Long-Term Infrastructure Investment Workshop

Board of Directors

October 28, 2025

Agenda

- CIP Drivers and Guiding Principles
- Water System Projects
- Water & Natural Resources Projects
- Wastewater System Projects

CIP = Capital Improvement Program

Today's Speakers

Serge Terentieff
Director of Engineering and Construction

Michael Hartlaub
Manager of Construction Division

Denise Cicala
Manager of Design Division

Carlton Chan
Manager of Pipeline Infrastructure Division

Alice Towey
Director of Water and Natural Resources

Amit Mutsuddy
Director of Wastewater

CIP Drivers

Maintenance and Reliability

Safety

Water Quality

Aging Infrastructure

Regulations

Resiliency

Capacity

Climate Change

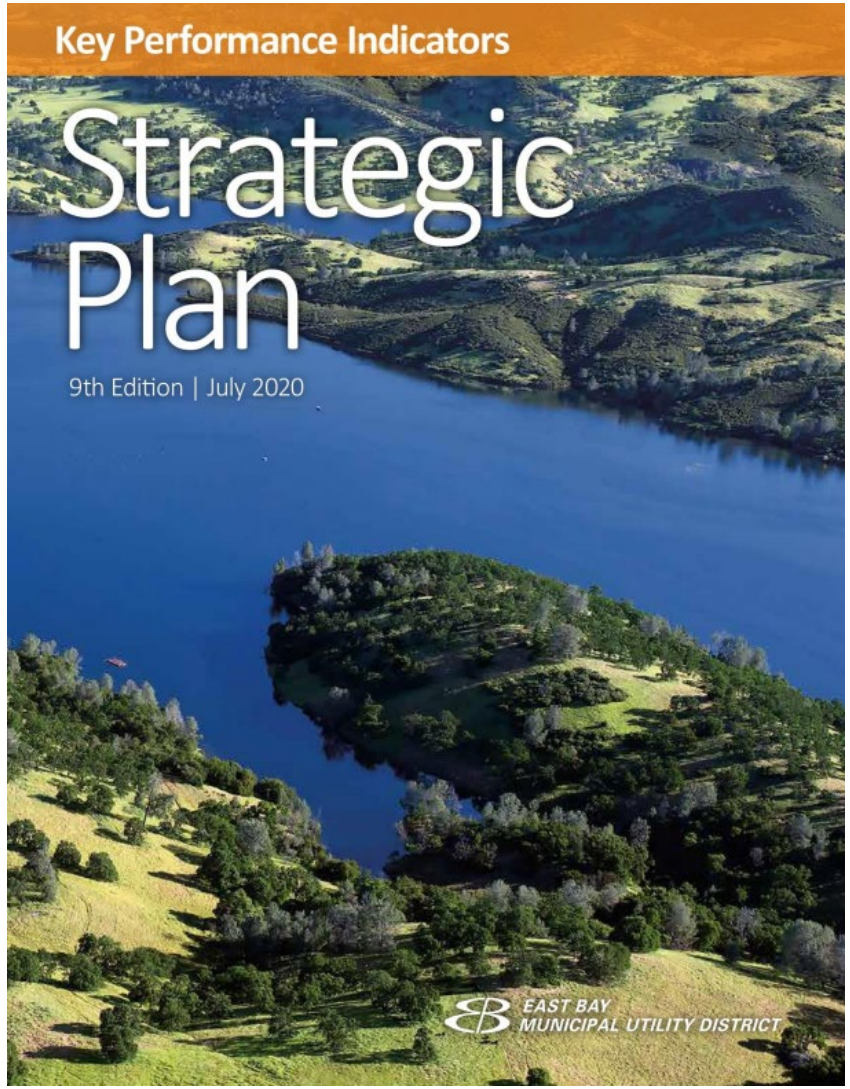
10-year CIP

Strategic Plan: Strategies for Long-Term Infrastructure Investment

1. Maintain coordinated master plans for all facilities and assets.

2. Meet operational needs and reliability goals by effectively maintaining the infrastructure.

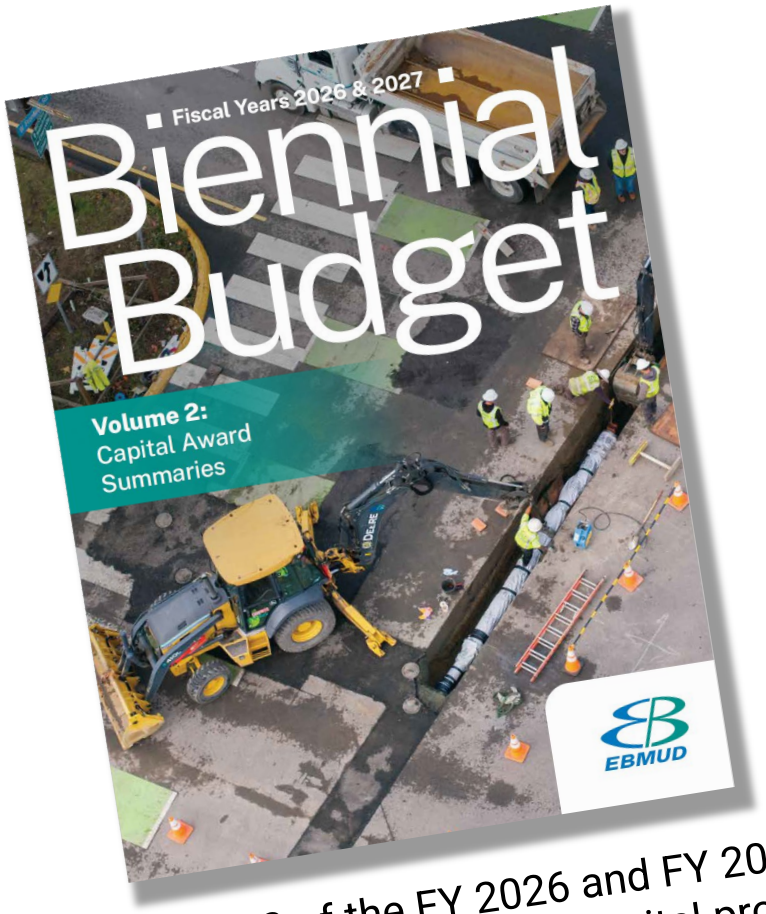
3. Implement the master plans and set priorities in the operating and capital budget process to reflect the needs identified in those plans.



Coordinated Master Plans

- Guides long-term capital investments and operations and maintenance decisions
- Developed with Board input and guidance
- Includes asset classes and systemwide plans
- Links to District goals, budgets, and regulatory drivers
- Used to develop CIP

CIP Prioritization for FY 2026 to FY 2035



Volume 2 of the FY 2026 and FY 2027 Biennial Budget, detailing capital project budgets for the 10-year CIP

- **Purpose:**
  - Spend ratepayer funds responsibly on the highest priority capital projects
  - Maintain reasonable rates while continuing to meet the community's needs for clean, reliable drinking water and protection of natural resources
- **Process:**
  - All projects prioritized with universal frameworks - Urgency and Importance
  - Prioritization guides which projects are included in the CIP

FY = Fiscal Year

Water System Infrastructure Overview

Raw Water System

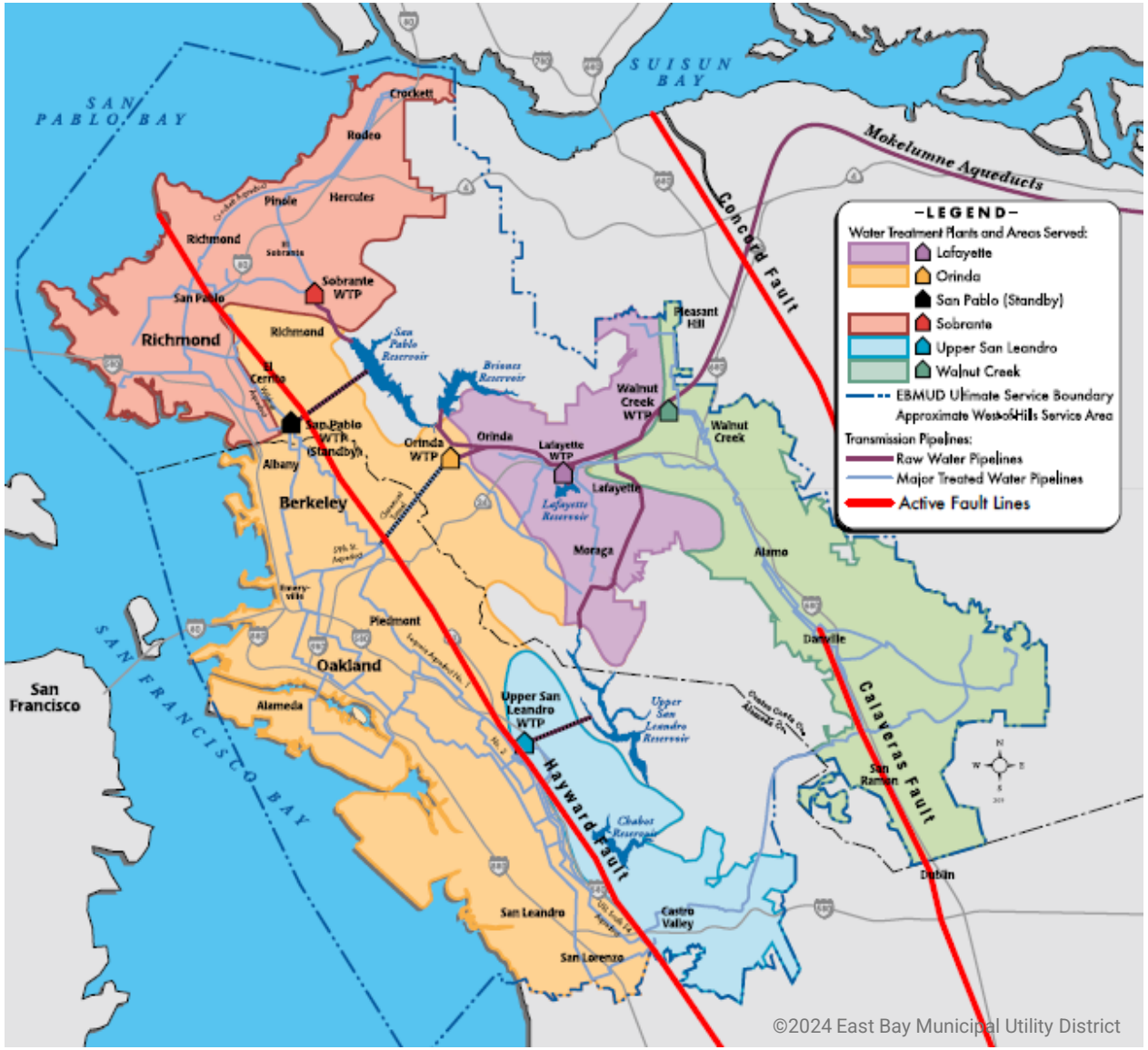
- 7 reservoirs
- Aqueducts

Treatment System

- 3 inline WTPs
- 3 conventional WTPs

Distribution System

- 4,200 miles of pipeline
- 120 pressure zones
- 167 reservoirs
- 131 pumping plants
- 100 regulators/RCS
- Customer elevation from sea level to 1,450 feet



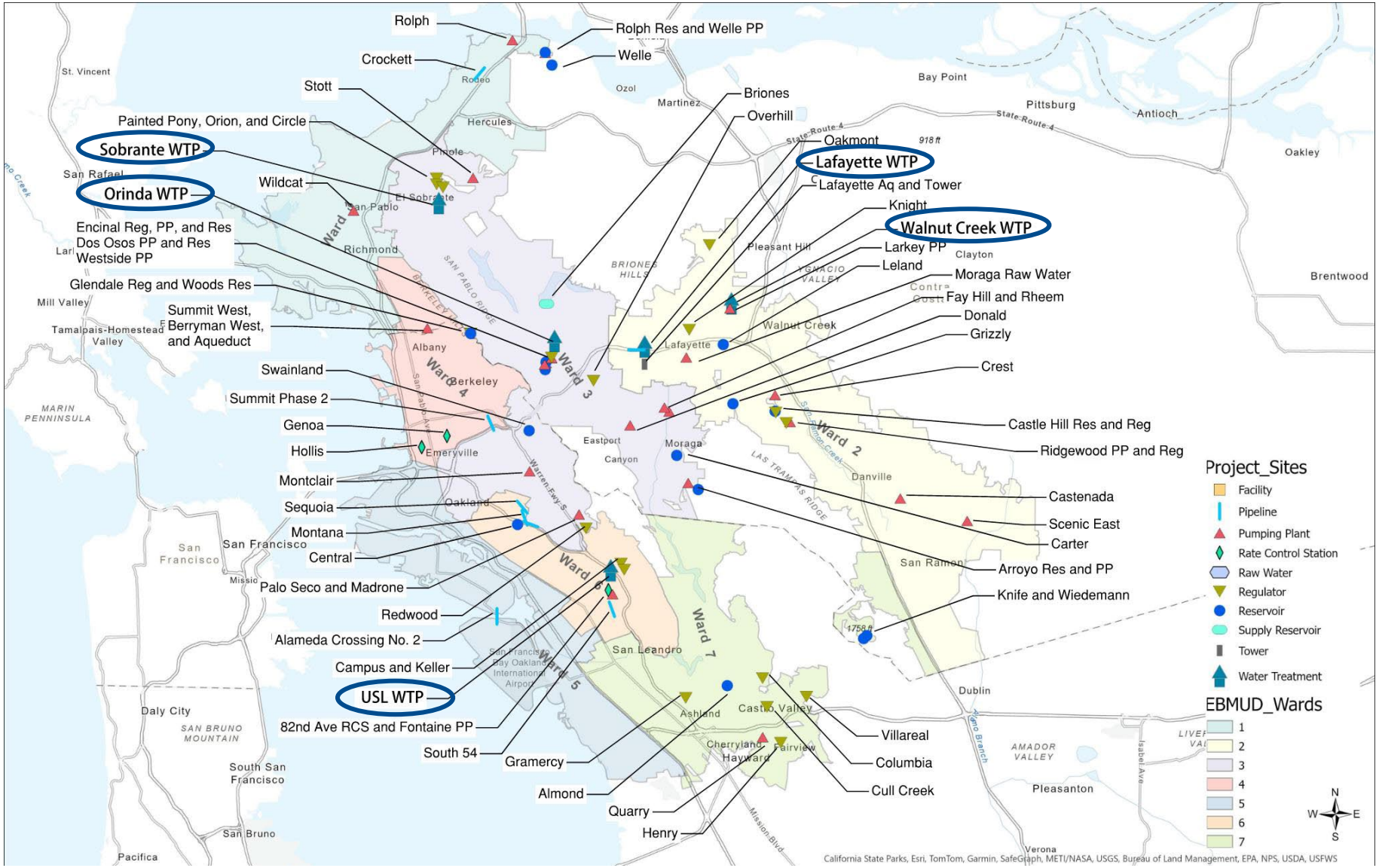
WTP = Water Treatment Plant | RCS = Rate Control Station

Progress Made: Water Recently Completed Projects

Water CIP Projects Completed in FY 2024 - 2026

Asset Class and Project Name	Completed FY and Cost (Millions $)			
	FY 2024	FY 2025	FY 2026	3-YR Total
Total Raw Water				**20.0**
Mokelumne Aqueduct No. 1 Bent Replacement			1.8	
Briones Outlet Tower Seismic Upgrade		20.0		
Total Treatment Plant: upgraded 4 plants				**39.5**
Orinda, Lafayette, and Walnut Creek WTPs – CO2 Storage and Feed and Control System			29.8	
Pardee Rec Area and Pardee Center WTP Improvements			9.7	
Total Distribution Reservoirs and Pumping Plants: upgraded 13 facilities upgraded				**126.8**
San Pablo Clearwell & RCS Replacement	58.9			
Acorn No. 1, Derby, Scenic, and Scenic East Res. Rehab.		25.5		
Castenada No. 1/2 Res. Rehab., Glen Res. Demo., and Mullholland Res. Roof Maintenance		25.1		
San Pablo Reservoir Hypolimnetic Oxygenation System		17.3		
Sunnyside and Happy Valley Pumping Plant Improvements			29.2	
Total Large Diameter Pipelines: replaced 6.1 miles				**83.6**
Oakland Inner Harbor Pipeline Crossing	35.4			
Summit Pressure Zone South Pipeline Replacement, Ph 1	12.1			
Wildcat Pipeline Improvements - El Cerrito		36.1		
Total Distribution Pipelines: replaced 58.4 miles				**220.4**
Pipeline Rebuild: (IRs, Relocations System Improvements, Trench Soils)	94.0	101.8	24.6	
Total Occupied Facilities: upgraded 2 facilities				**3.9**
North Orinda Sports Fields Temporary Maintenance Facilities	3.2			
Administration Building Ballistics-Resistant Window			0.7	
Total Other				**22.1**
Fuel System Improvements Projects			22.1	
Grand Total by FY	**203.6**	**225.8**	**86.9**	**547**

Overview of Water System's $5.6B 10-Year CIP



B = Billion

In Progress and Upcoming CIP Projects:

Water

Water Projects In Construction

Asset Class and Project Name	Cost (Millions $)
Total Raw Water System	**35.9**
Recoat Mokelumne Aqueduct No. 1 Gully Crossings – Phase 13	22.1
Mokelumne Aqueduct No. 2 Relining Phase 2 Project	11.5
Mokelumne Aqueduct No. 1 Bent Replacements at Station 2480	2.3
Total Water Treatment Plants	**805.0**
USL WTP Maintenance & Reliability and USL and Sobrante WTPs CSSIP	368.5
Orinda WTP Disinfection and CSSIP	357.3
Lafayette and Walnut Creek WTPs CSSIP	70.7
Lafayette WTP Control Systems Improvements	8.5
Total Distribution Reservoirs	**46.3**
East of Hills Facilities Demolitions and Improvements	28.1
Carter Res. Rehab., Arroyo Pumping Plant Improvement, and Arroyo Res. Replacement Project	18.2
Total Distribution Pumping Plants (PPs)	**101.4**
Happy Valley and Sunnyside Pumping Plants and Pipelines	28.9
Fay Hill PP Replacement, Rheem/Scenic East PP Imp., Pipeline Imp., and Ridgewood Reg. Installation and Pressure Tank Demo.	28.6
Westside PP Relocation	22.8
Palo Seco Pumping Plant and Madrone Regulator Replacement and Madrone Reservoir Demolition	21.2
Total Occupied Facilities	**12.1**
Administration Building Roofing Systems Rehabilitation – Upper Terraces	10.7
Oakland Administration Building Fiber Optic Backbone System Upgrade Project	1.4
Total Other	**14.9**
Cull Creek Regulator Construction, and Campus, Keller, Gramercy, and Villareal Regulators Replacement	10.0
Lafayette Recreation Area Wastewater Collection System Improvement	4.9
Grand Total	**1,016**

Water Projects Upcoming

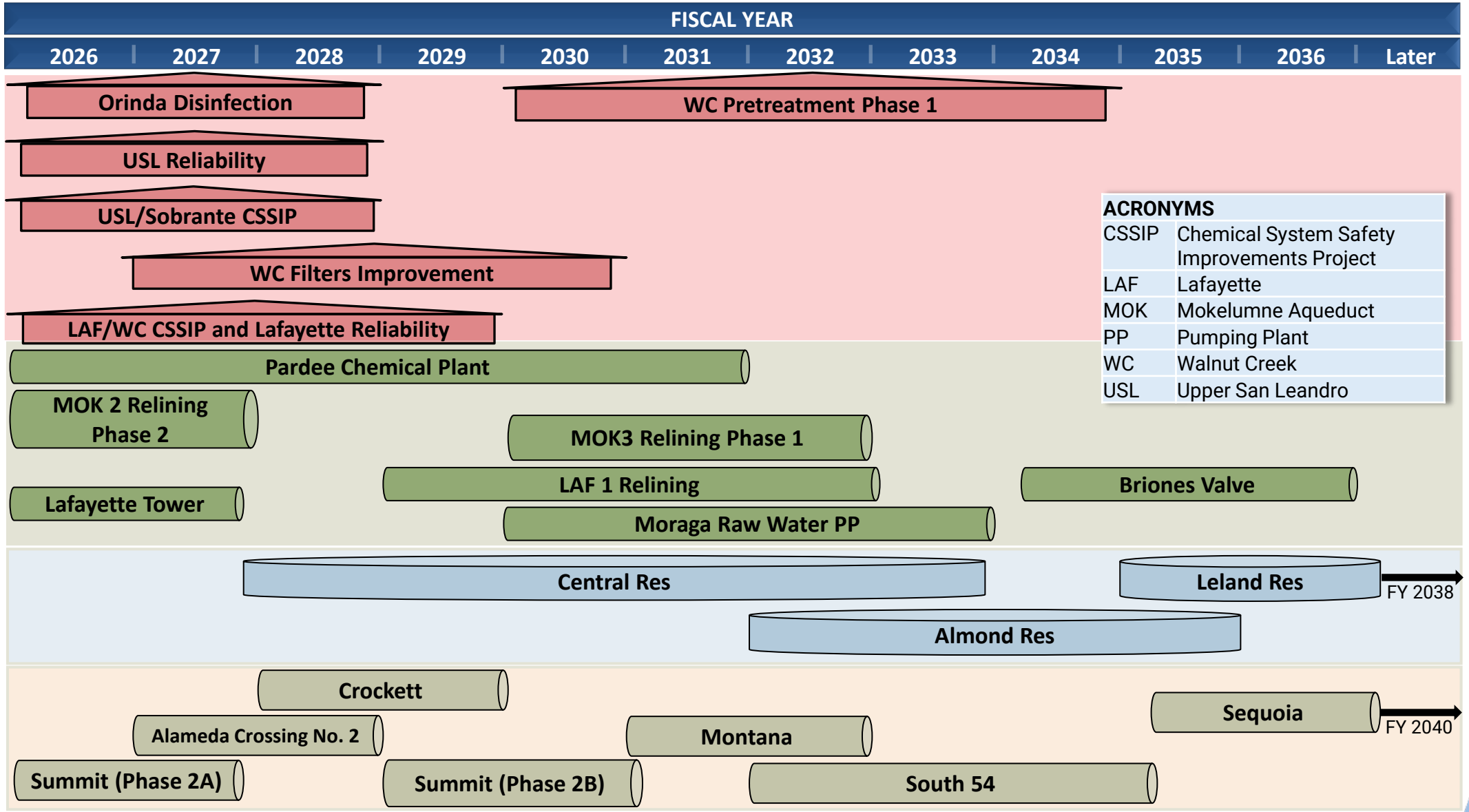
Asset Class	Cost (Millions $)
Raw Water	313
Water Treatment Plants	336
Distribution Reservoirs and Pumping Plants	609
Large Diameter Pipelines	158
Distribution Pipelines • Pipeline Rebuild/Infrastructure Renewals: $1.3B • Other: $0.7B (Relocations, System Improvements, System Extensions, etc.)	2,006
Occupied Facilities	186
Other Projects* • Water and Natural Resources Projects: $216M • Other Projects: $594M	810
Grand Total	**4,418**

***Other/Misc. Projects:**

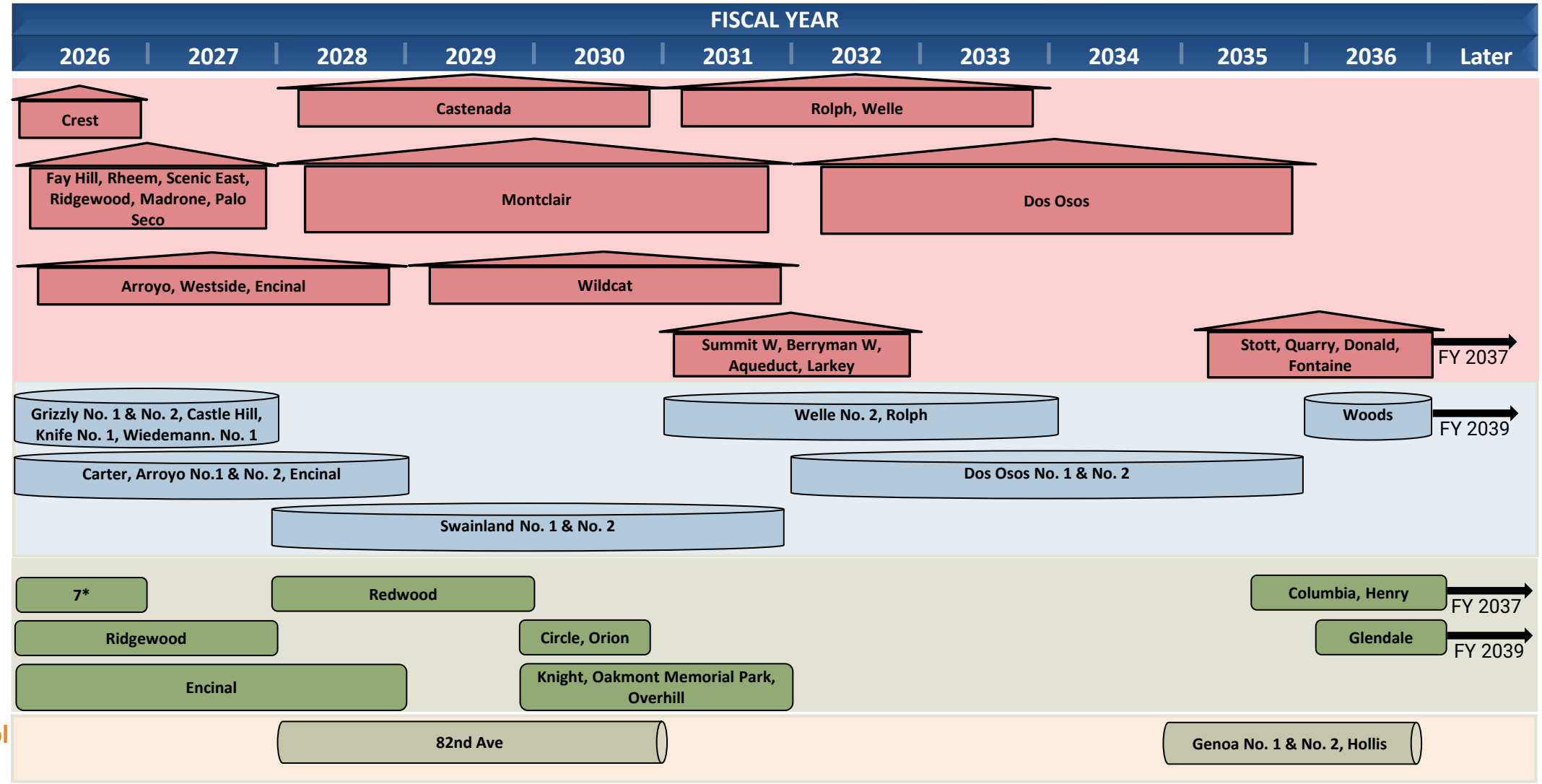
- Pressure Zone Studies
- Supplemental Supply, Regional Agreements
- Regulators & Rate Control Stations
- Recreation Areas & Facilities
- Sustainable Energy
- Water Recycling & Conservation
- Process & System Wide Improvements
- Vehicles, Equipment & Related Facilities
- Hydrants Installed by District Force
- ISD

M = Million

10-Year CIP Project Sequencing



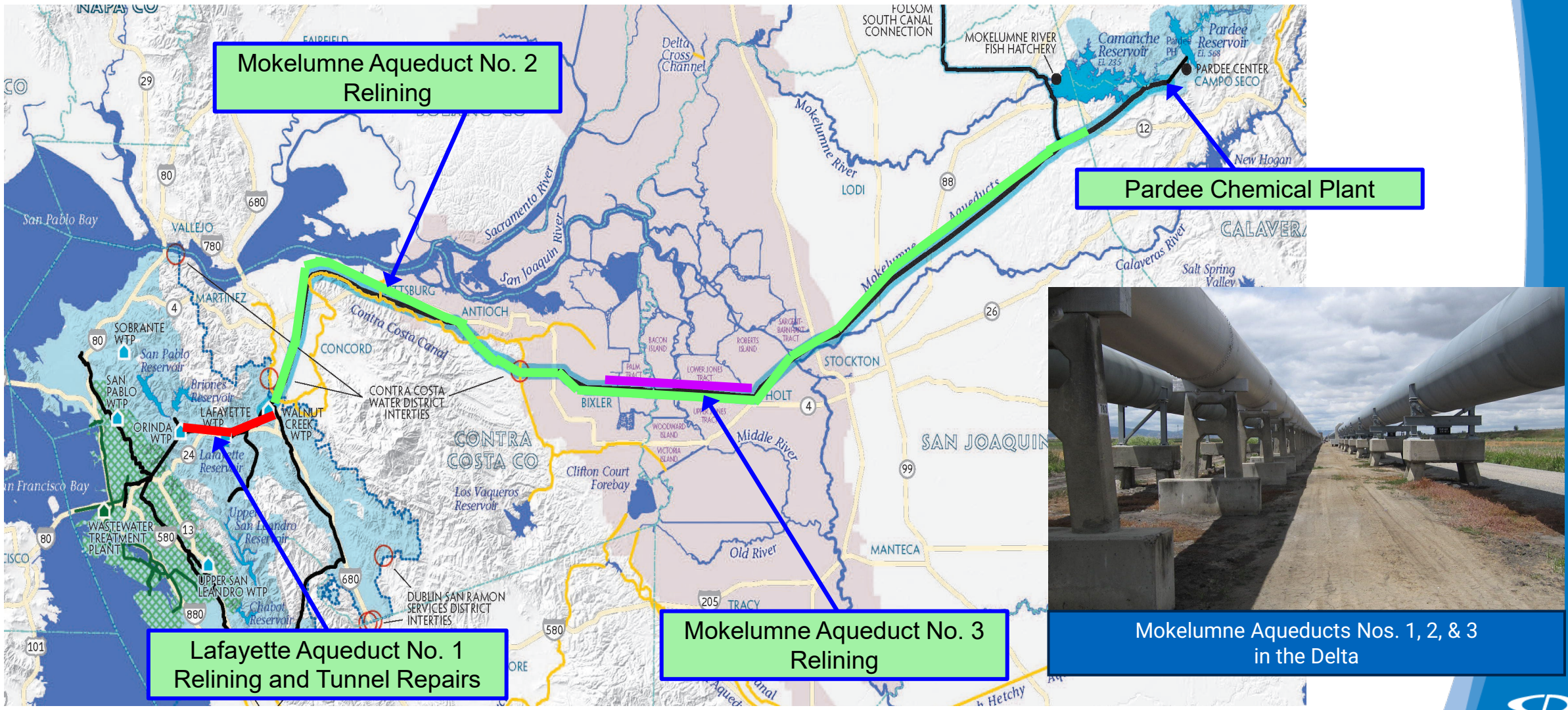
10-Year CIP Project Sequencing (Continued)



** 7 regulators include : Castle Hill, Painted Pony, Cull Creek, Campus, Keller, Gramercy, Villareal*

Raw Water

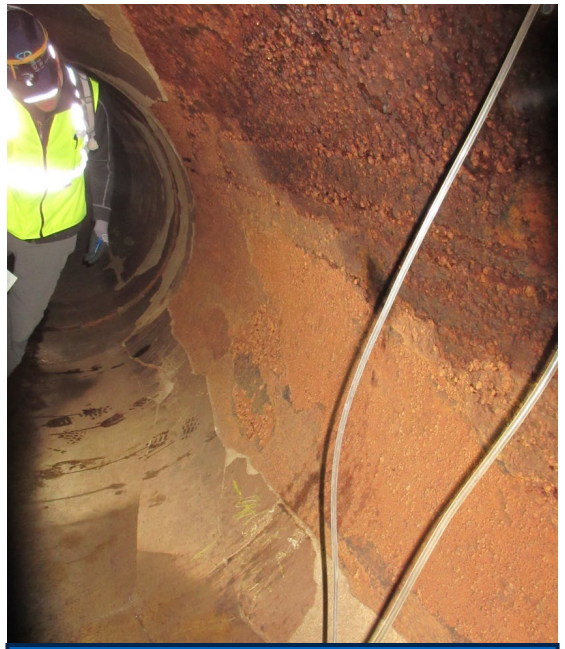
Raw Water Transmission



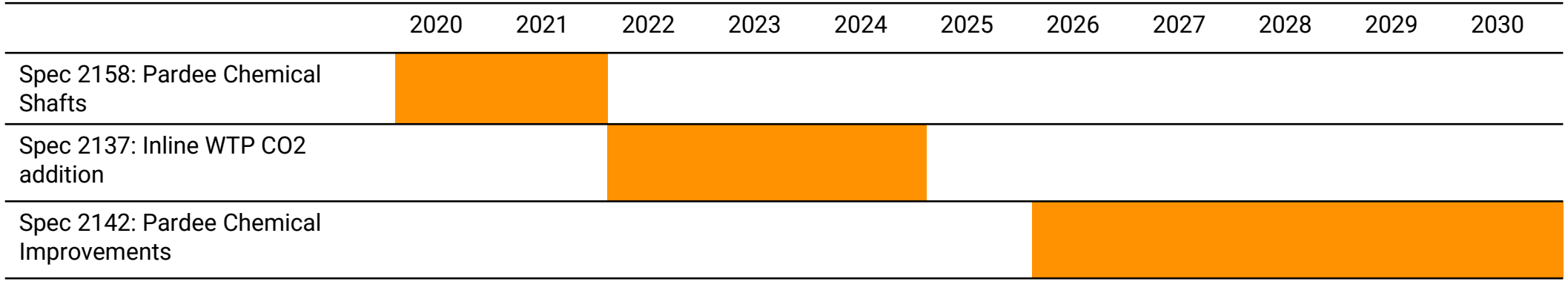
Raw Water Treatment Drivers

- Raw water is corrosive to the aqueducts' cement mortar lining (CML)
- Estimated 75 miles of CML needs replacement ($45M between now and FY2035)

Delaminated Lining Accumulated on Pipe Invert



Exposed Steel Pipe In Mokelumne Aqueduct No. 3



Pardee Chemical Plant Improvements

Scope

- Upgrade and add lime and CO_2 System
- Construct power building and new generators
- Construct new operations and storage building

Schedule

- Design FY 2023 - 2026
- Construction FY 2027 - 2030

Pardee Chemical Facility Site Layout (Rendering)

Why is this project critical?

- 3rd of 3 projects phases to improve water chemistry.
- Reduces corrosion in the Mokelumne Aqueducts, protecting over $3 billion in assets

Lime Slaker System (Rendering)

CO_2 = Carbon Dioxide

Mokelumne Aqueduct No. 2 Relining Phase 2

- Remove cement mortar lining in two miles of pipe and field apply new cement mortar lining

Why is this project critical?

- Improve raw water transmission capacity
- Replace failed mortar liner
- To protect the steel pipeline from internal corrosion

Mokelumne Aqueducts in the Delta

Failed Mortar Lining Accumulated in Pipe

Mokelumne Aqueduct No. 1 (MOK 1) Recoating Phase 13

- Final phase of recoating program
- Recoats 57 above-grade segments of the MOK 1
  - 3.6 miles of MOK1
  - Abrasive blast and recoat with a three-part coating system
- PCB contamination cleanup

Why is this project critical?

- To protect the steel pipeline from exterior corrosion
- Removal of contaminated soils

Before: Mokelumne Aqueduct No. 1, Calaveras County

After: Recoated Mokelumne Aqueduct No. 1, Calaveras County

PCB = Polychlorinated biphenyls

Mokelumne Aqueducts Nos. 2 and 3 (MOK 2, MOK3)

Why is this project critical?

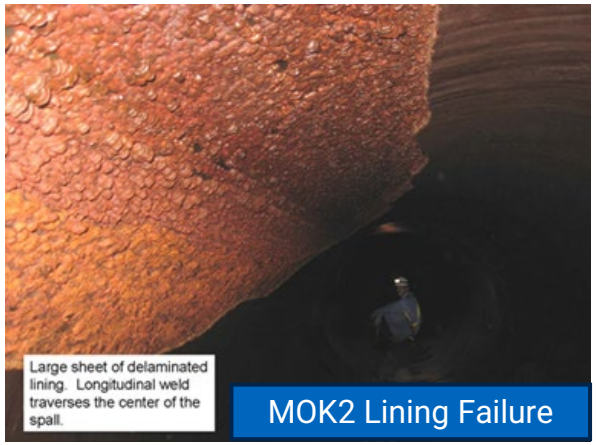
- Mokelumne Aqueducts provide 90% of District water supply
- The internal corrosion of the steel is reducing its structural integrity
- The increased roughness is reducing flow and increasing the need for pumping and increasing operating cost

Scope

- Remove and replace failed cement mortar lining in above ground pipelines in the Delta
- Reline 20 miles of MOK2/MOK3 above ground in the Delta
- Reline 55 miles of MOK2 below ground

Schedule

- MOK2 Ph 1 (2 miles below ground) construction completed in 2023
- MOK2 Ph 2 (1.5 miles above ground) award March 2025
- MOK3 Ph 1 (5 miles above ground) start construction in FY 2030



MOK2 Lining Failure


MOK3 Lining Failure
Delaminated Lining Accumulated on Pipe Invert


In-situ CML Installation Equipment

Lafayette Aqueduct No. 1 Relining

Scope

- Reline 3 miles of Lafayette Aqueduct No. 1 (LAF1) with new steel pipeline within the existing cast-in-place concrete pipe
- Repair defects in tunnels (4 miles)

Schedule

- Design: FY 2025 – FY 2026
- Construction: FY 2029 – FY 2032

Why is this project critical?

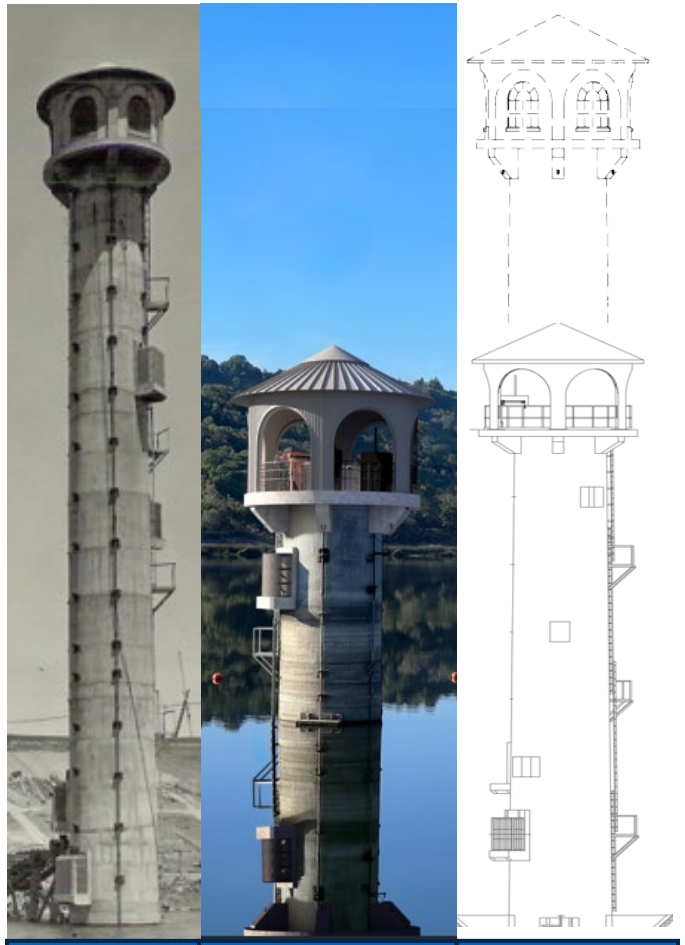
- Lafayette No. 1 is critical for FSCC and Briones Reservoir refill operations.
- Increasing leak repair maintenance activities are expensive

District Forces Repairing Leak on LAF 1 Pipeline

Typical Tunnel Lining Defect

FSCC = Folsom South Canal Connection

Lafayette Tower Seismic Safety Project



Existing Tower | Shortened Tower | Height Comparison

Why is this project critical?

- The tower functions as the sole spillway of the structure
- The facility serves as an emergency water source
- The tower is seismically deficient and the DSOD has mandated repair

Scope

- Shorten the tower by 40 feet to improve seismic performance.
- Add a lightweight metal operating house with architectural features similar to the existing structure.
- Retrofit tower conduits.
- Provide remote control for tower valves

Schedule

- Award November 2025
- Construction in FY 2026 - 2027

Existing

Metal Operating House

DSOD = Division of Safety of Dams

Water Treatment Plants

Orinda WTP Disinfection Improvements Project

- New post filter disinfection process
- Overhaul major electrical and back-up power systems

Why is this project critical?

- Improve robustness of treatment to 800,000 customers.
- Minimize disinfection by-products and improve reliability.
- Resiliency against climate change and changing water quality.

UV Room (Rendering)

Consolidated Maintenance and UV Building (Rendering)

New UV and CCB Structure

UV and CCB Structure Rebar and Piping

WTP = Water Treatment Plant | UV = Ultraviolet | CCB = Chlorine Contact Basin

EBMUD

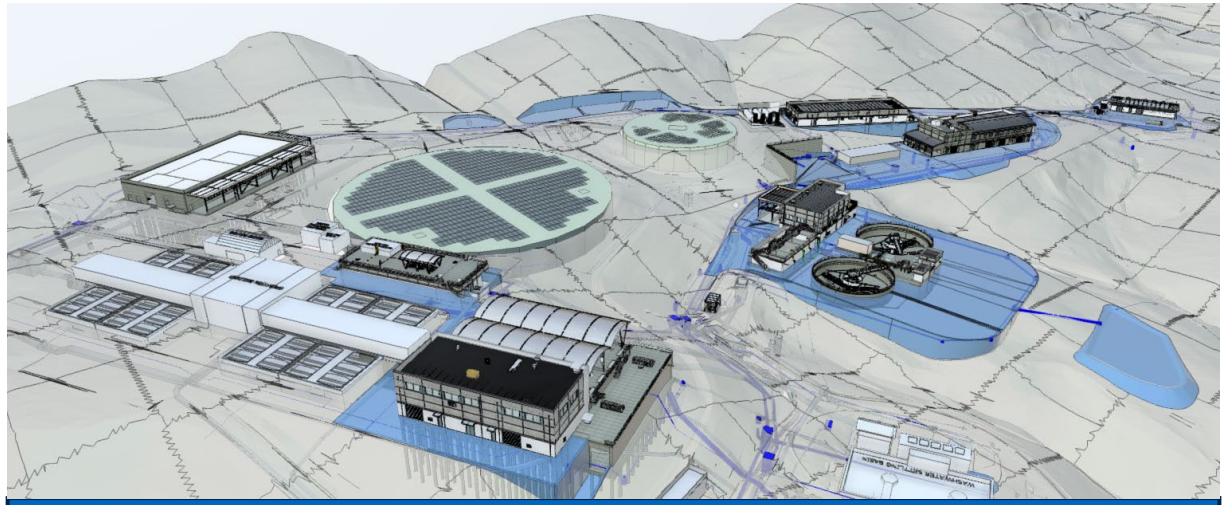
Walnut Creek Water Treatment Plant Pretreatment Project

Scope

- Add pretreatment and ozone treatment
- Upgrade solids handling system, reclaim improvements
- Consolidate Maintenance Building
- Upgrade Lafayette Weirs No. 1 and No. 2 to improve hydraulics

Schedule

- Design FY 2024 - 2028
- Construction FY 2029 - 2033



3D Model of Project Site Plan

Why is this project critical?

- Remove precursor material and turbidity
- Provide resilience against water quality upsets
- Improve drought operations

Pretreatment Project - Phased Consultant Management

Project Highlights

- Pre-design contract (0% - 30% design) is under budget and on schedule
- Scope refinement and value engineering performed
- Ability to sequence and phase the project based on District needs

Geotechnical Investigation at
Walnut Creek Water Treatment Plant

Key Takeaway

- Refined scope and cost estimate from 30% design milestone will be used to negotiate next contract for detailed design.

Walnut Creek Water Treatment Plant Water Quality Research Facility

Scope

- Install dual-train ozone, carbon dioxide, ballasted flocculation, filtration, and disinfection pilot equipment
- Rehab existing decant building and construct new structure to house new equipment, water quality lab, and workspace

Schedule

- Design FY 2024 - 2026
- Temporary Facility Construction FY 2026
- Process investigations FY 2026 - 2027
- Permanent Facility Construction FY 2029 – 2030

Water Quality Research Facility Pilot Testing Equipment

Why is this project critical?

- Confirm Pretreatment Project full-scale design assumptions and reduce risk
- Potentially reduce overall Pretreatment Project costs
- Ongoing ability to optimize and improve full-scale filter plant operations

Upper San Leandro WTP Maintenance and Reliability Project

- Rehabilitate multiple processes including flocculation, sedimentation, reclaim, and residuals handling systems
- Install new chlorine contact basin

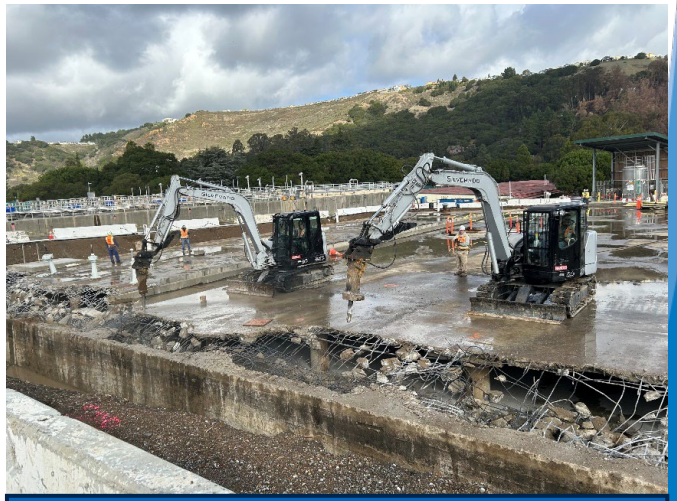
Why is this project critical?

- Improves drought, emergency, and seismic preparedness
- Allows for Planned outages of major facilities
- Reduces water loss
- Restores plant capacity

Workers Recoating Interior Tanks

Excavation for New CCB

Installation of Drilled Shoring System



Demolish 95-year-old CCB

WTP = Water Treatment Plant | CCB = Chlorine Contact Basin

Sobrante Water Treatment Plant Reliability Improvements Project

Scope

- Install new chlorine contact basin, reclaim facilities, and consolidated maintenance building
- Add two new filters and new sedimentation and flocculation basin

Schedule

- Final EIR certified and Project approved by Board on May 13, 2025
- Design to begin in FY 2034

Why is this project critical?

- Restore and increase WTP capacity to meet planned future demands.
- Supports decommissioning of San Pablo WTP.
- Maintain flexibility to treat supplemental supplies.

Project Site Plan with Conceptual Landscaping

New Power and Polymer Building (Rendering)

WTPs Chemical Systems Safety Improvements Project (CSSIP)

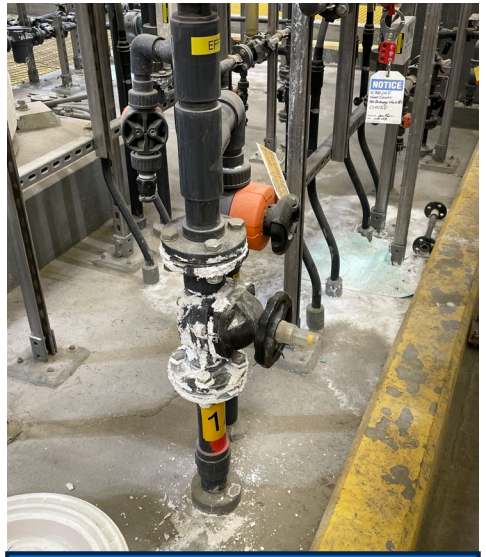
- Replace and upgrade chemical storage, feed, piping, and injectors
- Construct temporary facilities to maintain operation during construction
- HVAC, fire, electrical, containment, and seismic improvements
- Update all WTPs to current safety standards

Schedule

- Orinda WTP: FY 2023 – 2027
- USL and Sobrante WTPs: FY 2024 – FY 2028
- Lafayette and Walnut Creek WTPs: FY 2026 - 2029

Why is this project critical?

- WTPs do not meet current safety standards
- Reduce environmental hazards
- Chemical spill containment



Existing Chemical System (Leaky Caustic Pipe)

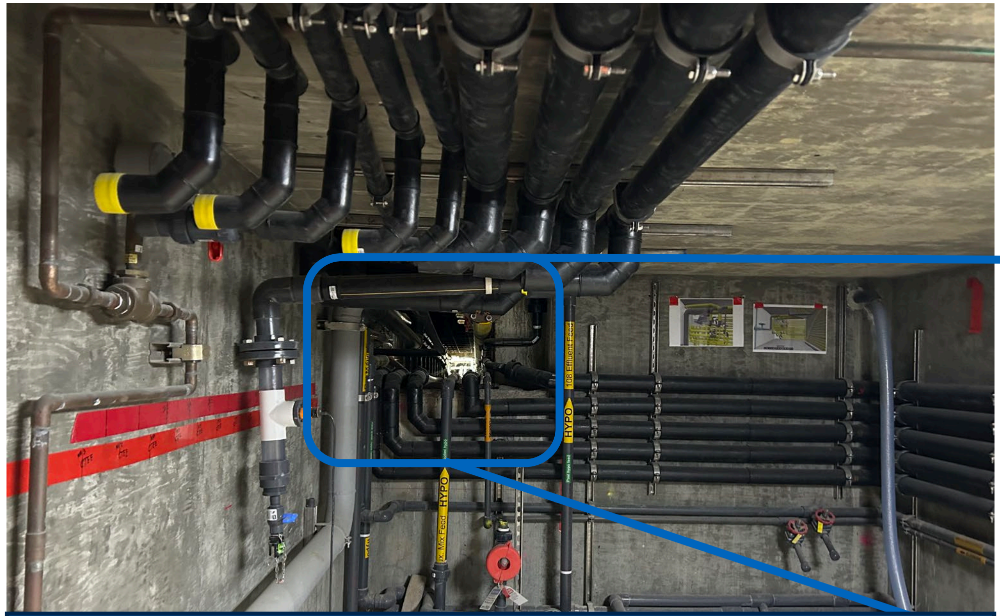
Failed Tank at Walnut Creek WTP

WTP = Water Treatment Plant | HVAC = Heating, Ventilation, and Air Conditioning | USL = Upper San Leandro

WTPs CSSIP

- Temporary chemical systems required to keep WTPs in service during construction
- Congested treatment plant sites
- Crowded and complex chemical trenches
- Coordination with other capital improvements

Photo of Temporary Chemical System at USL WTP



View Inside Chemical Building at Sobrante WTP, Showing Wall of Piping Entering a Chemical Trench

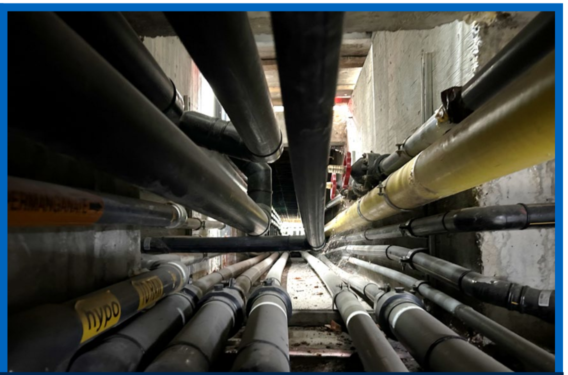


Photo Inside Chemical Piping Trench

EBMUD

Distribution Facilities

Reservoir Rehabilitation Projects

- Carter Reservoir Rehabilitation
- Arroyo Reservoir Replacement Project
- East of Hills Facility Demolitions and Improvements
- Madrone Reservoir Demolition

Why are these projects critical?

- Recoating and aluminum domes reduce corrosion of reservoirs and improve lifespan
- Improved redundancy, seismic reliability, and worker safety
- Improve water quality

Carter Reservoir Rehabilitation (Recoating)

Weidemann Reservoir (Recoating)

Grizzly Reservoir Rehabilitation (Welding)

Crest Rehabilitation to be Demolished

Central Reservoir Replacement

Scope

- Replace existing 154 MG reservoir with three 14-MG prestressed concrete tanks
- Replace Central RCS
- Construct bioretention area, paving, fencing

Schedule

- Planning: Final EIR certified and Project approved by Board in April 2021
- Design: FY 2025 – FY 2028
- Construction: FY 2028 – 2032

Why is this project critical?

- Oldest storage reservoir in the distribution system, serves >52,000 customer services.
- Oversized and low elevation creates water quality and operational challenges.

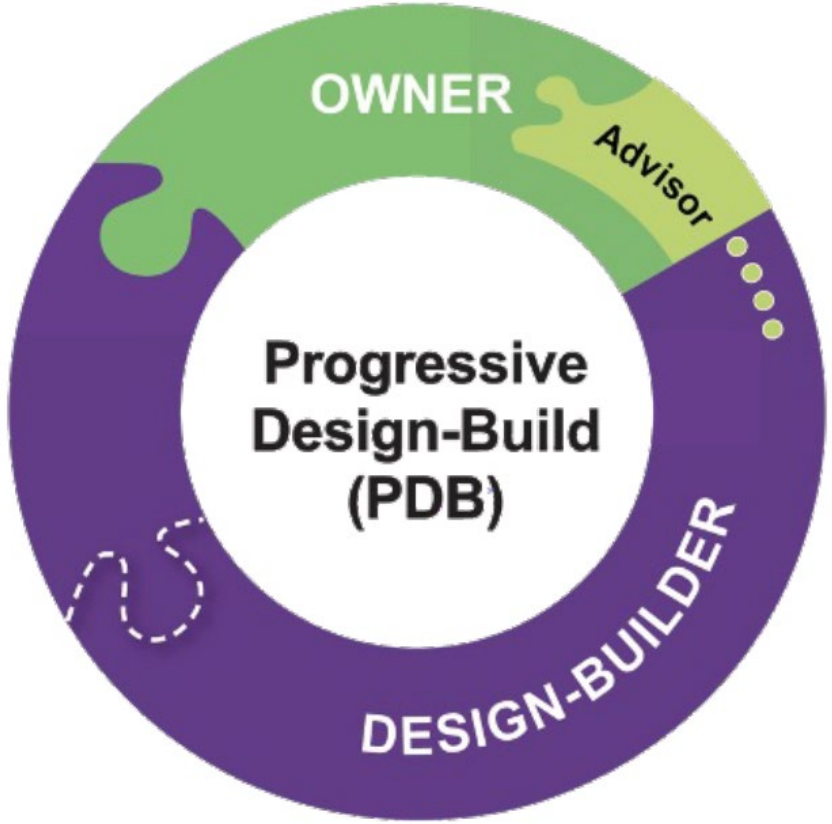
Central Reservoir Site Plan

RCS = Rate Control Station | EIR = Environmental Impact Report

Central Reservoir – Progressive Design Build

Project Benefits

- Cost Transparency
- Collaborative Design
- Continuous Value Engineering
- Shorter Construction Window
- Qualifications-based Procurement
- Risk Sharing



Pumping Plant (PP) Projects

- Arroyo PP Improvement
- Fay Hill PP Replacement
- Rheem and Scenic East PP Improvements
- Palo Seco PP Replacement
- Almond PP Flowmeter Replacement
- Westside PP Relocation
- Encinal PP Demolition

Rehabilitation of Yard Piping
Palo Seco PP

Why are these projects critical?

- Updating pump stations to meet current safety standards.
- Replacing aging and deficient mechanical and electrical infrastructure.

New Fay Hill PP Building Construction

Fay Hill PP Floor Slab

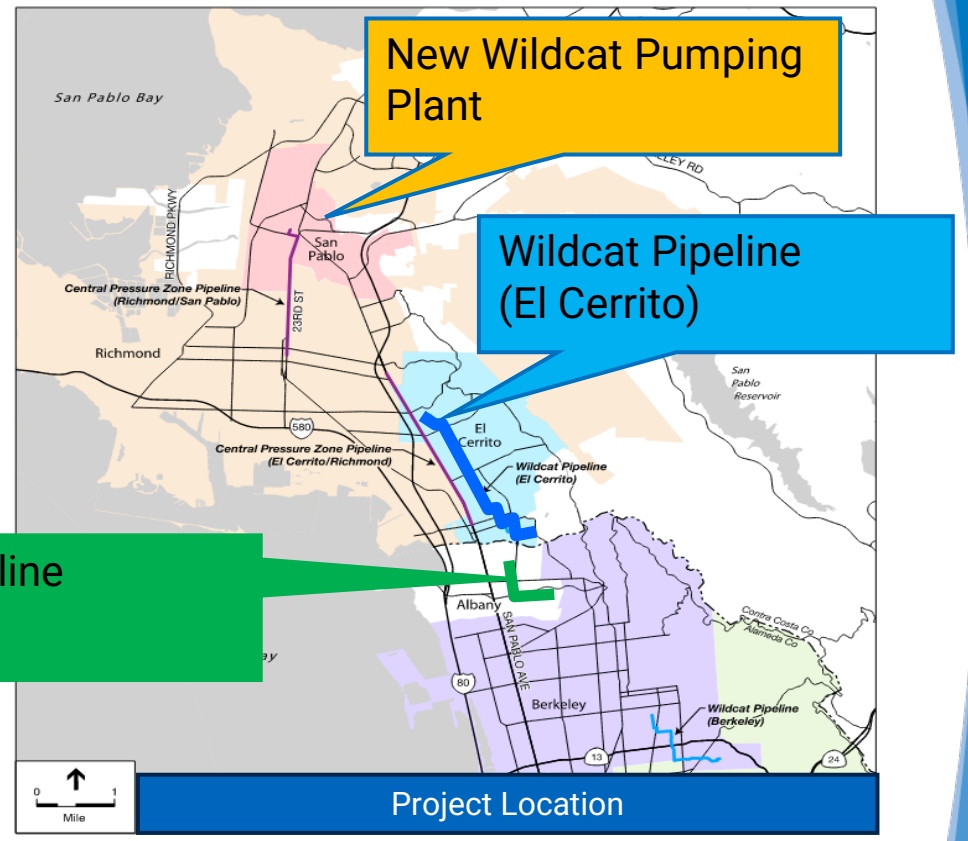
New Wildcat Pumping Plant

Scope

- Construct new 25 MGD Wildcat PP
- Improve capacity of Wildcat Aqueduct

Schedule

- MND adopted and Project approved by Board in FY 2023
- Design: FY 2026 to 2027
- Construction: FY 2029 to 2031



Why is this project critical?

- Improves water reliability for customers from Oakland to Crockett.
- Supports decommissioning of San Pablo WTP.
- Provides transmission capacity during facility outages and emergencies.

Southeast Wildcat PP View (Rendering)

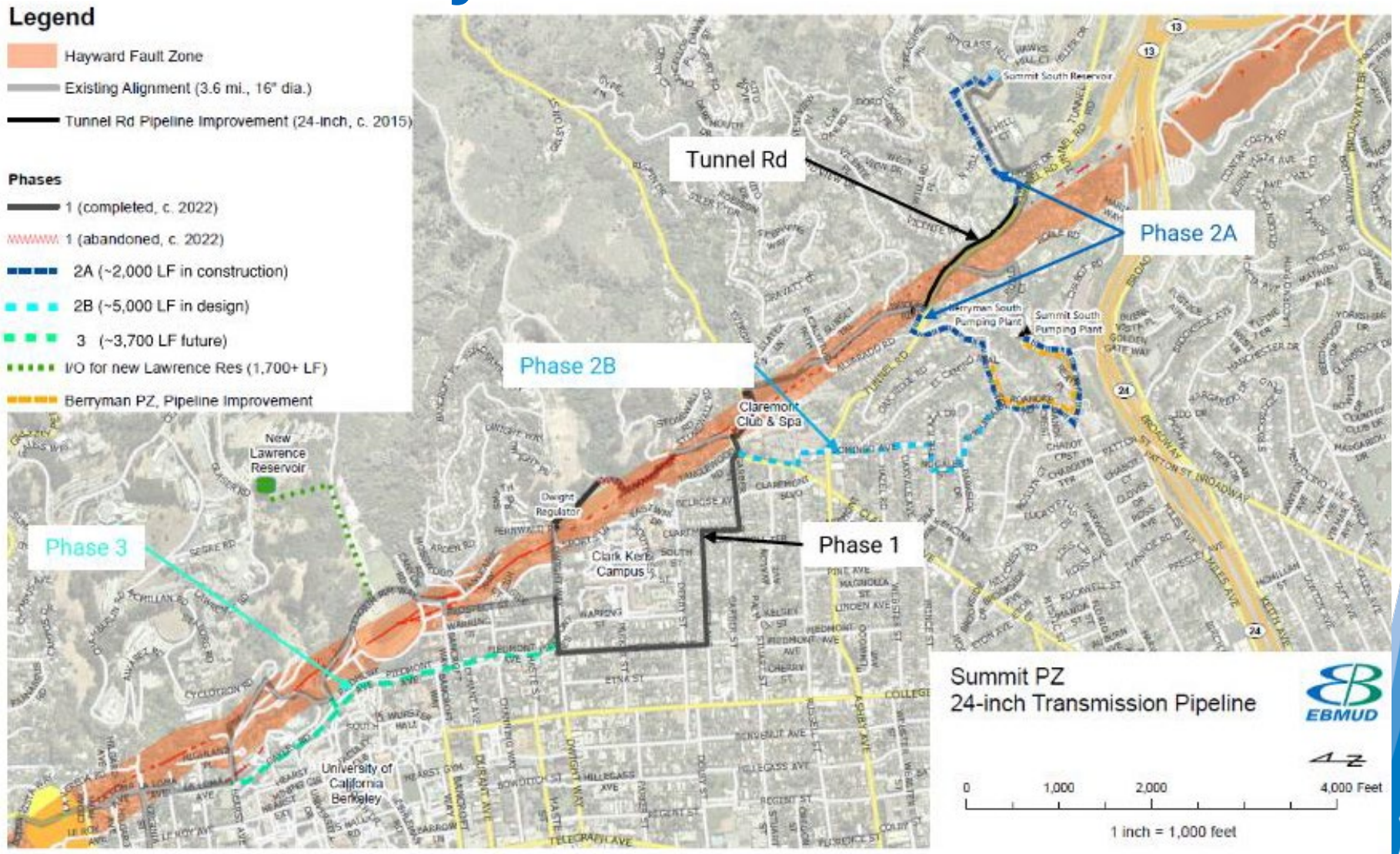
MGD = Million Gallons per Day | WTP = Water Treatment Plant | PP = Pumping Plant | MND = Mitigated Negative Declaration

Infrastructure Workshop

Pipelines

Summit Pressure Zone South Transmission Pipeline Replacement Projects

- Completed Projects
  - Tunnel Road (2015)
  - Phase 1 (2023)
- Current Project
  - Phase 2A in Construction anticipated completion December 2026
- Future Projects
  - Phase 2B in Design
  - Phase 3

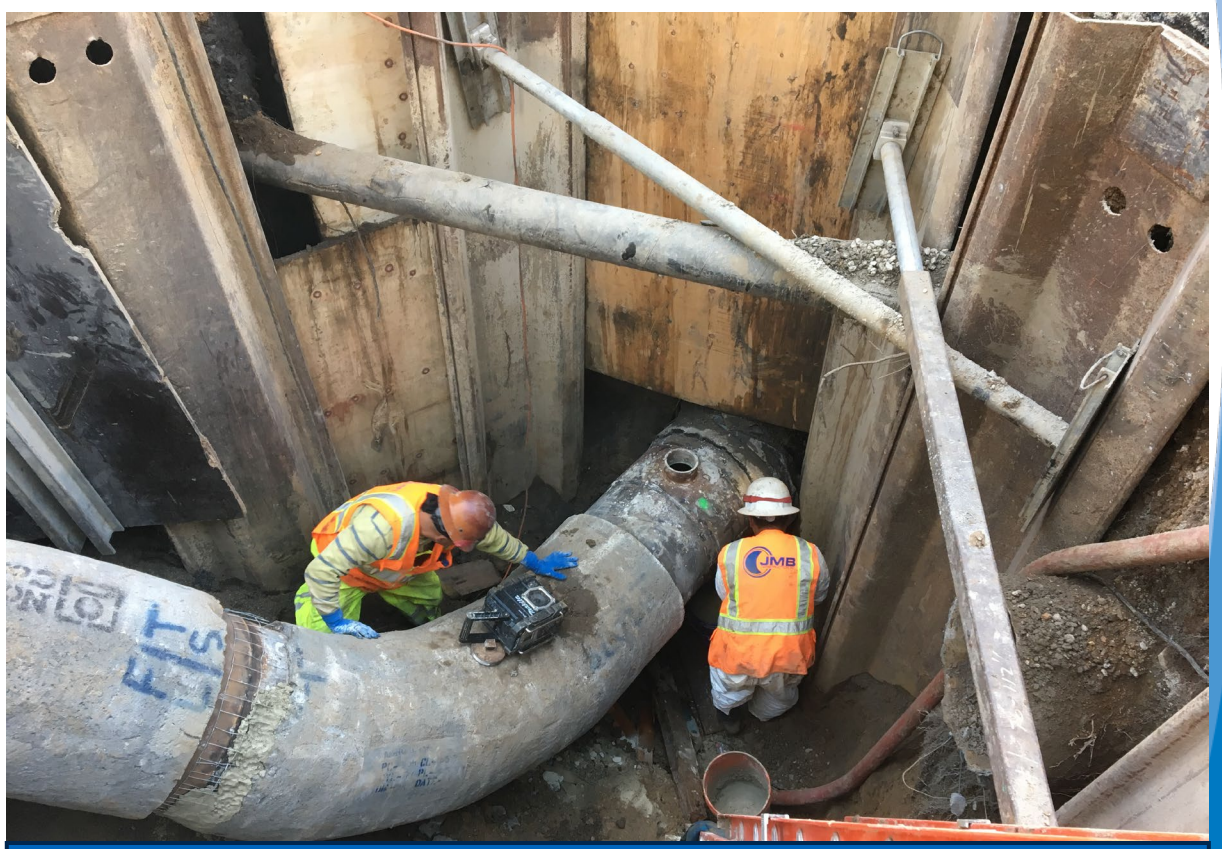


Summit Pressure Zone South Transmission Pipeline Replacement Phase 2A, Oakland and Berkeley

- Replace 2,000 feet of 24-inch transmission pipeline
- Construction scheduled to start this winter

Why is this project critical?

- Improve water transmission capacity
- The existing pipeline is extremely vulnerable to failure during an earthquake
- Improves reliability by moving alignment out of Hayward Fault zone



Typical 24-inch Transmission Pipe Installation

Alameda Crossing Projects

Oakland Inner Harbor, Phase 1 (Crossing #1)
- 2 miles of 24-inch welded steel in Oakland and Alameda
- 3,000 feet of 32-inch HDPE installed by Horizontal Directional Drilling (HDD) under the estuary
- Construction completed in 2023

Tidal Canal (Crossing #3)
- 1 mile of 24-inch welded steel in Oakland Alameda
- 1,400 feet of 32-inch HDPE installed by HDD under the estuary
- Start design FY 2030

San Leandro Channel (Crossing #2)

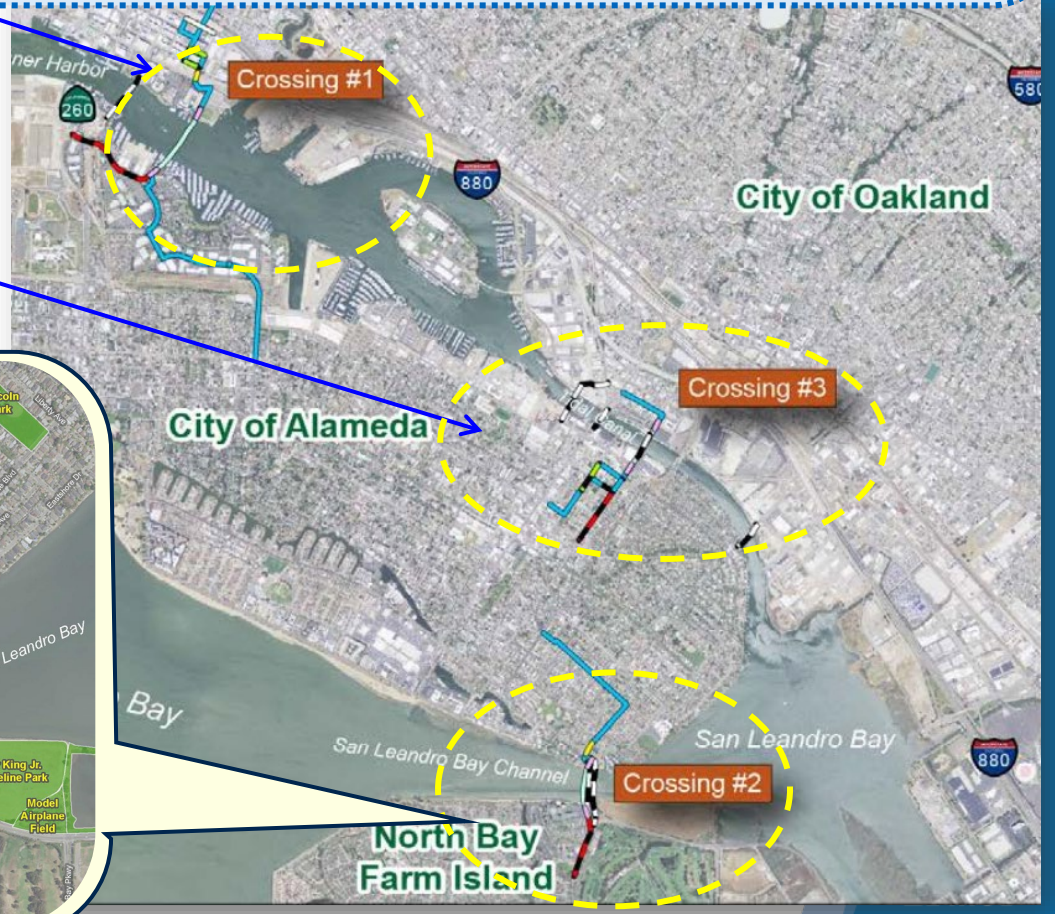
Scope
- 1 mile of 24-inch welded steel in Alameda
- 2,000 feet of 32-inch HDPE installed by HDD under the estuary

Schedule
- Complete design end of FY 2026
- Complete construction end of 2028

HDPE = High-Density Polyethylene

Why is this project critical?

- Improve water supply reliability to Alameda Island
- The existing crossing pipelines are extremely vulnerable to failure during an earthquake due to soil liquefaction



South 54 Aqueduct Relocation, Oakland

Scope

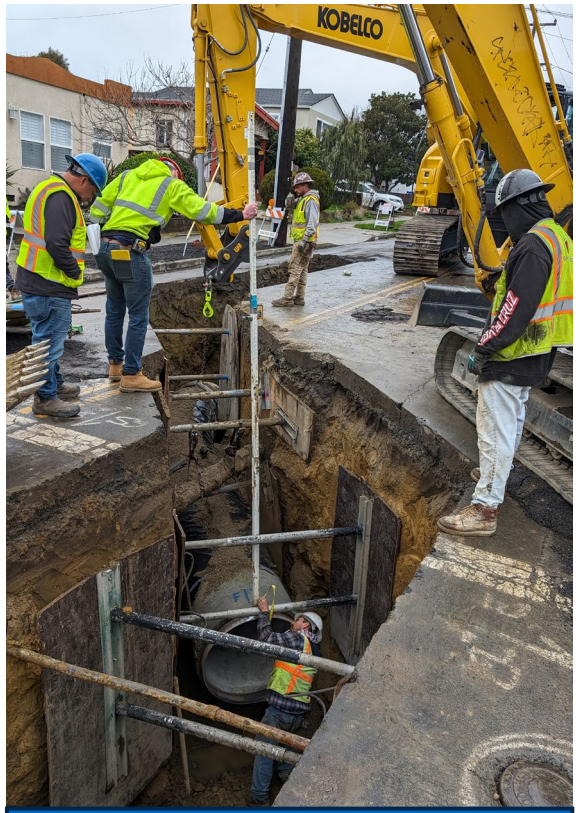
- Replace 7,000 feet of 48-inch transmission pipeline
- Includes one trenchless creek crossing

Schedule

- Design in progress, start construction FY 2032

Why is this project critical?

- Improve water supply reliability to southern service area
- Improves reliability by moving alignment out of Hayward Fault zone and landslide areas



Typical Transmission Pipe Installation

Typical Trenchless Installation

Pipeline Rebuild

Goal: To reduce main breaks and water loss

Why is this project critical?

- Replacing distribution pipelines to reduce water loss and minimize impacts to customers and the environment
- Installing resilient materials such as earthquake resistant ductile iron pipe (ERDIP) to build a more reliable water system

	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026 - 2028	FY 2029 - 2030	FY 2031 - 2035
Replacement Mileage Goal	10	12.5	15	15	15	17.5	20	20	22.5	22.5	25	25	27.5	30
Actual Miles Replaced	11.9	13.5	15.9	15.0	17.7	17.6	25.5	21.4	23.7	25.3	25.4	-	-	-

213 Miles Replaced (FY 2015- FY 2025)

280 Miles to be Replaced (FY 2026 –FY 2035)

Innovation, Prioritization, and Resiliency

Pipeline Replacement Prioritization

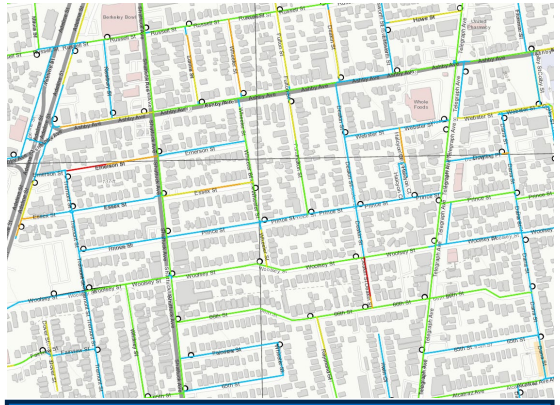
- Likelihood of Failure (LOF) and Consequence of Failure (COF) Model Research with UC Berkeley
- Completion of non-invasive condition assessment pilot project in Pleasant Hill

Water Innovation

- Streamlining planning, design, and construction workflows through technology to deliver capital projects more efficiently

Geotechnical Innovation

- Advanced geotechnical monitoring methods to model erodibility of Pardee Dam spillway in coordination with the Center for Smart Infrastructure

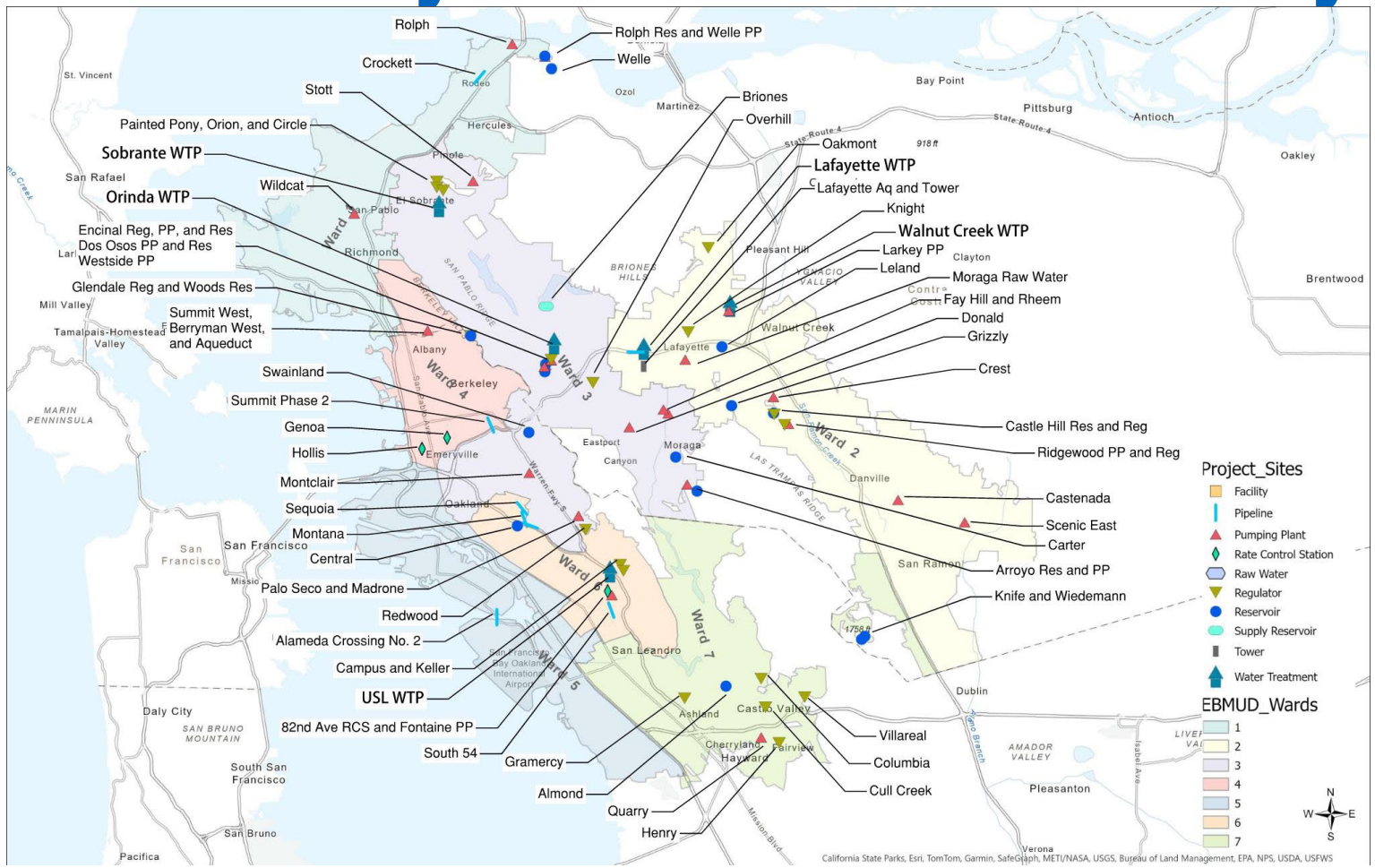


LOF Risk Model

Non-Invasive Condition Assessment Sensor in Valve Pot

Pardee Unlined Channel Condition

Water System's CIP Summary



Benefits to District Customers & the Community

- Replacement of aging infrastructure leads to a more reliable treatment and distribution system
  - Fewer main breaks
  - Improved seismic resiliency
  - Improved resilience to climate change and impacts to raw water quality
- Improved maintenance & reliability
- Progress towards transition from 6 to 4 WTPs, to reduce future costs
- Improved water quality (lower DBPs)
- Improved environmental and worker safety

DBPs = Disinfection Byproducts

. . . $5.6B 10-Year CIP buys us a more sustainable and resilient water system

Infrastructure Workshop

Water and Natural Resources Projects

Recently Completed Construction

Grizzly Peak Shaded Fuel Break

Groundwater Monitoring Well Installation

Two Dog Bridge Fish Passage Project

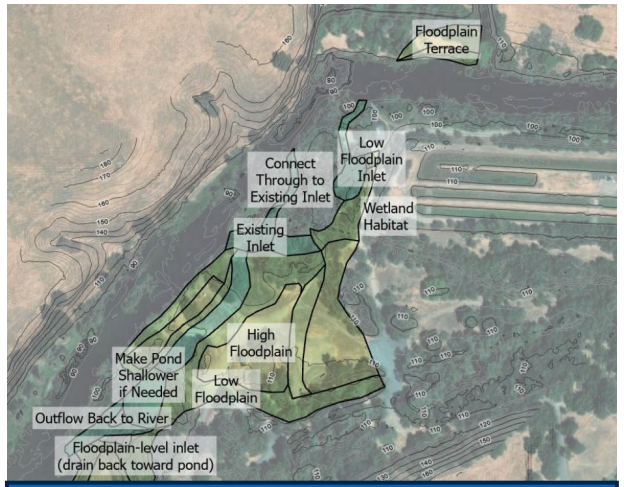
Projects in Construction:
Healthy Rivers and Landscapes (HRL) Habitat Restoration

Scope:
- Floodplain restorations on Lower Mokelumne River
- Install 3 riparian diversion fish screens
- Two gravel restoration projects and annual maintenance
- McCormack Williamson Tract (MWT) habitat monitoring

Schedule:
- Design complete FY 2025
- Construction complete FY 2029
- MWT Monitoring FY 2026-2033

Why is this project critical?
- Improves outcomes for native fish on the Lower Mokelumne River
- $8.1 million in State and Federal grants

Gravel Restoration FY25



Floodplain Design

Installed Riparian Diversion Fish Screen

FY = Fiscal Year

Projects in Construction:
Tomato Stand Fish Passage Project

Scope:
- Replacing a failing culvert with a bridge
- Restoring the creek channel with placement of gravel and boulders

Schedule:
- Completion of construction in FY 2026

Why is this project critical?

- Improves habitat and connectivity for Steelhead in Pinole Creek
- $787,000 in funding from Wildlife Conservation Board

Pinole Creek Channel Restoration

Projects in Development:
Recycled Water Service Extension

Recycled Water Strategic Plan Update completed in FY 2025

- Near-term focus on non-potable reuse expansion (DERWA, East Bayshore) to reduce potable demand

DERWA/San Ramon to Danville

Priority

- Secure supplemental supply from Central San

Scope

- New recycled water pump station
- 5 miles new pipelines, customer retrofits

Schedule

- Design FY 2026 - 2030
- Construction FY 2027 - 2031

East Bayshore to Alameda

Priority

- Federal funding
- Inspection of estuary crossing pipeline

Scope

- Repurpose and line pipeline to Alameda
- 4.6 miles new pipelines, customer retrofits

Schedule

- Design FY 2028 - 2040
- Construction FY 2028 - 2040

Workshop Break

Gone Fishing at San Pablo Reservoir (2006)

Wastewater Infrastructure

BY THE NUMBERS

EBMUD

88	Square Miles
740k	Customers
1,600	Miles of Private Sewer Laterals
1,600	Miles of Pipe in the Collection System
37	Miles of Interceptor & Force Main Pipe
1	Wastewater Treatment Plant
3	Wet Weather Facilities
15	Pump Stations
14	Level Monitoring Stations
5	Overflow Structures

Wastewater Infrastructure

MWWTP Originally Constructed in 1951

24/7 Operations for Aging Interceptors and MWWTP

29 Miles of Large-Diameter Interceptors

Point Isabel Originally Constructed in 1992

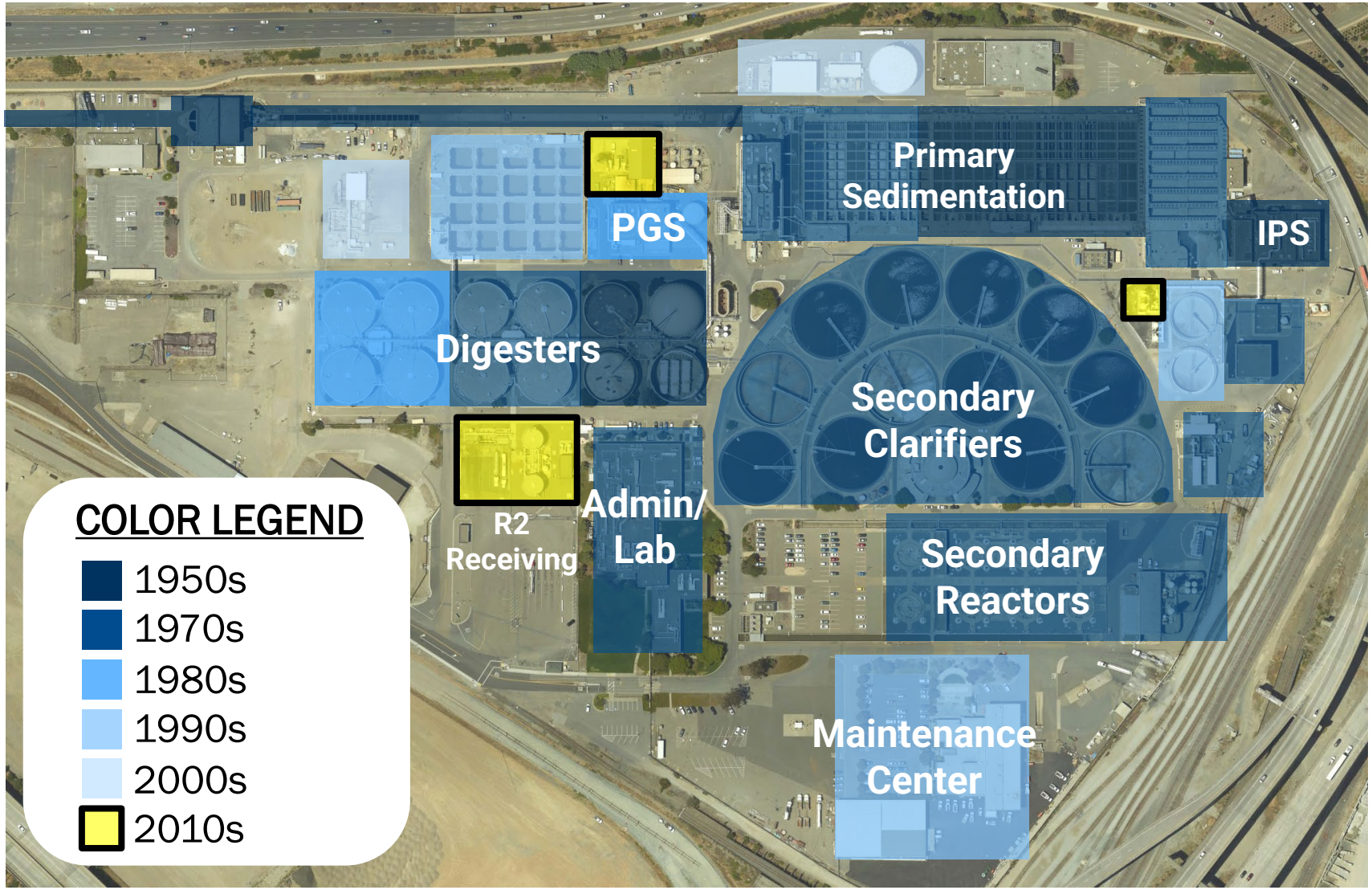
San Antonio Creek Originally Constructed in 1992

Oakport Originally Constructed in 1991

MWWTP = Main Wastewater Treatment Plant

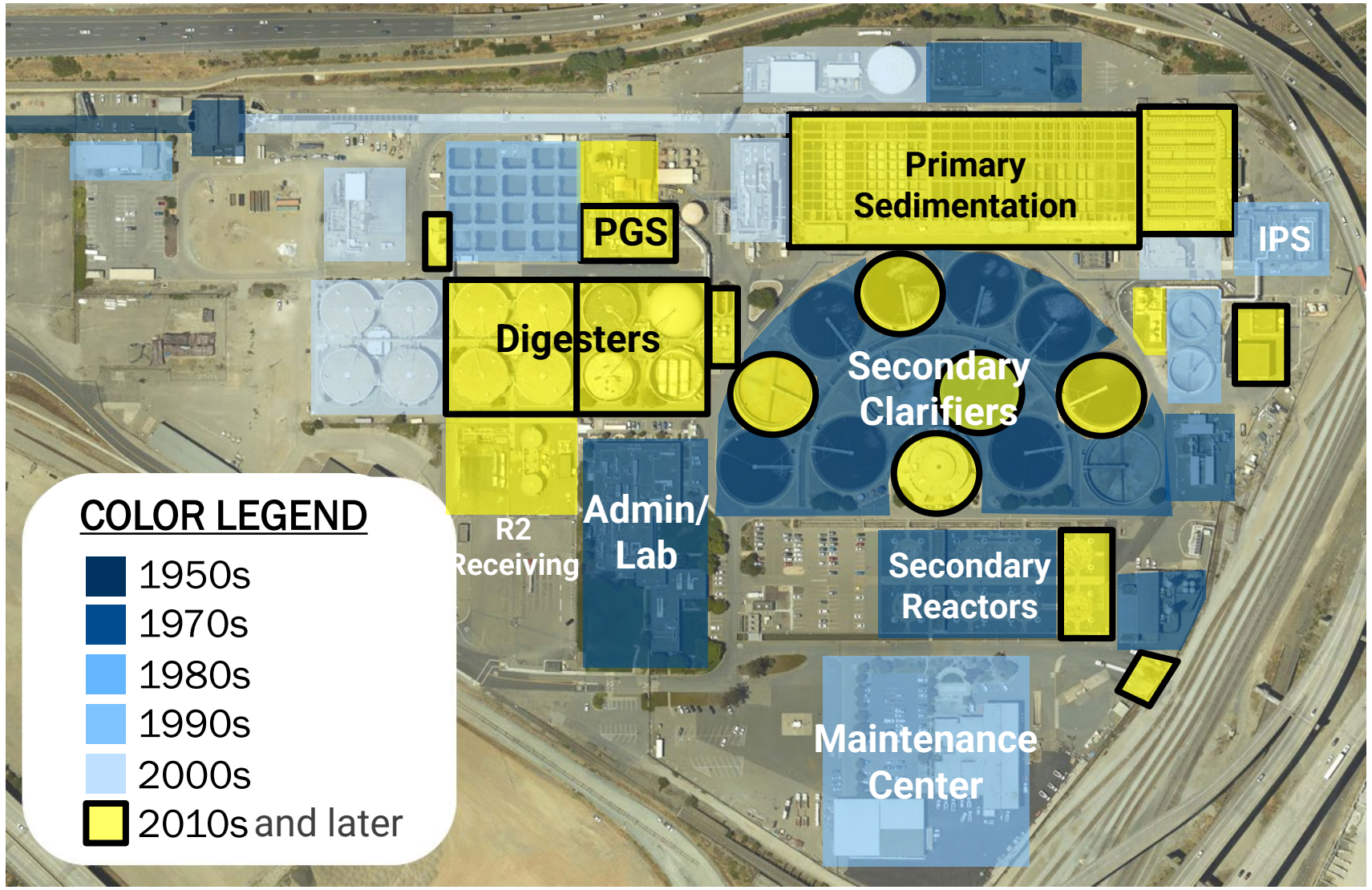
Progress Made:
Wastewater Recently Completed Projects

MWWTP Original Construction



PGS = Power Generation Station | IPS = Influent Pump Station | R2 = Resource Recovery

MWWTP Renewal To Date

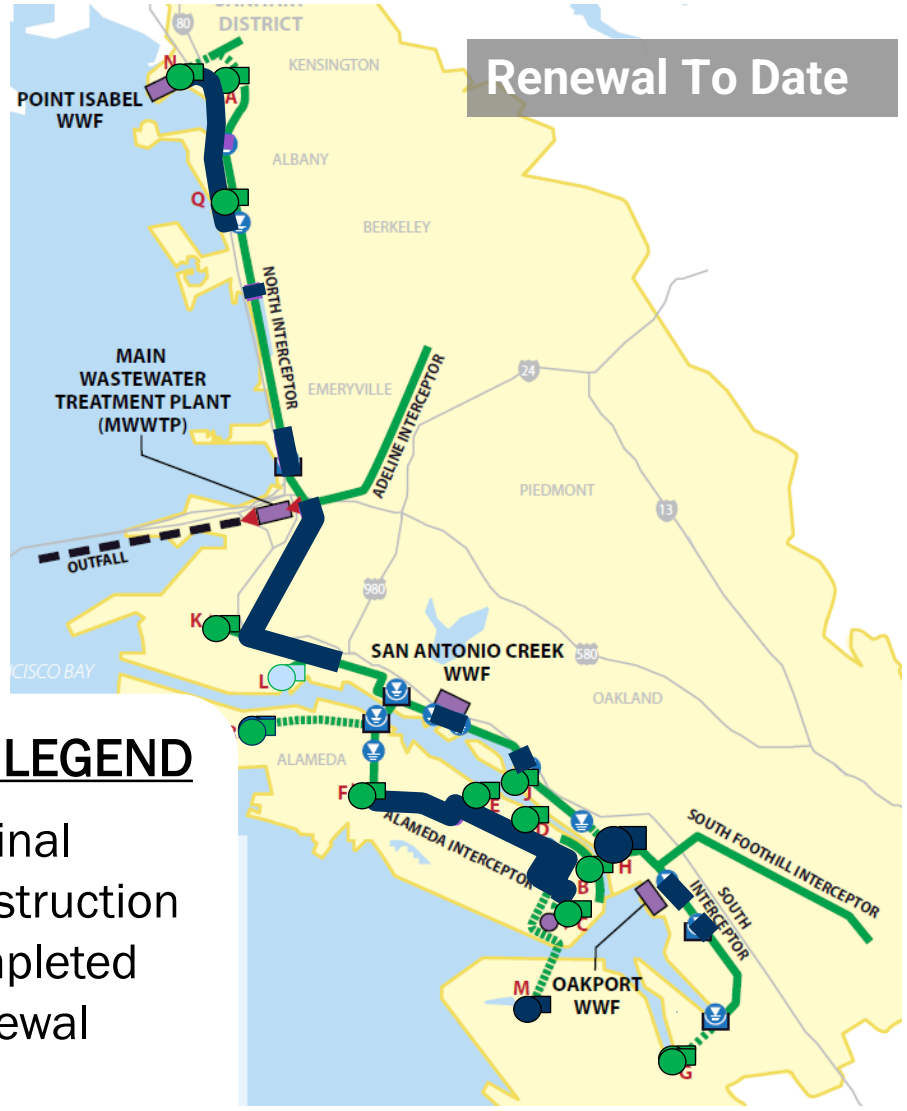


PGS = Power Generation Station | IPS = Influent Pump Station | R2 = Resource Recovery

Interceptor System

COLOR LEGEND

- Original Construction
- Completed Renewal

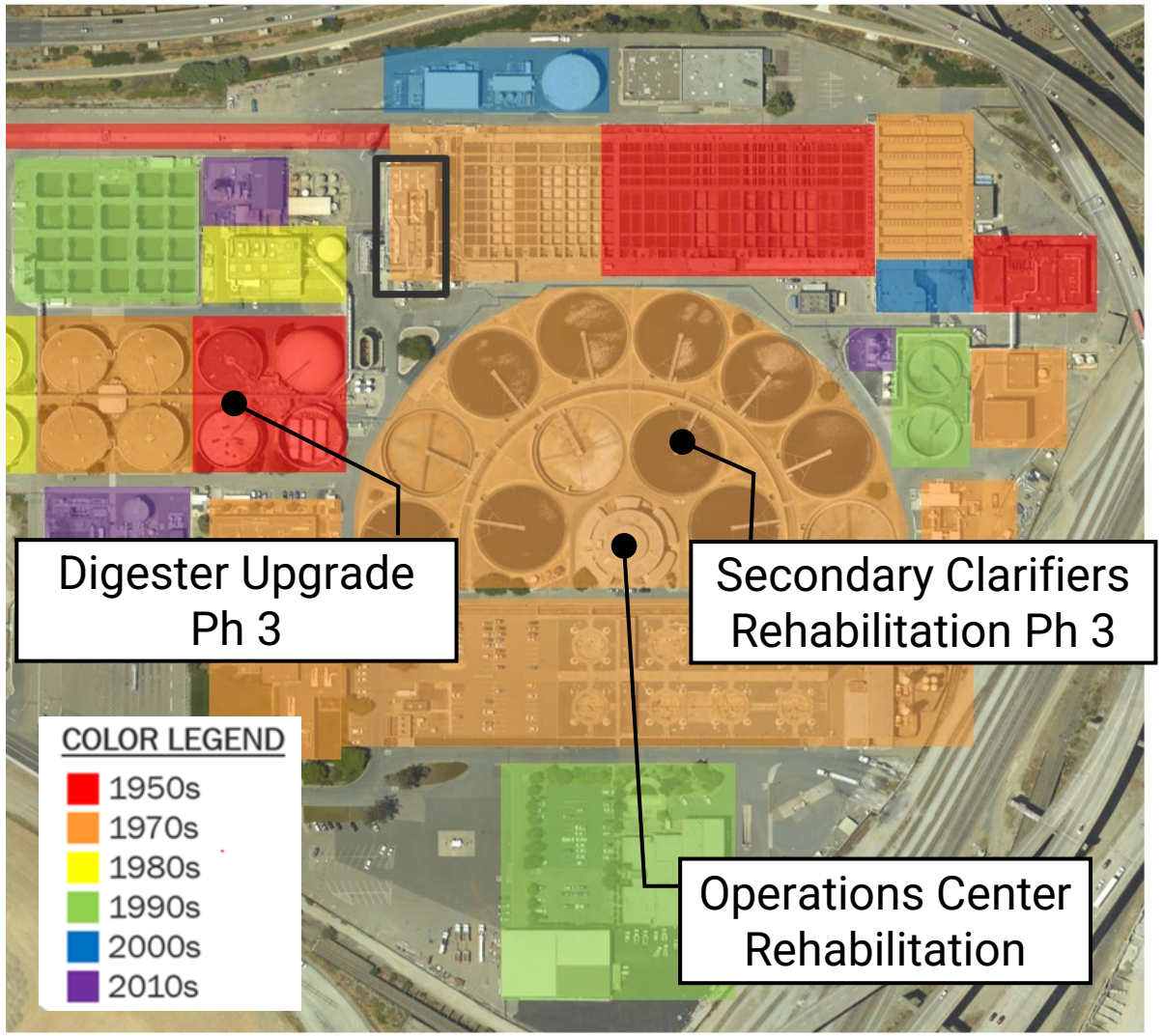


COLOR LEGEND

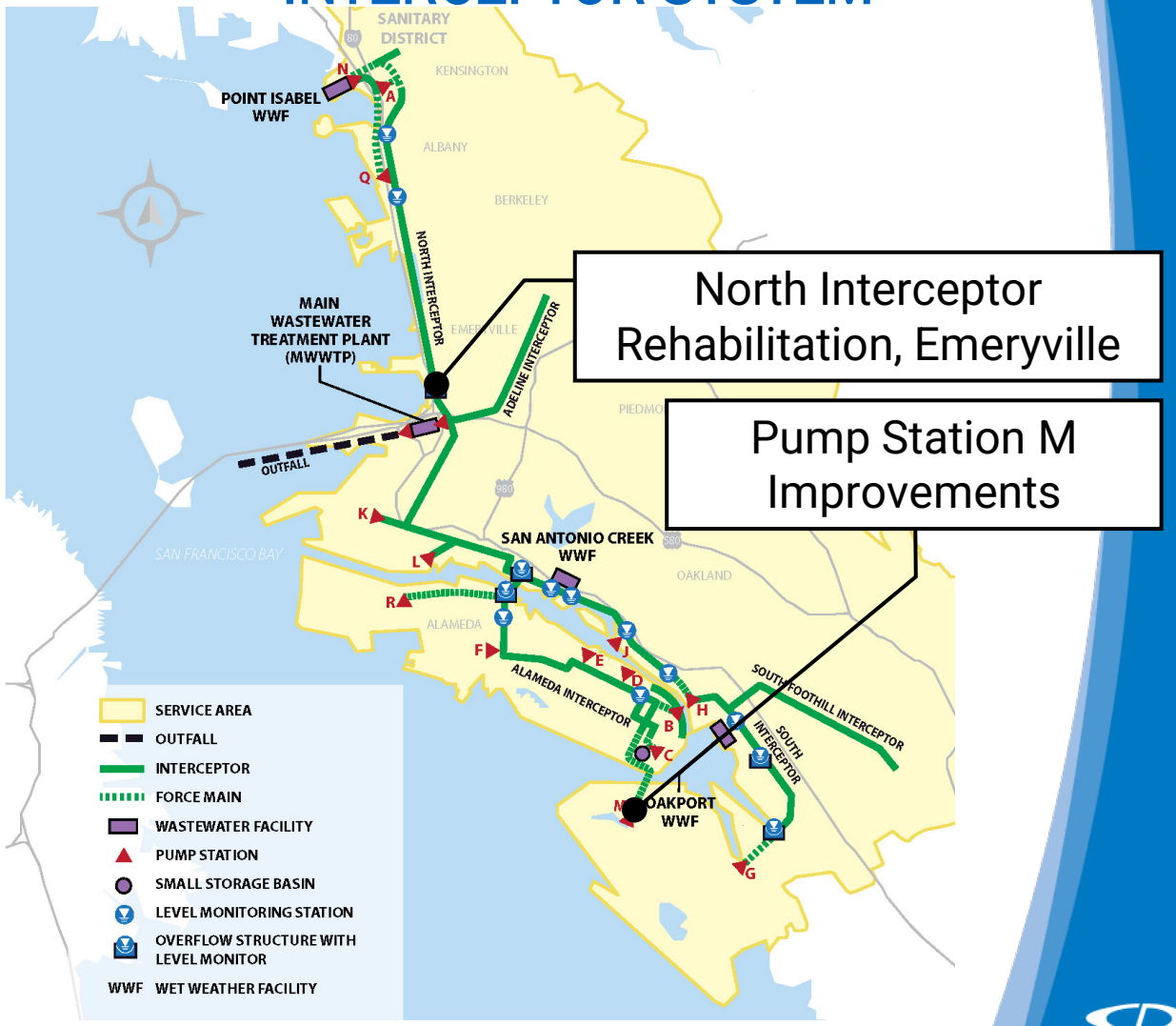
- Original Construction
- Completed Renewal

Wastewater CIP Projects Completed FY 2024 - 2026

MWWTP



INTERCEPTOR SYSTEM



Wastewater CIP Projects Completed in FY 2024 - 2026

Award/Asset Class	Project Name	Completed FY & Cost (Millions, $)			
		FY 2024	FY 2025	FY 2026	3-Yr Total
Secondary	MWWTP Secondary Clarifiers Rehabilitation Phase 3		11.4		11.4
Effluent	Dechlorination Facility Improvements Phase 2B	4.9			4.9
Effluent	Dechlorination Facility Improvements Phase 3		4.2		4.2
Digesters	MWWTP Digester Upgrades Phase 3			35.1	35.1
Electrical	MWWTP Intercom Paging System Upgrades Phase 1		1.7		1.7
Electrical	MWWTP Electrical Resiliency Master Plan			0.5	0.5
General WW	MWWTP Administration, Lab and Dewatering Building HVAC Improvements Phase 1	6.5			6.5
General WW	MWWTP Site Enhancements Project	1.5			1.5
General WW	MWWTP Seismic Evaluation	0.6			0.6
General WW	MWWTP Laboratory Media Room Improvements	0.5			0.5
General WW	MWWTP Operations Center Building Improvements			11.0	11.0
Interceptors & PS	Interceptor Special Structures Rehabilitatioin		21.7		21.7
Interceptors & PS	Pump Station M Rehabilitation and Forcemain Investigation		16.5		16.5
Interceptors & PS	North Interceptor Rehabilitation at Emeryville			12.8	12.8
Interceptors & PS	Interceptor Master Plan Update			2.1	2.1
	Grand Totals by FY	**14.1**	**55.5**	**61.5**	**131.2**
	MWWTP	14.1	17.3	46.6	78.1
	Interceptor System	-	38.2	14.9	53.1

MWWTP = Main Wastewater Treatment Plant | HVAC: Heating, Ventilation, and Air Conditioning

In Progress and Upcoming CIP Projects:

Wastewater

Wastewater Projects In Construction and Upcoming

Award/Asset Class	Cost (Millions, $)
MWWTP	
Preliminary	78.1
Primary	27.9
Secondary	377.3
Nutrients	9.0
Effluent	21.6
Digesters	67.9
Dewatering	114.9
Resource Recovery	11.0
Power Generation	54.6
Electrical	97.6
Utilities	4.2
General WW	125.9
Interceptor Systems	
Interceptors and Pump Stations	163.1
Wet Weather Facilities	59.9
Grand Total	**1,212.9**
MWWTP	990.0
Interceptor Systems	223.0

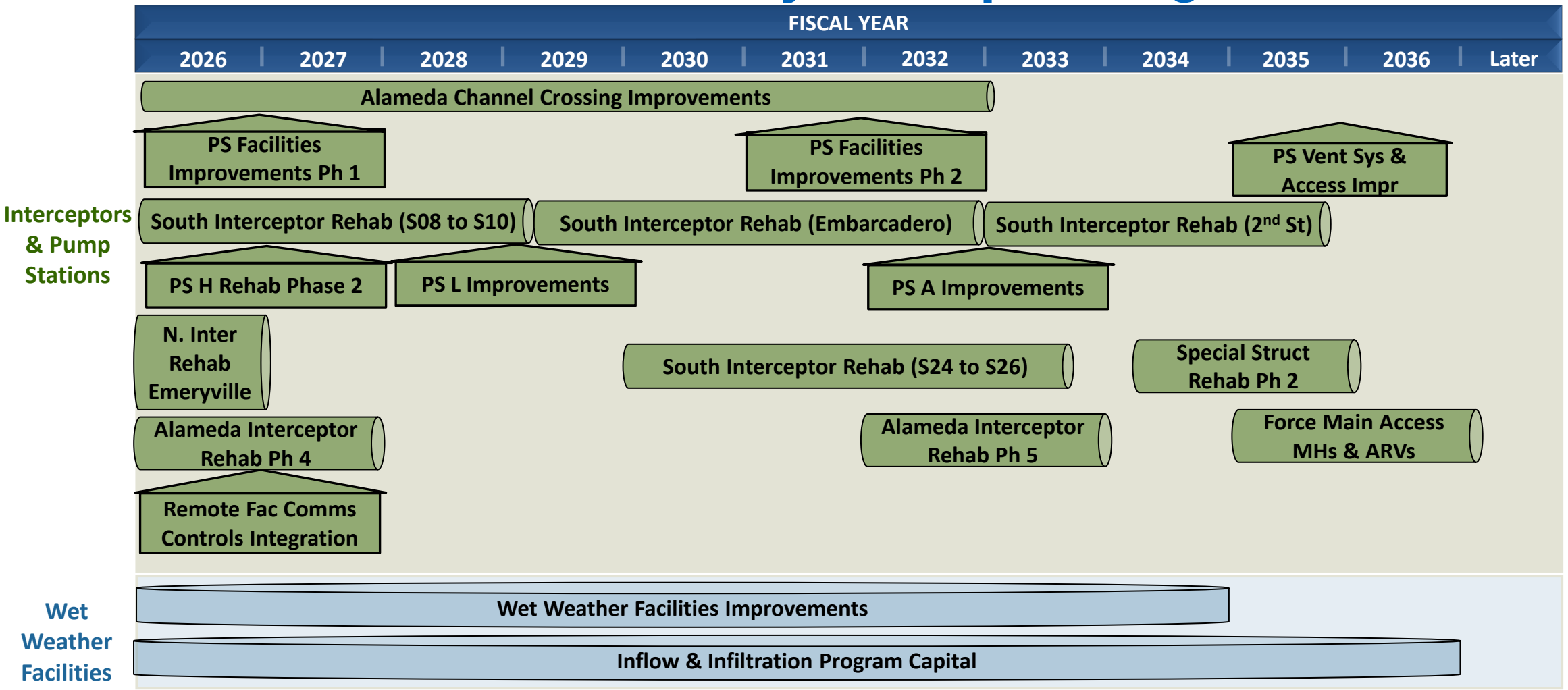
Key Projects:

- Nutrients Master Plan Update
- Oxygen Plant Rehabilitation
- Secondary Reactor Expansion
- New Dewatering Improvements Project
- Influent Pump Station Resiliency Project
- MWWTP Admin & Lab Building - Seismic & HVAC Systems Improvements
- Maintenance Center Seismic Retrofit
- South and Alameda Interceptors Rehabilitation
- Alameda Forcemain Channel Crossing Improvements

MWWTP = Main Wastewater Treatment Plant | HVAC = Heating, Ventilation and Air Conditioning

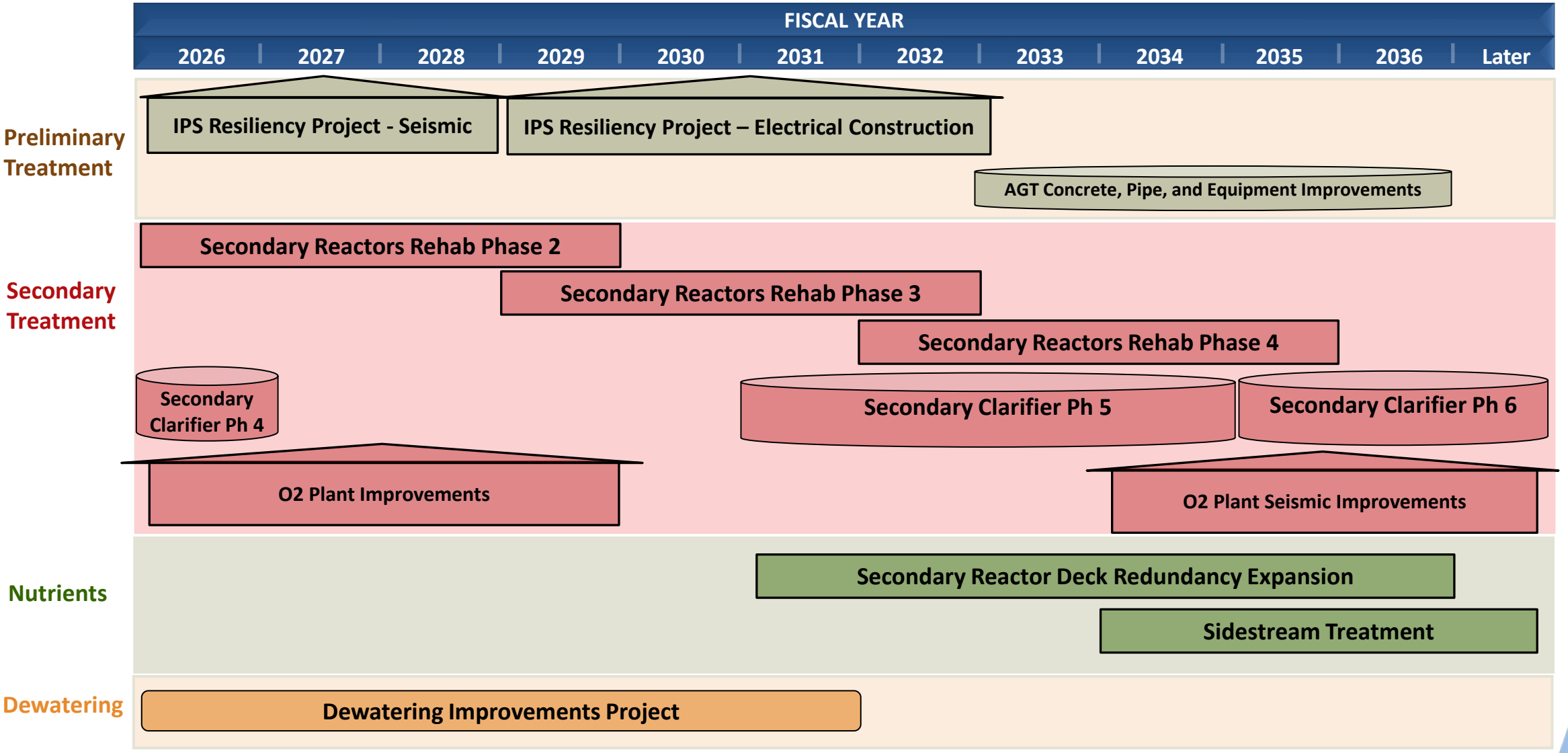
EBMUD

Wastewater 10-Year CIP Project Sequencing

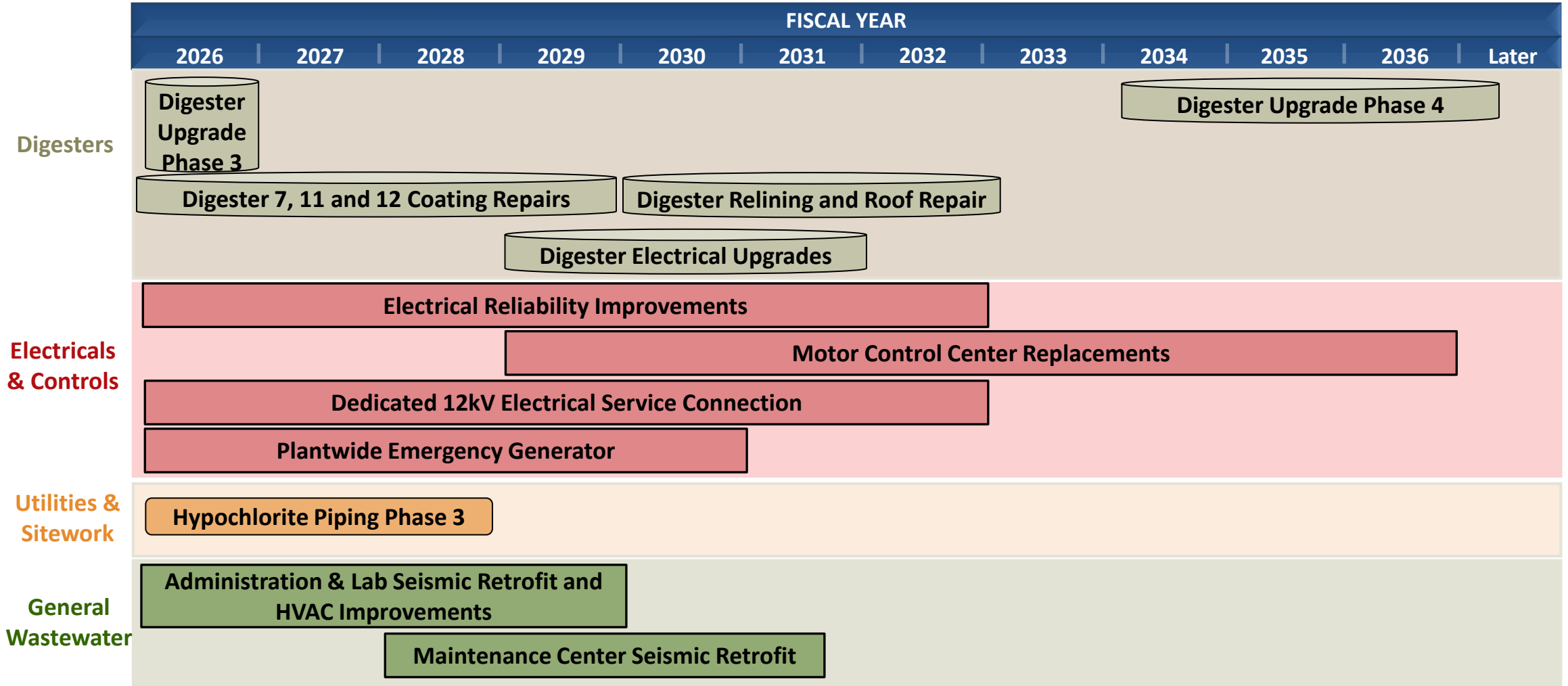


CSSIP = Chemical System Safety Improvements Program | WC = Walnut Creek | LAF = Lafayette | USL = Upper San Leandro | MOK = Mokelumne Aqueduct | RWPP = Raw Water Pumping Plant | PP = Pumping Plant

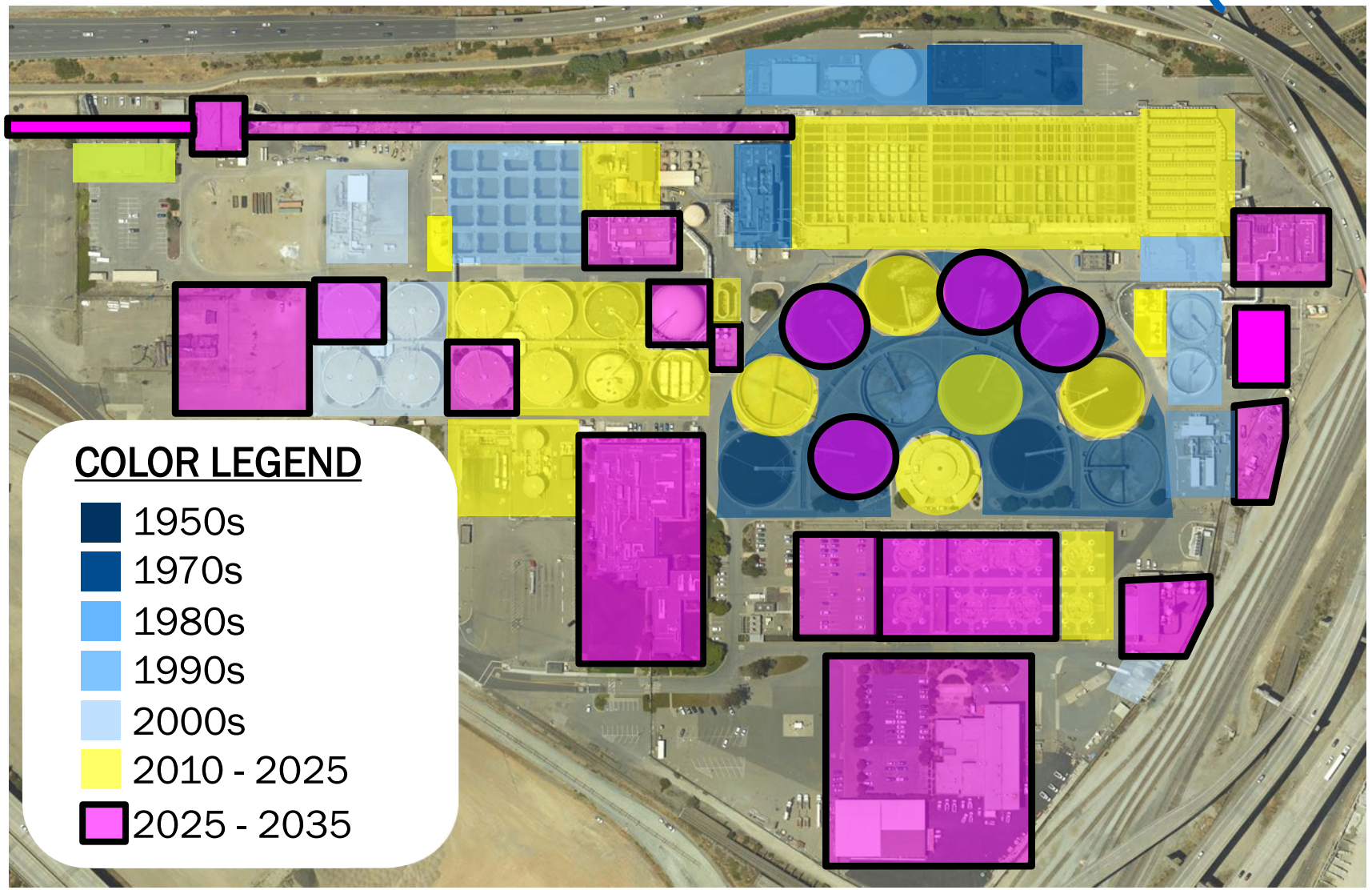
Wastewater 10-Year CIP Project Sequencing (Continued)



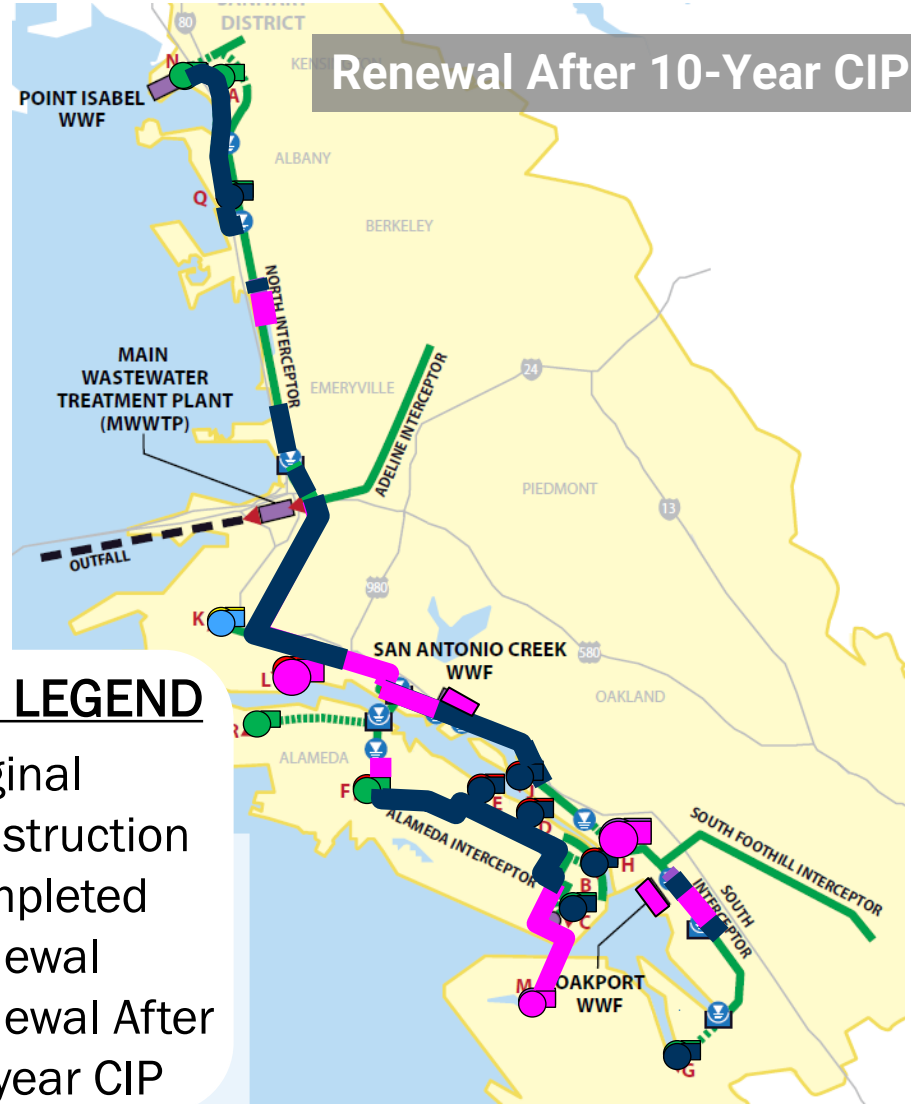
Wastewater 10-Year CIP Project Sequencing (Continued)



MWWTP Renewal After 10-Year CIP (2035)

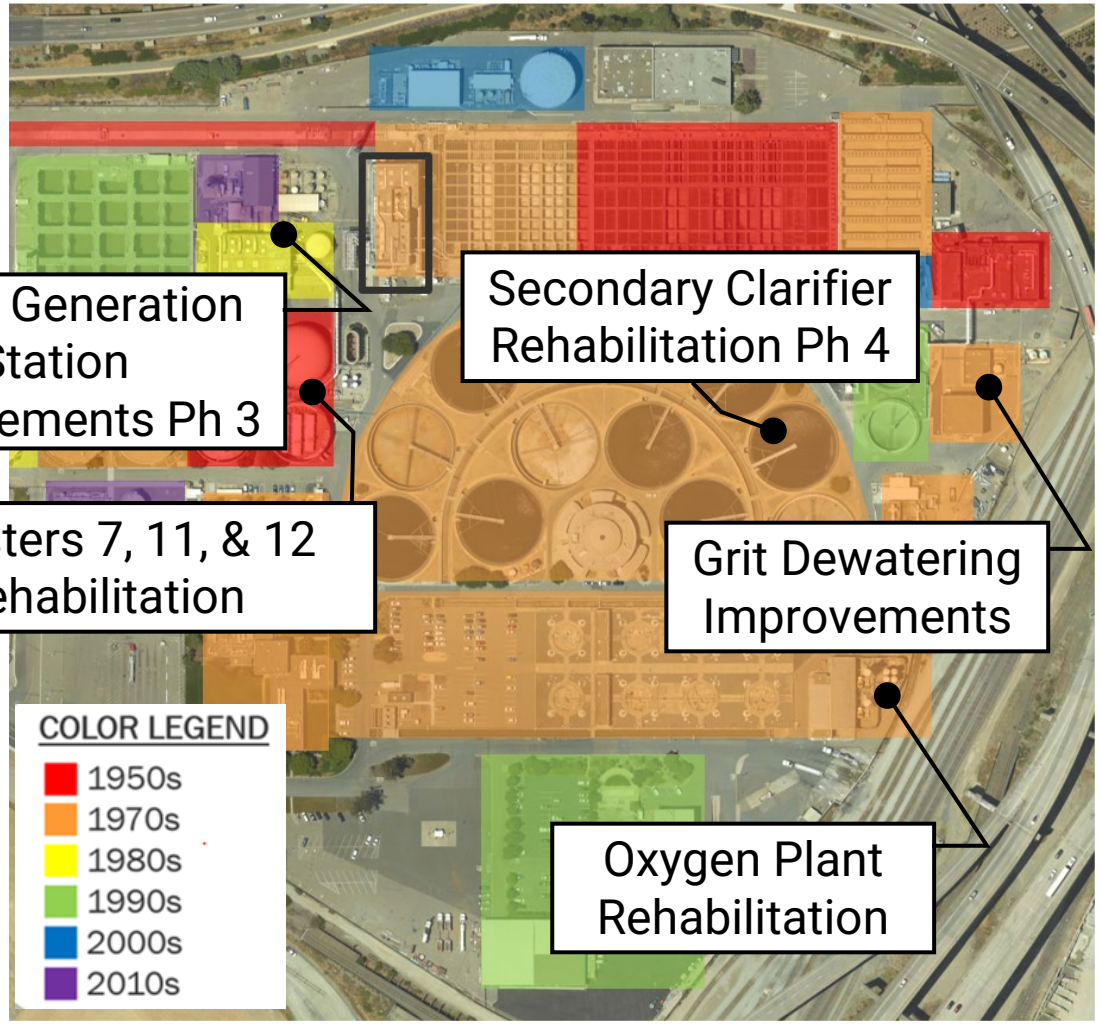


Interceptor System Renewal After 10-Year CIP



Wastewater Projects In Construction

MWWTP



Power Generation Station Improvements Ph 3

Digesters 7, 11, & 12 Rehabilitation

Secondary Clarifier Rehabilitation Ph 4

Grit Dewatering Improvements

Oxygen Plant Rehabilitation

INTERCEPTOR SYSTEM

Pump Station H Improvements Ph 2

Oakport Wet Weather Facility Chemical Tanks Replacement

MWWTP = Main Wastewater Treatment Plant

Oxygen Plant Rehabilitation

Why is this project critical?

- Oxygen production is essential to the core biological treatment process; regulatory violations can result from system failures
- Modernizing equipment will ensure reliable and efficient operation
- Safety improvements included to protect workers
- Nutrient removal requires more oxygen

Corroded Equipment

Scope

- Replace obsolete analog equipment with modern digital controls
- Rehabilitate corroded piping and equipment

Schedule

- Design Rebid: Completed FY 2025
- Construction: FY 2026 to FY 2029

Obsolete Equipment

Failing and Leaking Pipes

Pump Station H Improvements Project Phase 2

Why is this project critical?

- Largest pump station in the Interceptor System located in East Oakland near High Street and Oakport, pumping 10 to 20% of system flows
- Lack of redundancy means failures can have outsized impacts
- Obsolete pumps and motors prone to failure

Replace Obsolete Pumps and Motors

Scope

- Rehabilitate degraded, repaired piping and concrete
- Replace two pumps and motors
- Construct new bypass connections to improve redundancy

Schedule

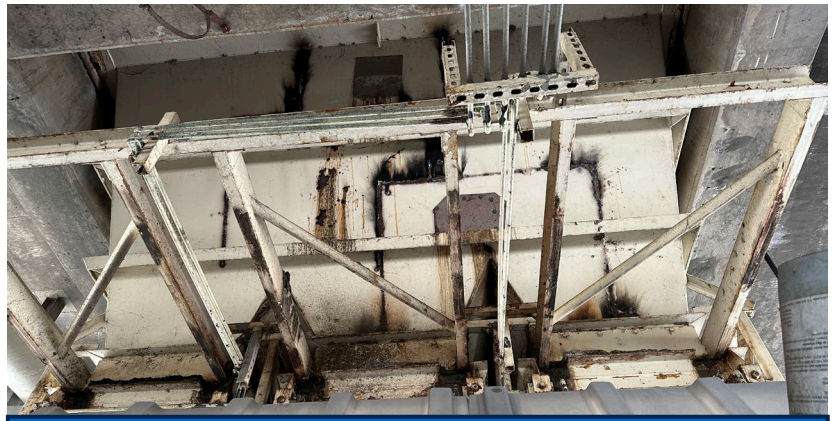
- Construction: FY 2025 to FY 2027

Piping Rehabilitation | Rehabilitate Corroded Concrete

Grit Dewatering Improvements Project

Why is this project critical?

- Process facility that, if not operating properly, can disrupt operations during most critical peak wet weather events
- Increasing failures due to harsh conditions and age of equipment
- Install equipment to improve worker safety and efficiency



Corroded and Leaking Hoppers

Scope

- Replace grit dewatering equipment
- Rehabilitate grit hopper and install new mobile grit bin equipment
- Rehabilitate drainage systems

Schedule

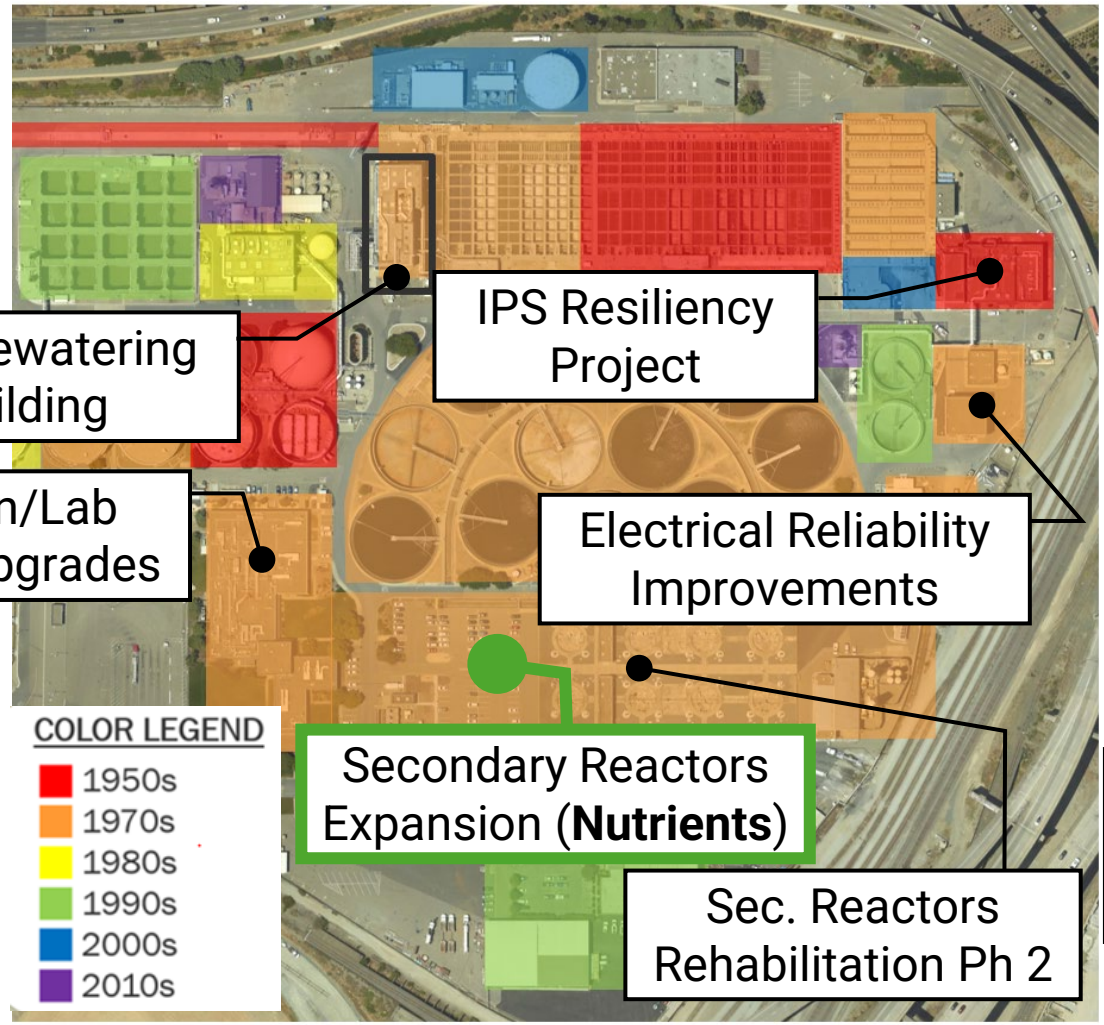
- Design: Completed
- Construction: FY 2025 to FY 2027

Repaired Grit Dewatering Equipment

Damaged Grit Screws

Wastewater 10-Year CIP Projects in Development

MWWTP



New Dewatering Building

IPS Resiliency Project

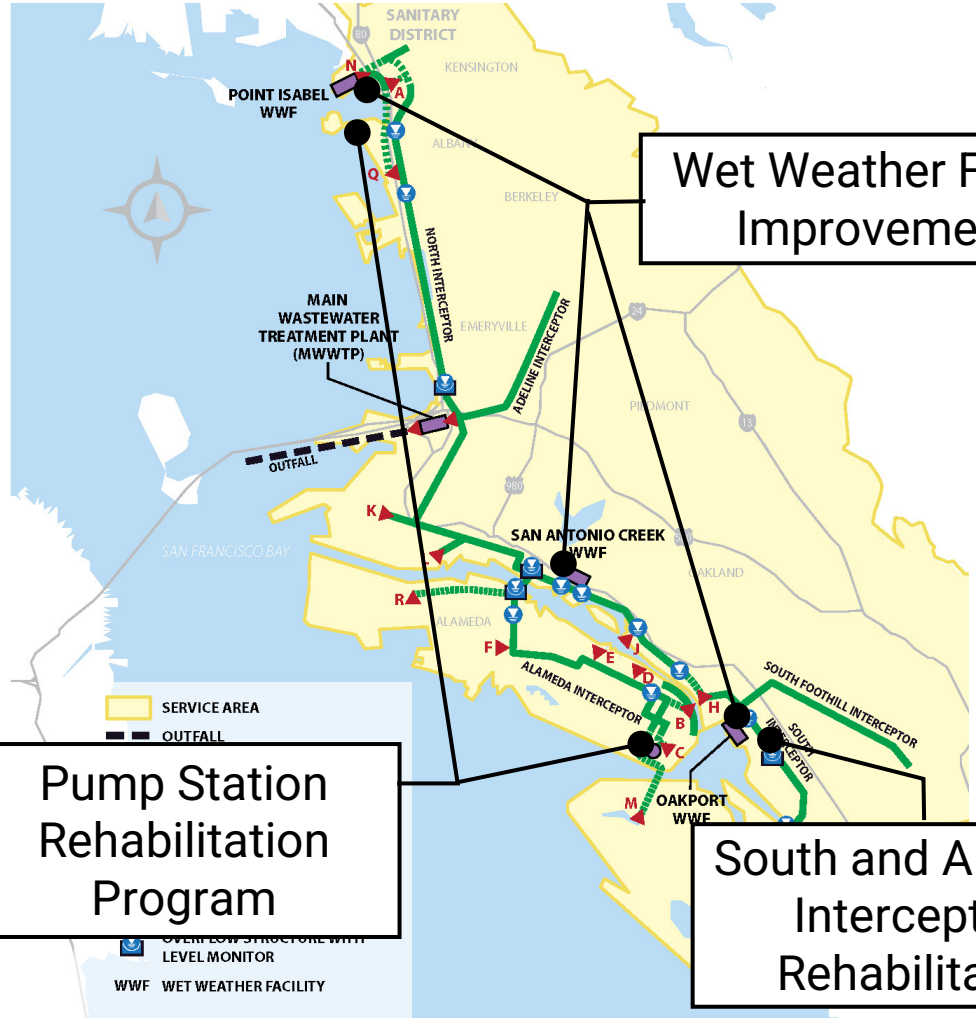
Admin/Lab Bldg. Upgrades

Electrical Reliability Improvements

Secondary Reactors Expansion (**Nutrients**)

Sec. Reactors Rehabilitation Ph 2

INTERCEPTOR SYSTEM



Wet Weather Facility Improvements

Pump Station Rehabilitation Program

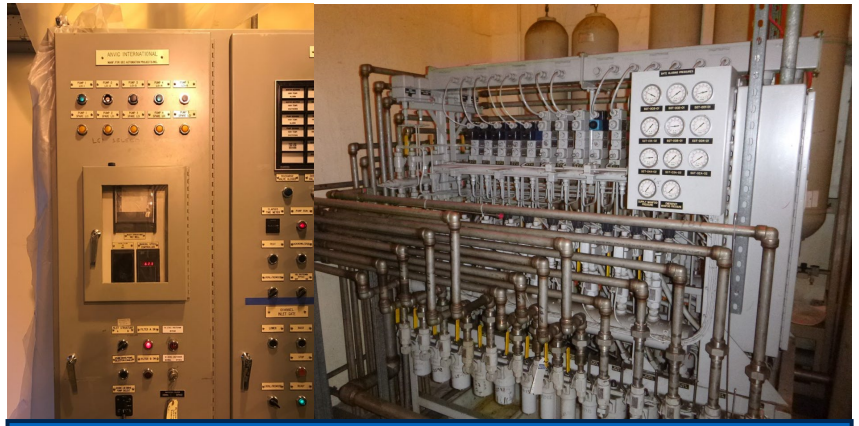
South and Alameda Interceptors Rehabilitation

IPS = Influent Pump Station

Influent Pump Station (IPS) Resiliency Project

Why is this project critical?

- IPS is the most critical process facility at the MWWTP
- Seismically vulnerable to complete failure
- Critical equipment is obsolete and failing at an increasing rate
- Approved for FEMA grant covering **$28M** in seismic retrofit costs



Obsolete Equipment

Scope

- Seismic retrofit of structure, anchorage of equipment
- Replace obsolete equipment

Schedule

- Construction: FY 2027 to FY 2031

Seismic Vulnerabilities

Increasingly Difficult to Maintain

FEMA: Federal Emergency Management Agency

New Dewatering Building Project

Why is this project critical?

- 7,000+ labor hours of unplanned equipment maintenance each year and trending up
- Obsolete equipment requires custom replacement parts
- Building configuration limits performance, leading to 10-15% higher biosolids handling costs
- Building is seismically vulnerable

Failing Equipment


Failing Pipes

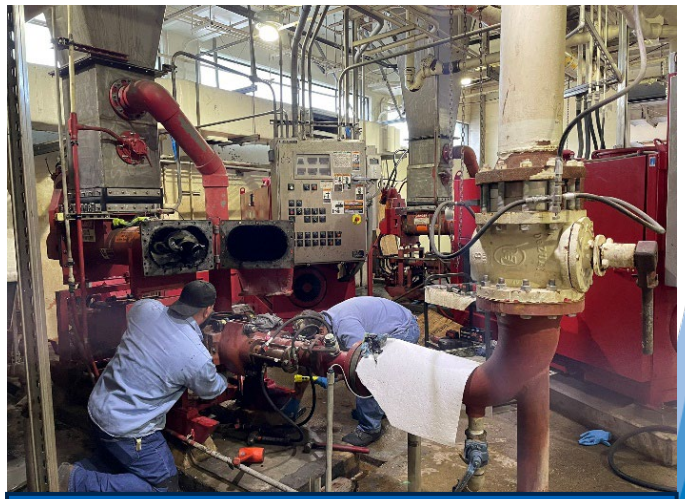
Scope

- New dewatering building

Schedule

- Design: Complete in FY 2028
- Construction: FY 2028 to FY 2031


Rendering of New Building


High Maintenance

Secondary Reactors Rehabilitation Ph 2

Why is this project critical?

- Concrete degradation due to age and service
- Interior columns are seismically deficient
- Aging equipment and piping requires rehab or replacement
- Reactor mixer upgrades to improve performance

Secondary Treatment System Installed in the 1970s

Scope

- 2 reactors per phase
- Concrete repairs and seismic improvements
- Piping and equipment rehab or replacement
- Mixer motor upgrades for 1 stage per reactor to improve nutrients removal

Schedule

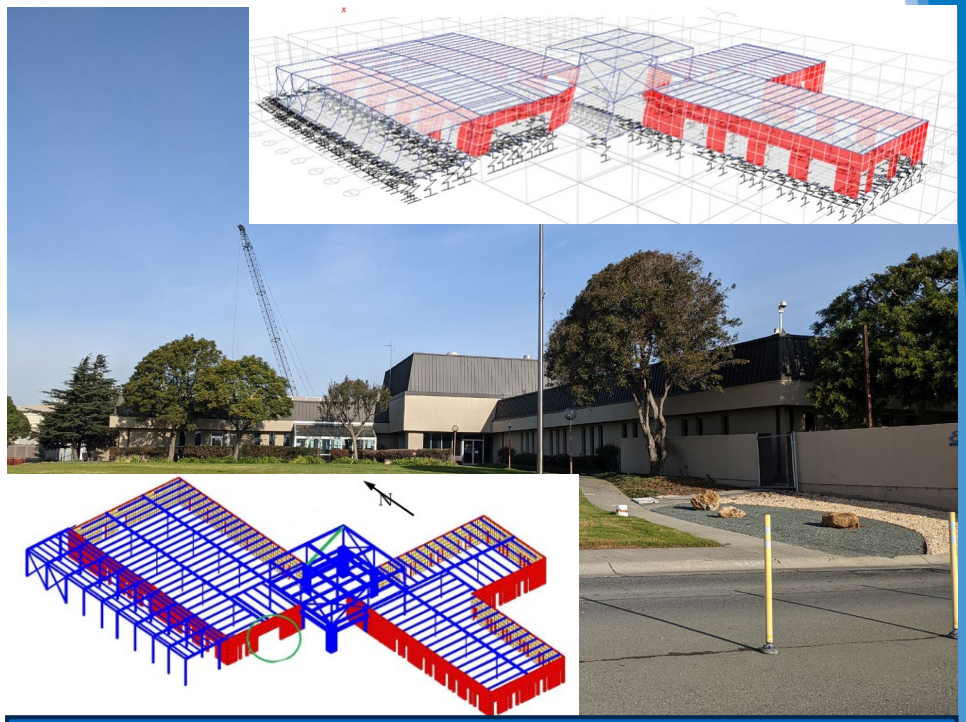
- Design: Complete in FY 2026
- Construction: FY 2027 to FY 2029

Secondary Reactor Interior

MWWTP Admin/Lab Building

Why is this project critical?

- Building is seismically vulnerable
- Cost for upgrades estimated >$45M based on preliminary design findings – looking into alternatives
- Lab responsible for all water quality testing for District
- Admin building houses operation and construction management staff for Wastewater



Seismic Vulnerabilities

Scope

- Coordinating seismic and HVAC work to reduce construction impacts
- Phasing construction within lab to sequence outages
- Seismic upgrades more significant than originally planned

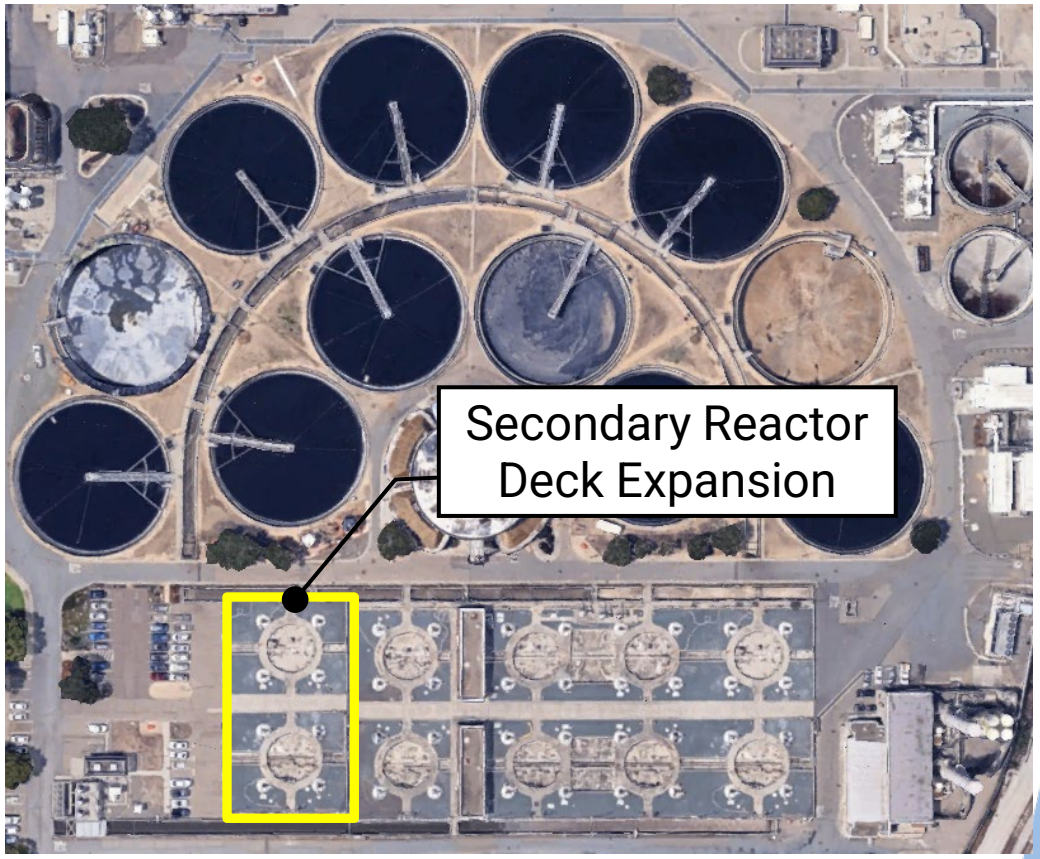
Schedule

- Design: Complete in FY 2028
- Construction: FY 2028 to FY 2031

Failing HVAC Equipment

Nutrient Removal Project

- Expected to be largest investment in the Wastewater 10-year CIP
- Full-scale nutrient removal using existing infrastructure
- Nutrients Master Plan Update to evaluate alternative nutrient removal technologies for reliable regulatory compliance
- Expansion of existing HPO system
- Sidestream treatment



HPO = High Purity Oxygen

Smarter Spending Through Innovation

Demonstrating Nutrient Removal with Existing Infrastructure

Implementing the New Dewatering Building with Progressive Design Build

Producing Renewable Energy and Enhancing Revenue with the Resource Recovery Program

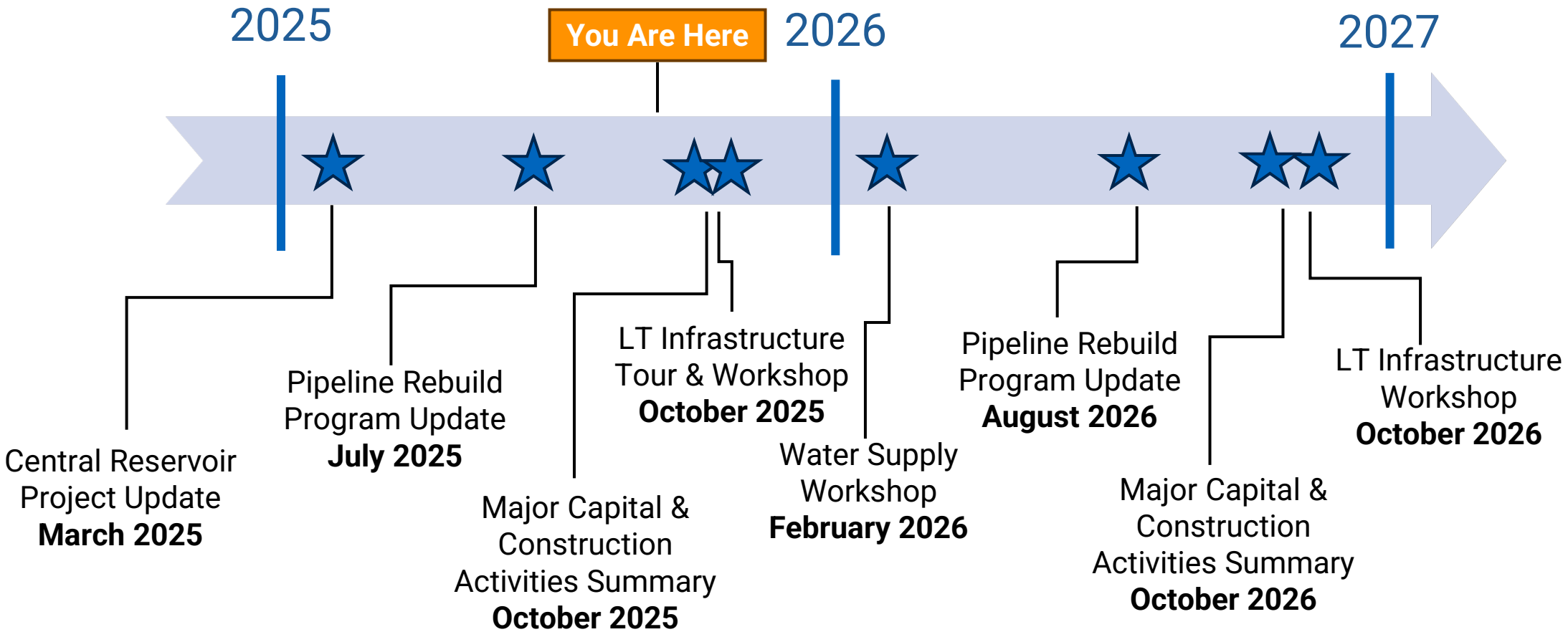
Wastewater's CIP Summary

- **Aging Infrastructure**
  - MWWTP - Digesters, IPS, Lab, O2 Plant, Clarifiers, Reactor Deck, Sludge Dewatering
  - Interceptors, Pump Stations, Wet Weather Facilities
- **Regulatory**
  - Nutrients
  - PGS Improvements
- **Electrical Resiliency**
  - IPS Electrical Improvements
  - Emergency Generators
  - New 12 kV PG&E Service Connection
- **Seismic Resiliency**
  - IPS Seismic Retrofit, Admin/Lab Building

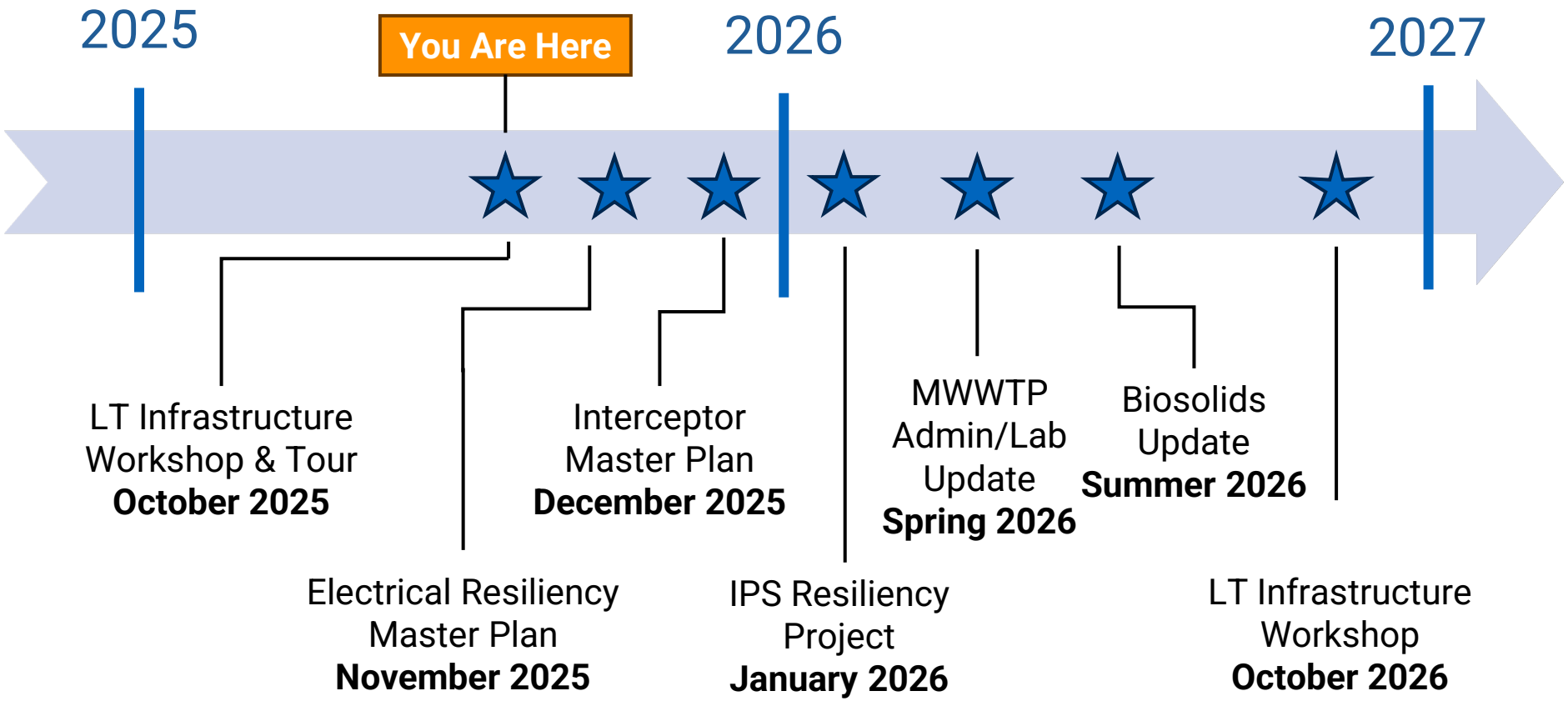
. . . A More Sustainable and Resilient Wastewater System

IPS = Influent Pump Station | O2 = Oxygen | kV = Kilovolt | PGS = Power Generation Station | PG&E = Pacific Gas & Energy

Updates to the Board – Water CIP



Updates to the Board – Wastewater CIP



Summary

- Completed 34 projects for the water/wastewater systems since FY 2024.
- 54 projects are currently in construction or planned to begin construction in the next two years for the water/wastewater systems.
- Construction and material costs are increasing faster than the rate of inflation.
- Pipeline Rebuild is an increasing share of total capital spending in the 10-year CIP. Plan to remain at 25 miles in FY 2027.
- District continues to innovate and implement alternative project delivery methods to achieve project objectives, reduce cost, and manage schedule.
- Board updates in FY 2026 and 2027 leading up to the Infrastructure Workshop in October 2026 and the FY 2028/2029 Budget Workshop.

EBMUD

Board Feedback/ Questions?

EBMUD

Flowing into the Future