concrete cracks
- Epoxy line 500 linear feet of conduit



Metropolitan Scope

- Perform project-specific shutdown activities
- Scrape the conduit prior to contractor entry
- Perform 3D survey/inspection of entire Cholla Wash conduit
- Support Activities
  - Construction inspection
  - Contract administration & PM
  - Submittal reviews & record drawings

3-D Survey

Bid Results

Specifications No. 2016

Bids Received	October 12, 2021
No. of Bidders**	2
Bidder	J.F. Shea Construction, Inc.
Bid Amount	$3,280,920
Engineer's estimate	$2,000,000
SBE Participation*	8%

*SBE (Small Business Enterprise) participation level set at 5%
** Other bid non-responsive

Alternatives Considered

- Various liner products evaluated
  - Polyurethane, polyester, vinyl & epoxies
- Selected Alternative – Epoxy Lining (Demonstration project)
  - Ease of application in moist & damp environment
  - Smooth finish & long-term durability
- Proceed with project vs. cancel project due to high bid
  - Verify current conduit conditions
  - Begin collecting data/results in 2022 on liner effectiveness
  - Verify lining process production rates & efficiencies
  - Apply lessons learned to potential future lining projects

Allocation of Budgeted Funds

Contract	
J.F. Shea Construction, Inc.	$3,280,920
Metropolitan Labor	
Force construction	200,000
Construction inspection	350,000
Submittals review & record drawings	165,000
Contract administration & PM	210,000
Remaining Budget	294,080
Total:	$4,500,000

Total construction cost: $3,480,920

Project Schedule

Activity	2021	2022
CRA Cholla Wash Cut-and-Cover (MM126) Lining		

Construction

Shutdown

Board Action

Completion

Board Options

- Option #1
  - Award $3,280,920 contract to J.F. Shea Construction, Inc. for the lining of Cholla Wash cut-and-cover conduit along the Colorado River Aqueduct.
- Option #2
  - Do not proceed with the project at this time.

Staff Recommendation

- Option #1

THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

Overview of Planned Facility Upgrades at La Verne Site

Engineering and Operations Committee
Item 6a
November 8, 2021

Facilities Upgrades at La Verne Site

Seismic Upgrade Program at La Verne Site

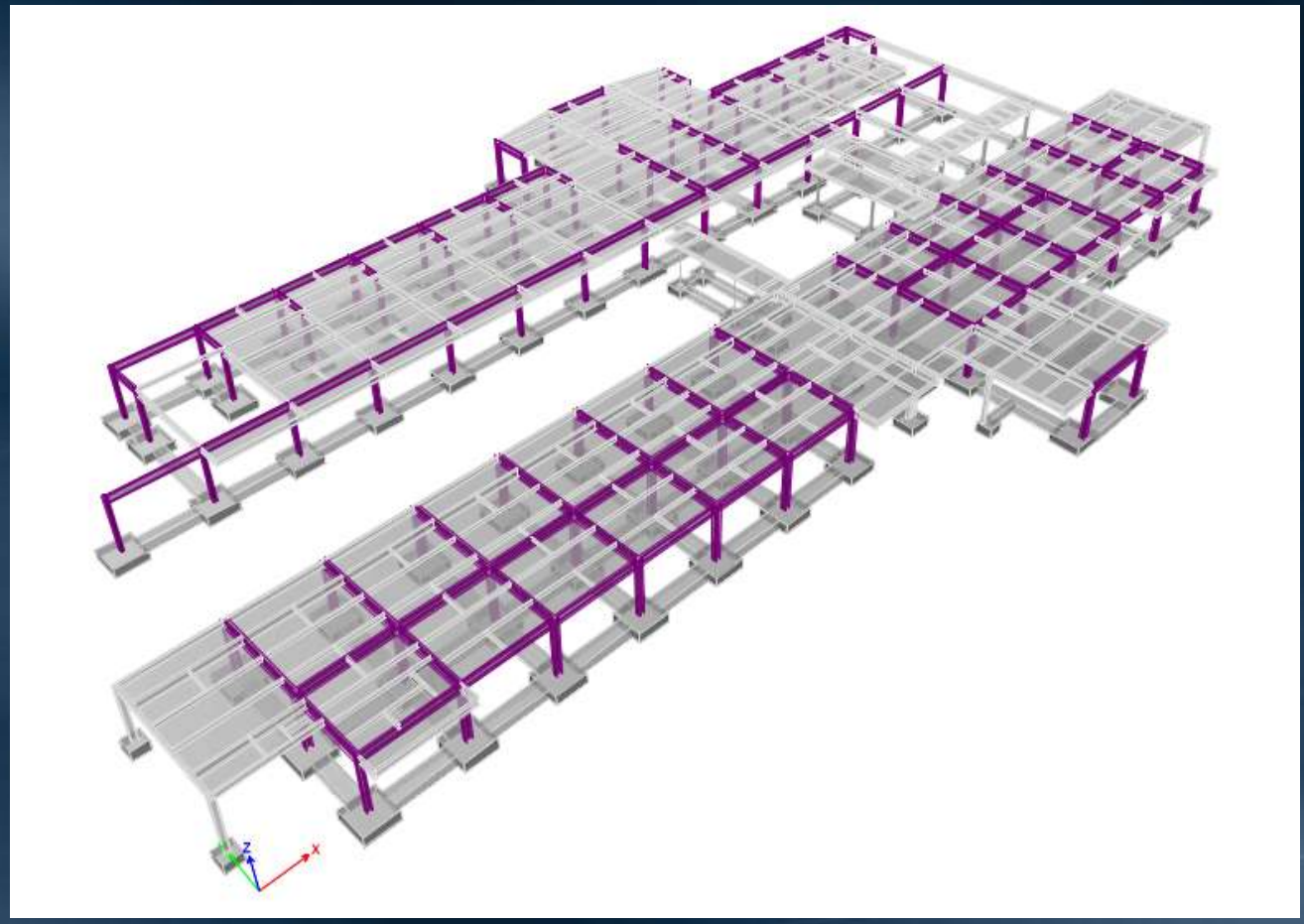
- 38 facilities evaluated
- 16 determined to be adequate as-is
- 15 structures completed or in design
  - Inlet conduit: completed
  - Junction structure: completed
  - Filter buildings: completed
  - Admin. Building: in design
  - Basins 5 – 8: in design
- 7 lower priority structures remain
  - Currently in evaluation phase

Weymouth Filter Building Seismic Rehab

Water Quality Lab Building Improvements

WQL Building Improvements – Seismic Drivers

- Building Structure
  - North and south wings are deficient with respect to “essential facility” seismic design criteria
- Project Approach
  - WQL users relocate to temp. facilities during extensive construction
  - Opportunity to address other critical improvements



WQL – Looking Toward the Future

- Multiple issues have increased demands on staff and lab requirements
  - Ongoing:
    - Disinfection Byproduct rules
    - Nitrification
    - Quagga mussels
    - Taste and Odor
  - Emerging issues:
    - New lab accreditation regulation
    - PFAS
    - Microplastics
    - Cyanotoxins
    - Water reuse

WQL – Project Elements for Functional Improvements

- Laboratory optimization through space reorganization
- Building expansion to address future regulation

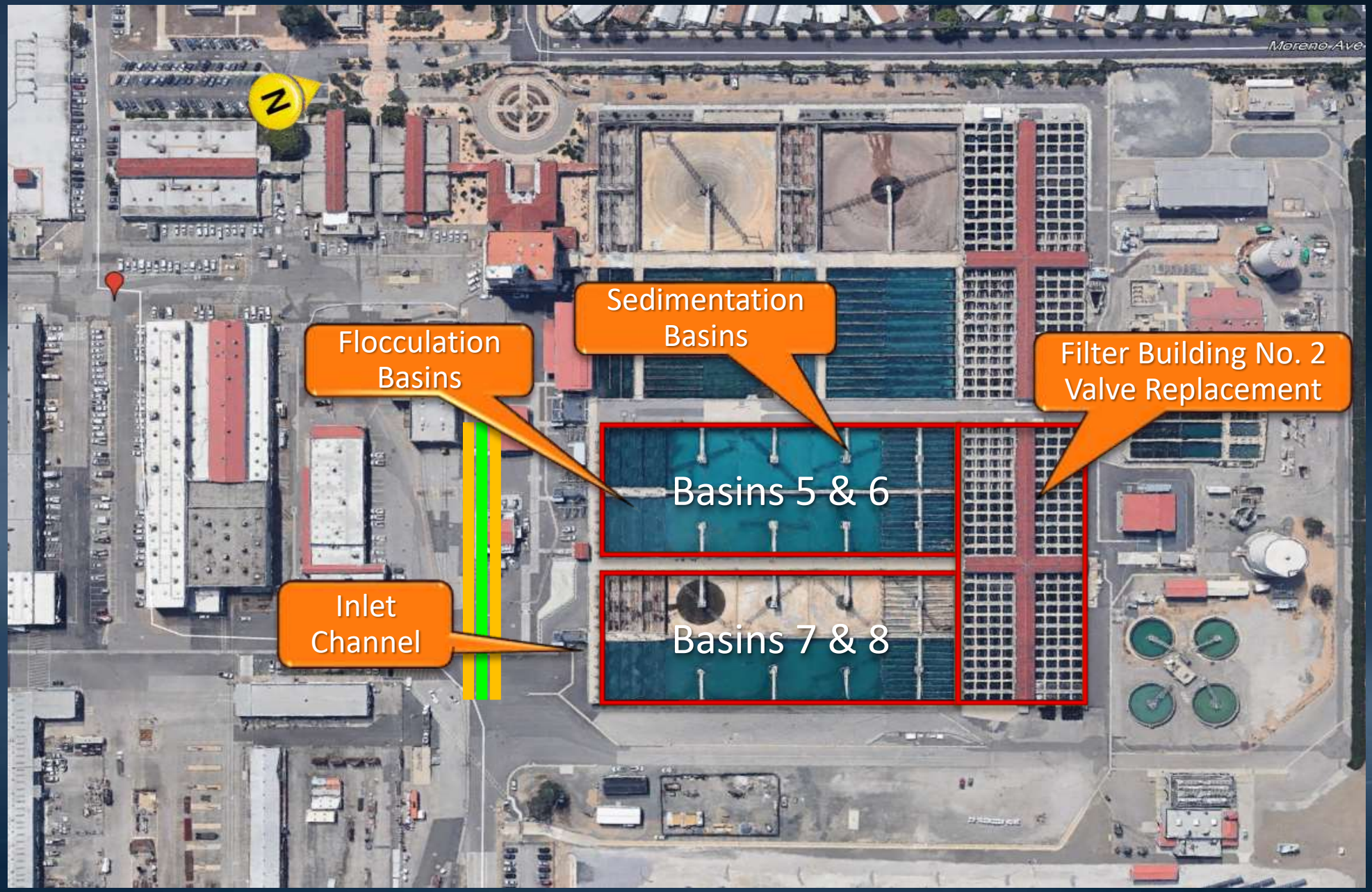
Weymouth Administration Building – Seismic Drivers

- Building Structure
  - Constructed in 1938
  - Does not meet current seismic code standards
- Project Approach
  - Maintain historic architectural attributes
  - Seismic retrofit required
  - Phased approach to construction

Field Engineering Building – Seismic Drivers

- Building Structure
  - Constructed in 1968, deficient with respect to current seismic code
- Project Approach
  - Due to structure type and materials used, retrofit costs are prohibitive
  - Construct new building

Basins 5-8 Rehabilitation



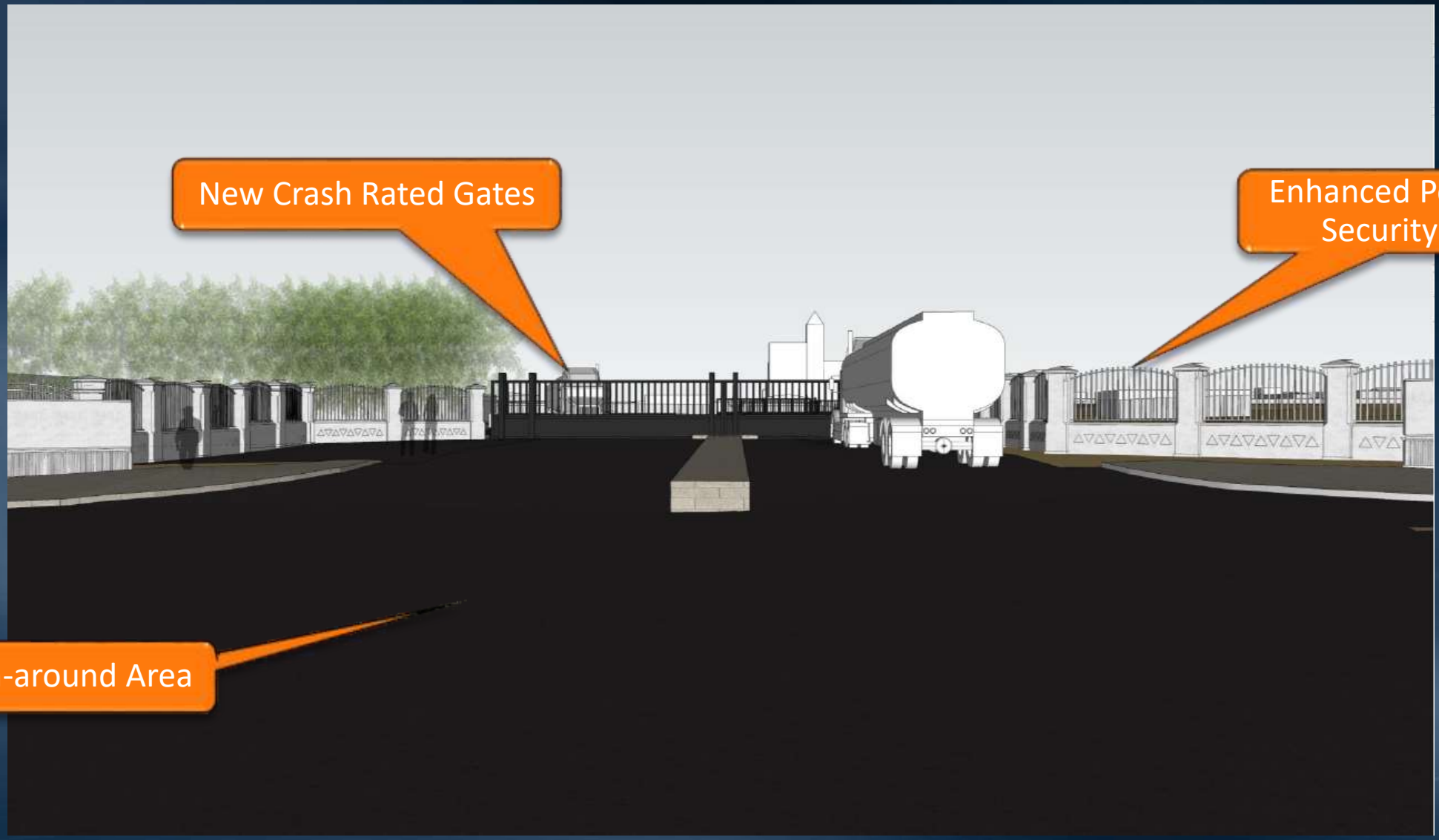
La Verne Shops Improvements – Stage 4

- Install shop heaters, walkways & roof access for safety, & shop waterlines
- Refurbish blast booth
- Replace existing machines
  - Plasma Cutter
  - Hydraulic Shear
  - Press Brake
  - 2 Band Saws
- Install new water jet cutting system
- Install new large Vertical Machine Center

Vertical Machine Center

Wheeler Gate Improvements

Wheeler Gate Improvements

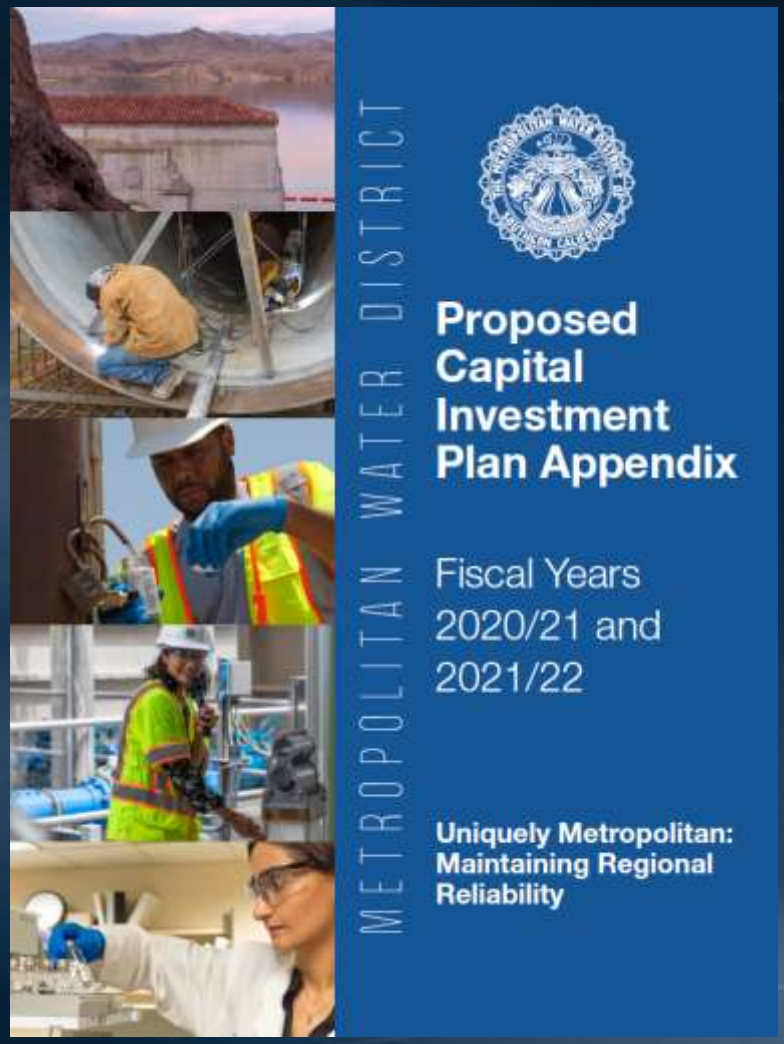


Facility Improvements – Project Estimates

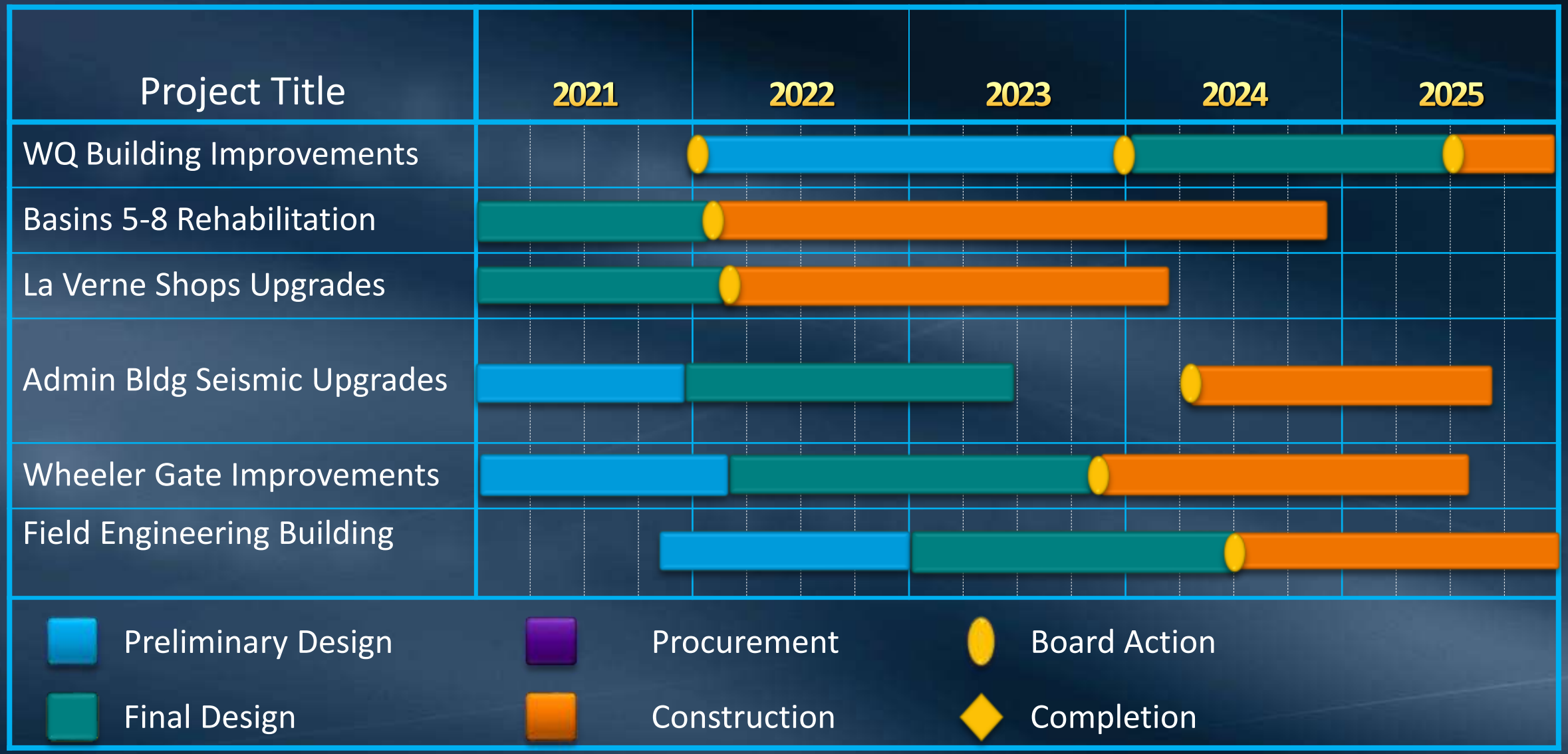
	Planned expenditures: upcoming biennium	Estimated total expenditures
WQ-Lab Building	$6M	$80M to 100M
Admin Building	$2M	$12M to $15M
Field Engineering Building	$2M	$13M to $15M
Basins 5-8 Basin Rehab.	$45M	$55M to $60M
La Verne Shops Stage 4	$11M	$14M
Wheeler Gate Security	$1M	$5 to $6M

Seismic Upgrade

Other Upgrades



La Verne Master Schedule



THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

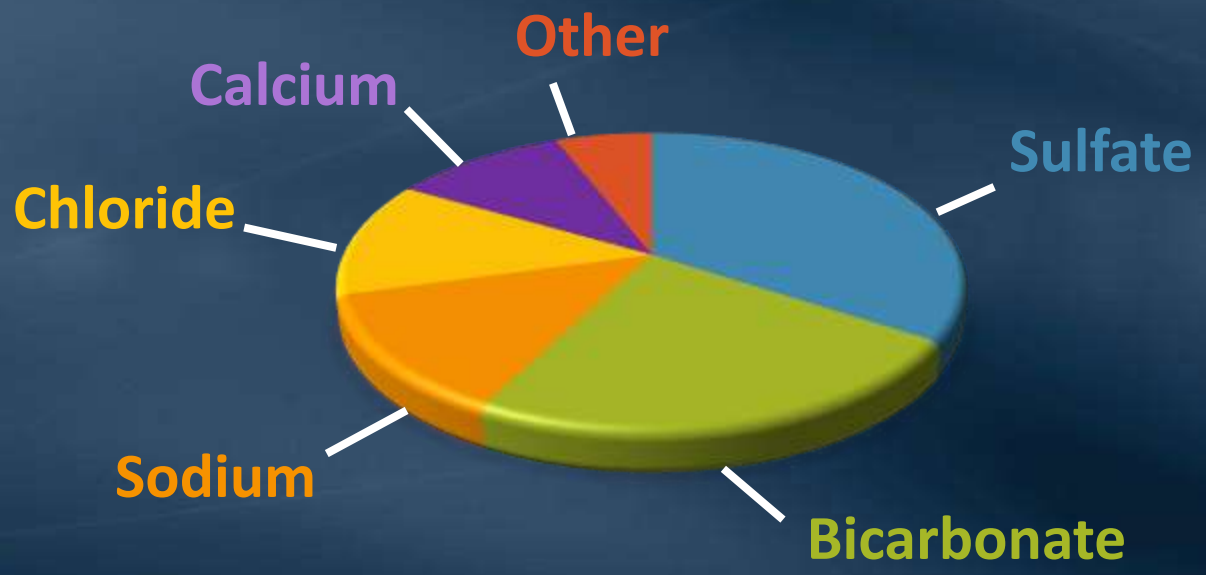
Report on Salinity Management

Engineering and Operations Committee
Item 6b
November 8, 2021

What is salinity?

- Measurement of salts (minerals) dissolved in water
- Commonly expressed as Total Dissolved Solids or “TDS”
- Naturally occurring, agricultural runoff, urban uses, seawater intrusion

Typical mineral comparison in Colorado River water

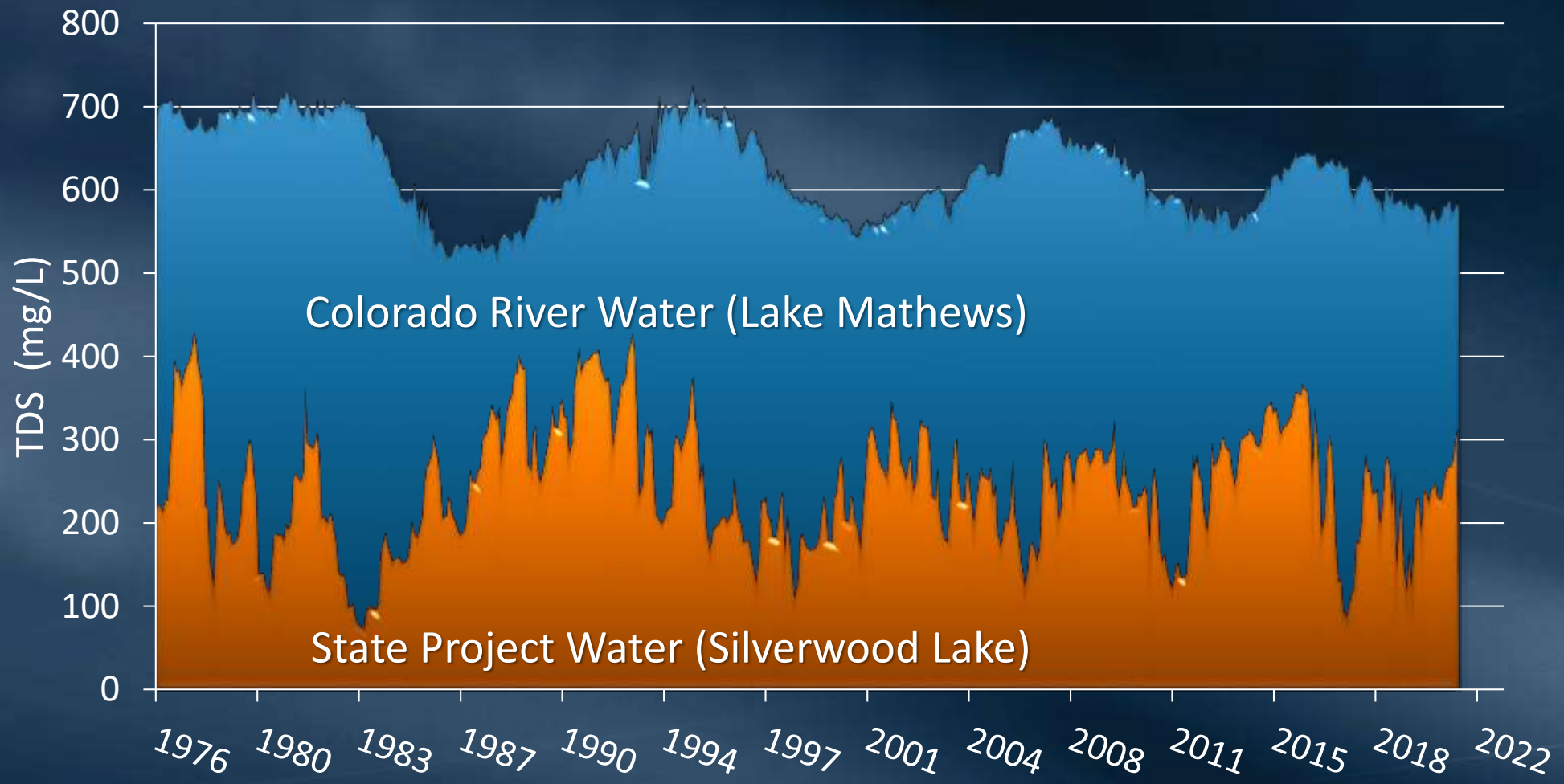


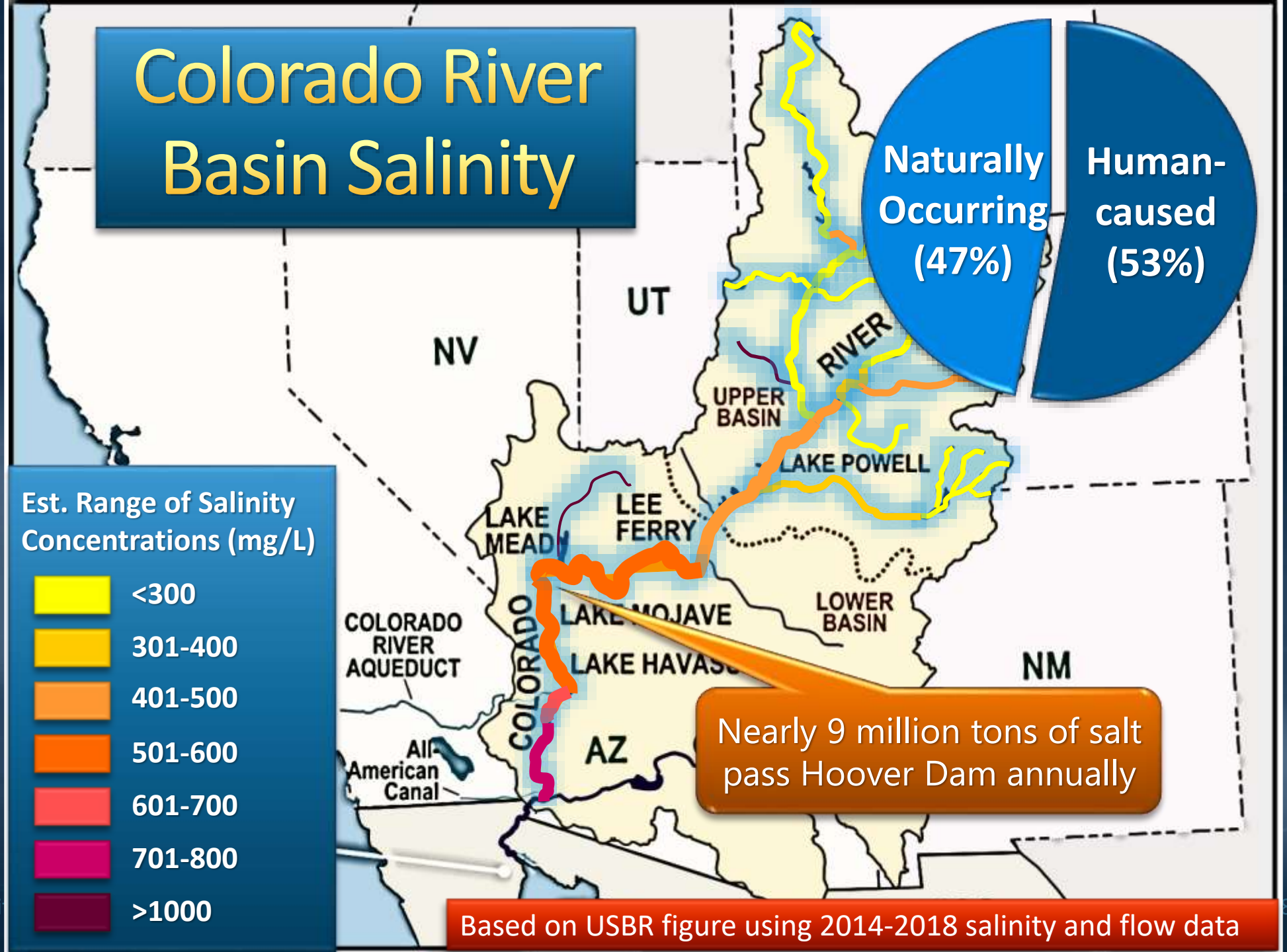
Why does salinity matter?

- Limits use of groundwater basins for storage
- Lowers usefulness and increases cost of recycled water
- Scaling of household appliances and plumbing fixtures; impacts industrial processes
- Reduces agricultural crop yields
- Imparts unpleasant taste in drinking water

Salinity in Metropolitan Supplies

Historical Trends




Colorado River Basin Salinity
Naturally Occurring (47%)
Human-caused (53%)
Est. Range of Salinity Concentrations (mg/L)
<300
301-400
401-500
501-600
601-700
701-800
>1000
UT
NV
AZ
NM
RIVER
UPPER BASIN
LAKE POWELL
LEE FERRY
LAKE MEAD
LAKE MOJAVE
LAKE HAVASU
LOWER BASIN
COLORADO RIVER AQUEDUCT
COLORADO
All American Canal
Nearly 9 million tons of salt pass Hoover Dam annually
Based on USBR figure using 2014-2018 salinity and flow data

Colorado River Basin Salinity Control Program

- Salinity Control Forum (1973); federal government and Basin states
- Salinity control measures
  - Improved irrigation practices
  - Rangeland management
  - Deep-well brine injection
- 1.2 million tons/year removed → 100 mg/L reduction
- ~$40 million spent annually; 70% federally funded
- Current challenges: Paradox Valley; Funding

Uncompahgre Project, CO

Paradox Valley Unit, CO

Paradox Valley Salinity Control

Deep Well Injections

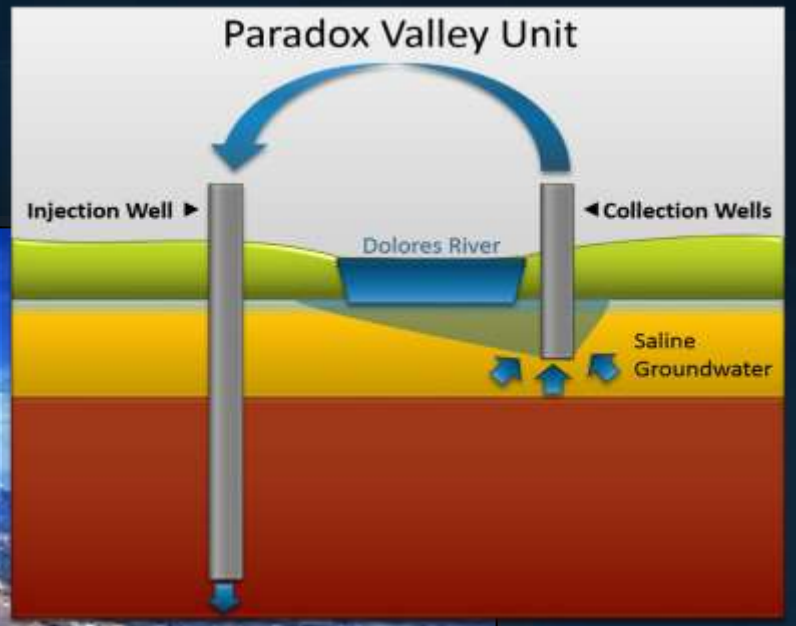
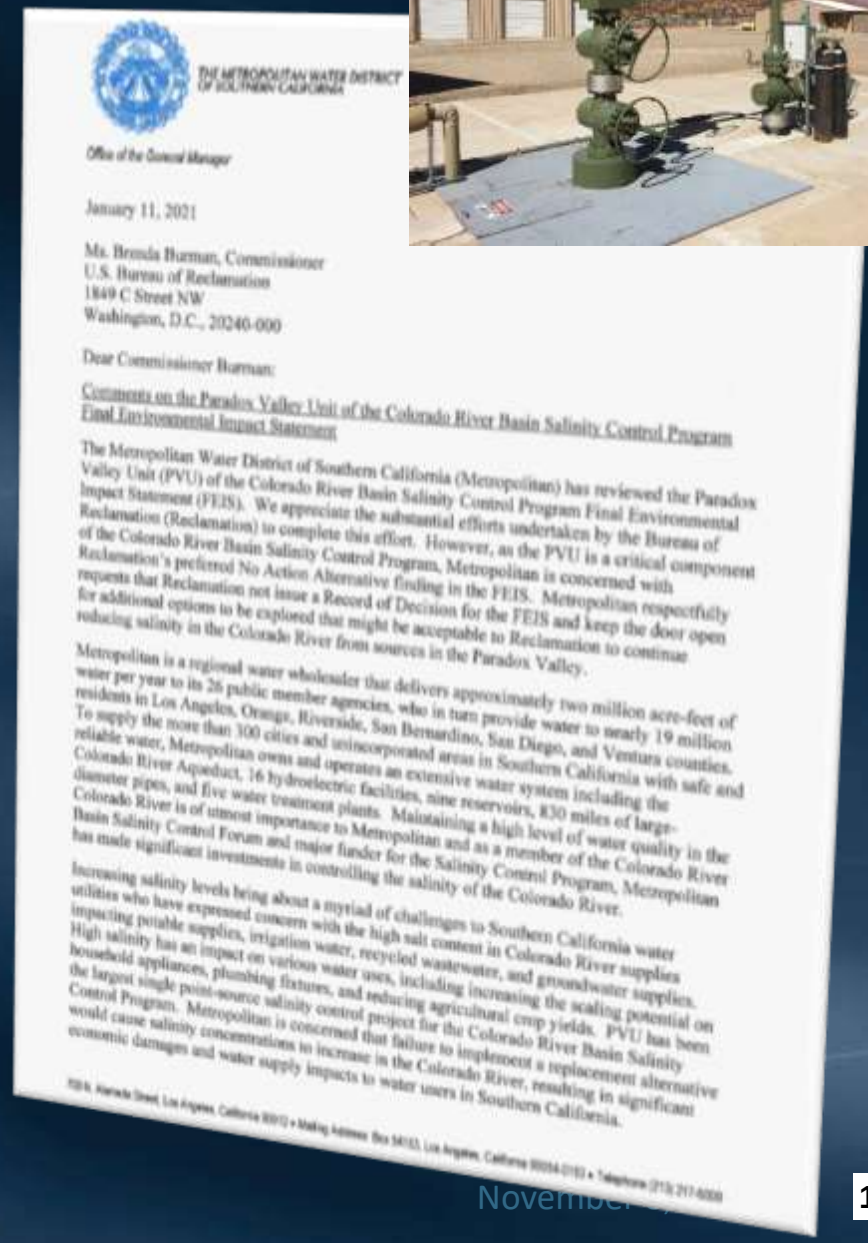


Photo courtesy of CRBSCF

Paradox Valley Salinity Control Status

- Well hasn't operated since 4.1 magnitude earthquake in March 2019
  - Reclamation analyzing injection and seismic data to optimize operations
- Final EIS analyzed replacement options – new injection well, evaporation ponds, zero liquid discharge, and no action
- Lake Powell and Lake Mead provide significant buffers



THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Office of the General Manager

January 11, 2021

Ms. Brenda Burman, Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, D.C., 20240-000

Dear Commissioner Burman:

Comments on the Paradox Valley Unit of the Colorado River Basin Salinity Control Program Final Environmental Impact Statement

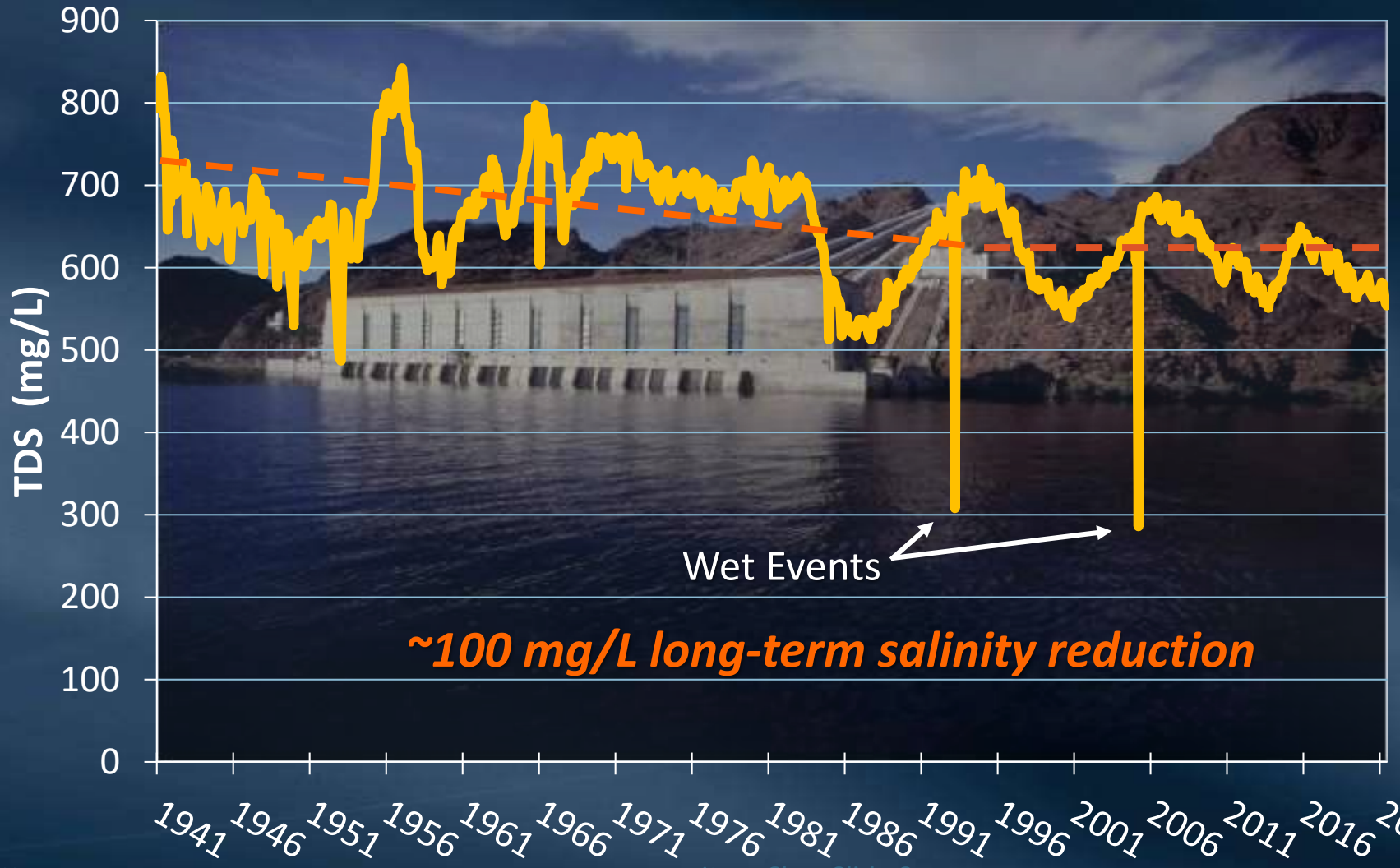
The Metropolitan Water District of Southern California (Metropolitan) has reviewed the Paradox Valley Unit (PVU) of the Colorado River Basin Salinity Control Program Final Environmental Impact Statement (FEIS). We appreciate the substantial efforts undertaken by the Bureau of Reclamation (Reclamation) to complete this effort. However, as the PVU is a critical component of the Colorado River Basin Salinity Control Program, Metropolitan is concerned with Reclamation's preferred No Action Alternative finding in the FEIS. Metropolitan respectfully requests that Reclamation not issue a Record of Decision for the FEIS and keep the door open for additional options to be explored that might be acceptable to Reclamation to continue reducing salinity in the Colorado River from sources in the Paradox Valley.

Metropolitan is a regional water wholesaler that delivers approximately two million acre-feet of water per year to its 26 public member agencies, who in turn provide water to nearly 19 million residents in Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. To supply the more than 300 cities and unincorporated areas in Southern California with safe and reliable water, Metropolitan owns and operates an extensive water system including the Colorado River Aqueduct, 16 hydroelectric facilities, nine reservoirs, 830 miles of large-diameter pipes, and five water treatment plants. Maintaining a high level of water quality in the Colorado River is of utmost importance to Metropolitan and as a member of the Colorado River Basin Salinity Control Forum and major funder for the Salinity Control Program, Metropolitan has made significant investments in controlling the salinity of the Colorado River.

Increasing salinity levels bring about a myriad of challenges to Southern California water utilities who have expressed concern with the high salt content in Colorado River supplies impacting potable supplies, irrigation water, recycled wastewater, and groundwater supplies. High salinity has an impact on various water uses, including increasing the scaling potential on household appliances, plumbing fixtures, and reducing agricultural crop yields. PVU has been the largest single point-source salinity control project for the Colorado River Basin Salinity Control Program. Metropolitan is concerned that failure to implement a replacement alternative would cause salinity concentrations to increase in the Colorado River, resulting in significant economic damages and water supply impacts to water users in Southern California.

Colorado River Historical Salinity

Whitsett Intake



State Water Project

Primary Salinity Sources

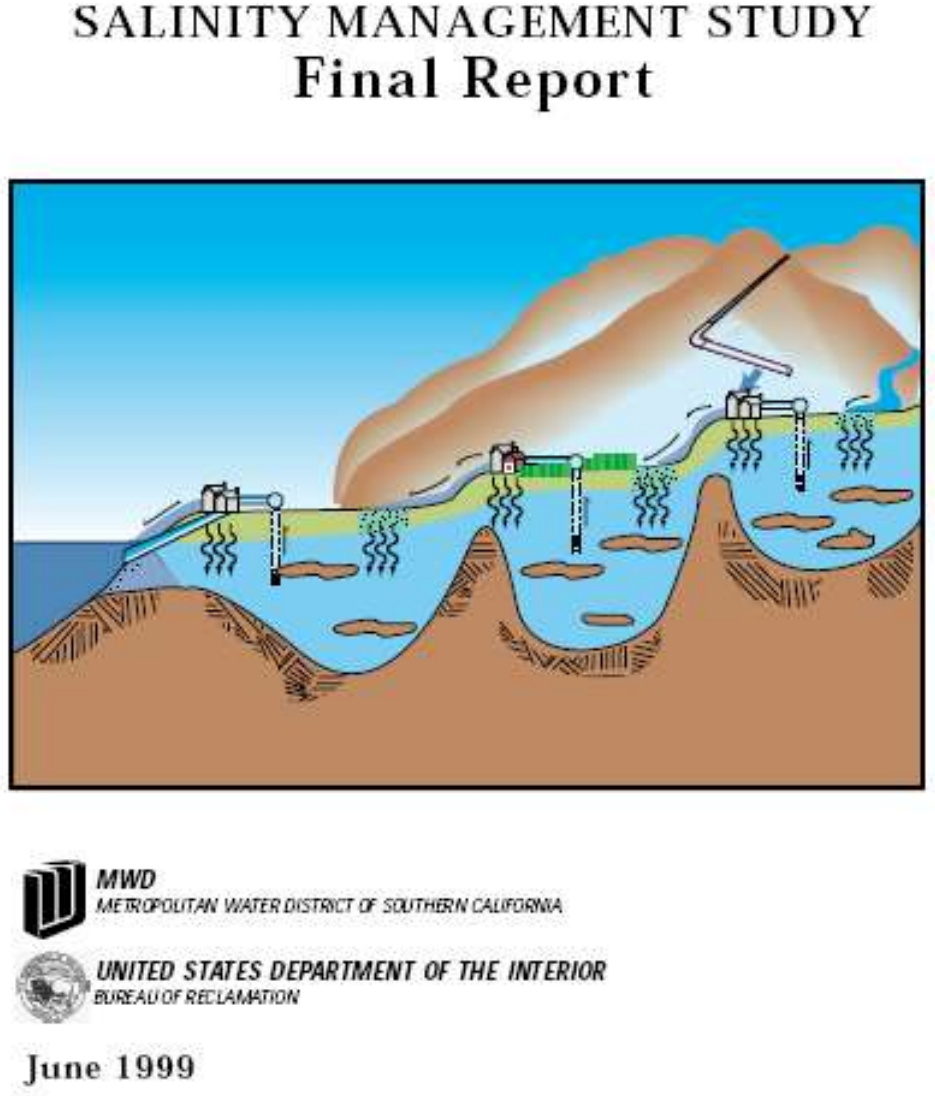
Statewide Salinity Management Efforts

- Delta-State Water Project
  - Delta Cross Channel Gate
  - Emergency Drought Salinity Barrier
  - Salinity forecasts
- Central Valley Salinity Alternatives for Long-term Sustainability (CV-SALTS) Initiative
- Salt and Nutrient Management Plans

2021 Emergency Rock Barrier
Sacramento-San Joaquin Delta

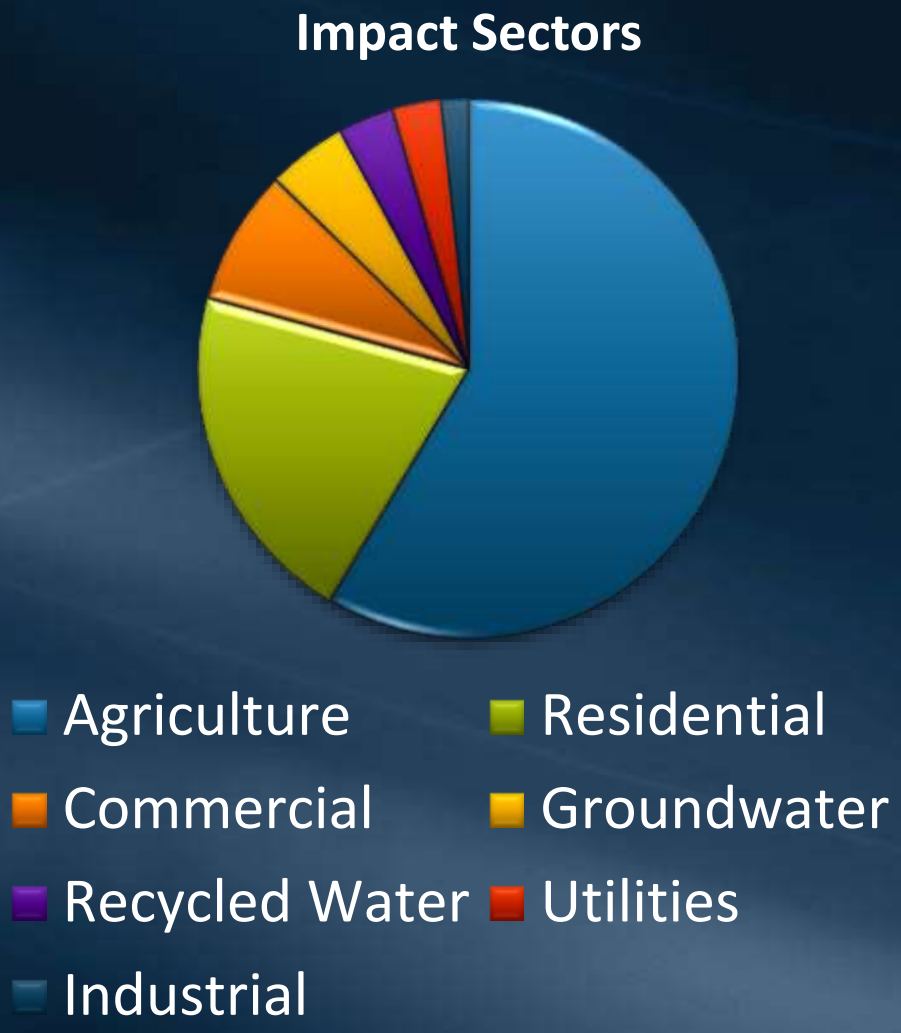
Salinity Management Study

- Study estimated $95 million/yr economic benefit with 100 mg/L salinity reduction (1999 dollars)
- Metropolitan Board adopted 500 mg/L TDS objective, annual average
  - System Blending
  - Dependent on availability of sufficient SWP water
- Protect imported source water
- Support groundwater and recycled water resources



Salinity Economic Impact Model

- Developed by USBR and Metropolitan; updated in 2020
- Quantifies economic impacts of salinity
  - Reduced appliance/ plumbing fixtures useful life
  - Reduced crop yields
  - Groundwater & Recycling impacts
- $500 million/yr damages to lower Colorado River Basin (2035 projection)



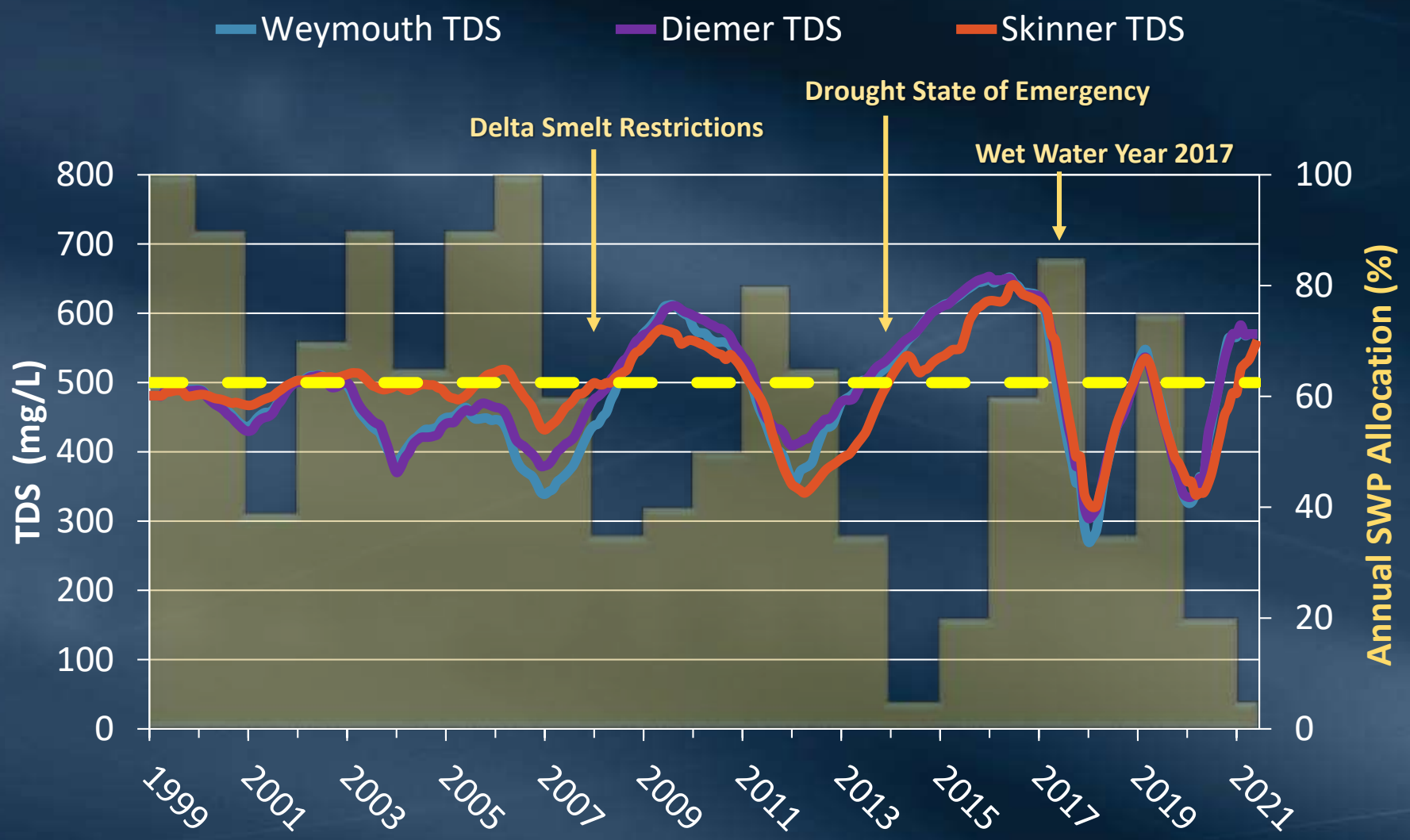
Efforts to Meet Salinity Goal

- Transfer and Exchange Programs
- Local Storage
  - Inland Feeder/ Diamond Valley Lake
- Operating Principles
  - Meet water quality requirements and salinity objectives

Coachella Canal

Diamond Valley Lake

TDS Trends at Blend Plants



Moving Forward

- Work with Reclamation to find a long-term replacement for the Paradox Well and develop a sustainable funding plan for the Salinity Control Program
- Invest in reliable Delta water supplies
- Manage system to meet salinity management policy objectives
- Collaborate with stakeholders on regional approaches
  - Southern California Salinity Coalition
  - Future Supply Actions Funding Program
  - Participate in other state and national programs

THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

Water System Operations Manager's Report

Engineering and Operations Committee
Item 7a
November 8, 2021

Current Operational Conditions

- 2021 SWP Allocation is 5%
- SWP blend targets are 0% at Weymouth, Diemer, and Skinner plants
- CRA is at 7-pump flow
- DVL to Mills drought operation continues to perform well
- Managing storage based on WSDM principles
- October 2021 deliveries of 146 TAF were 5 TAF higher than October 2020

Safety Culture Assessment for Metropolitan

- National Safety Council is conducting an independent review of Metropolitan's safety program
- On November 1, NSC sent a confidential survey to all employees to assess safety culture and perceptions
  - Survey results benchmarked against 1,400 organizations
  - Survey used to prioritize focus areas for review
- Comprehensive review of safety program including employee interviews
  - Review will identify priority areas for continuous improvement
- Partnering with bargaining units through Labor-Management Safety Committee

Founded in 1913, NSC is a non-profit, non-governmental organization– the oldest and largest safety organization in the U.S.

Safety Culture Assessment for Metropolitan
Schedule

February 2022 progress update to E&O Committee during annual update of Metropolitan's Health and Safety Program

Rainfall Returns to California

Ensuring Access to Critical Infrastructure

Clearing Eagle Pump Plant entrance road

Debris covering Hinds Pump Plant entrance road

Rainfall Returns to California

Ensuring Access to Critical Infrastructure

Excavator Placing Rock

Loader Compacting Road

Preparing for Emergencies

Shake Out 2021

- Business Continuity and Emergency Management Program Managers provided earthquake preparedness webinar to employees
- Emergency Management Program Manager presentation at AWWA AFC-21 conference
- Met-Alert “Shake Out” notification sent to all employees

THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

Engineering Services Manager's Report

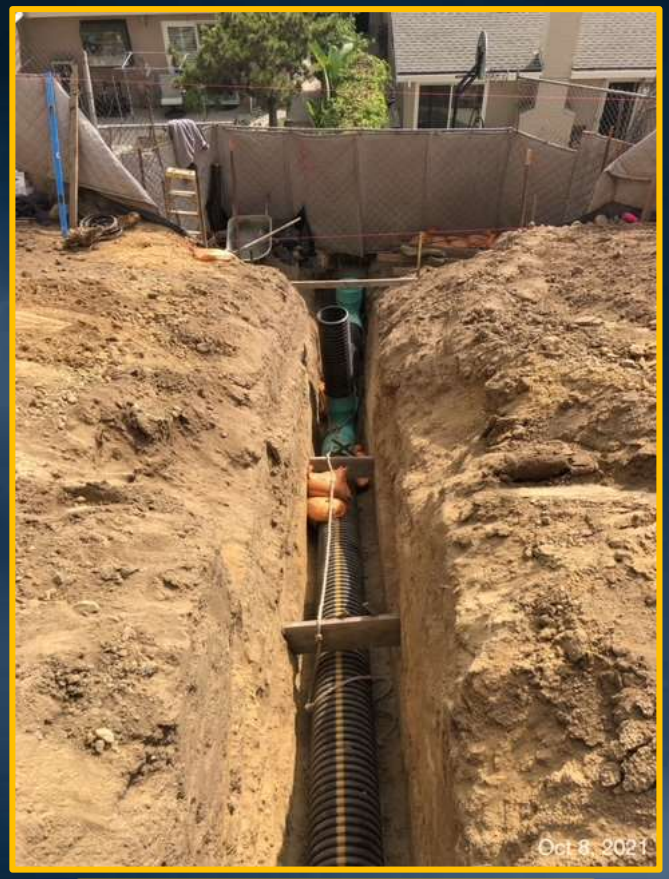
Engineering and Operations Committee
Item 7b
November 8, 2021

Construction and Procurement Contracts September 2021

Construction & Procurement Contracts Through September 2021	
Number of Contracts at end of September 2021	33
Total Bid Amount of Contracts in Progress at end of September 2021	$249M
Contracts Awarded in September 2021	1
Contracts With Notice To Proceed Issued in September 2021	0
Contracts Completed in September 2021	1
Contract Gross Earnings in September 2021	$2.4M

Garvey Reservoir Drainage and Erosion Improvements – Areas 6, 7, 8, 10, and 11

- Contract Amount:
  - $ 1,294,800
- Contractor:
  - Kaveh Engineering and Construction, Inc.
- Paid to Date:
  - 63 %



12-inch HDPE Storm Drain Piping at Area 7

MWD HQ Building Improvements

- Anticipated Completion Dates:
  - Seismic Upgrade Project:
    - January 2022
  - Physical Security Phase 2:
    - March 2022
  - Fire Alarm & Smoke Control:
    - January 2023
- Upcoming projects
  - Physical Security Phase 3
  - AV Room Upgrades
  - P-1 fire sprinkler system upgrades

Dust Containment for Security Upgrades In Rotunda

Planned December Board Actions

- Casa Loma Seismic Upgrade
- Desert Villages Domestic Water Treatment Systems
- Rialto Pipeline Service Area Water Supply Reliability Projects

Earthquake Resistant Ductile Iron Pipe (ERDIP) Stored in DVL Yard

2021 E&O Virtual Field Inspection Trip

- 11 Directors in Attendance
- 15 Presentations and videos

THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928