Infrastructure Workshop

Board of Directors

November 26, 2024

Agenda

- Today’s Speakers
- Water System Major Projects
- Wastewater System Major Projects
- Capital Prioritization Process
- Next Steps

Today's Speakers

Water System

Serge Terentieff
Director of Engineering and Construction

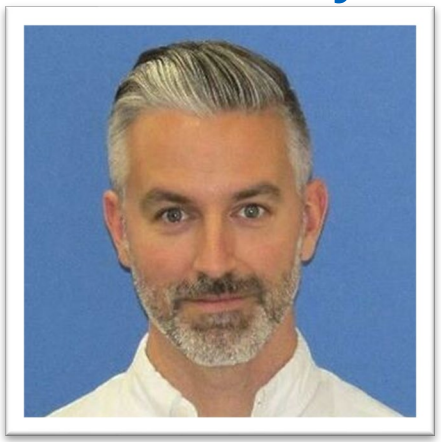
Carlton Chan
Manager of Pipeline Infrastructure Division

Denise Cicala
Manager of Design Division

Elizabeth Bialek
Manager of Engineering Services Division

Michael Tognolini
Director of Water & Natural Resources

Wastewater System



Matthew Hoeft
Senior Civil Engineer

Finance

Samuel Feldman
Manager of Budget

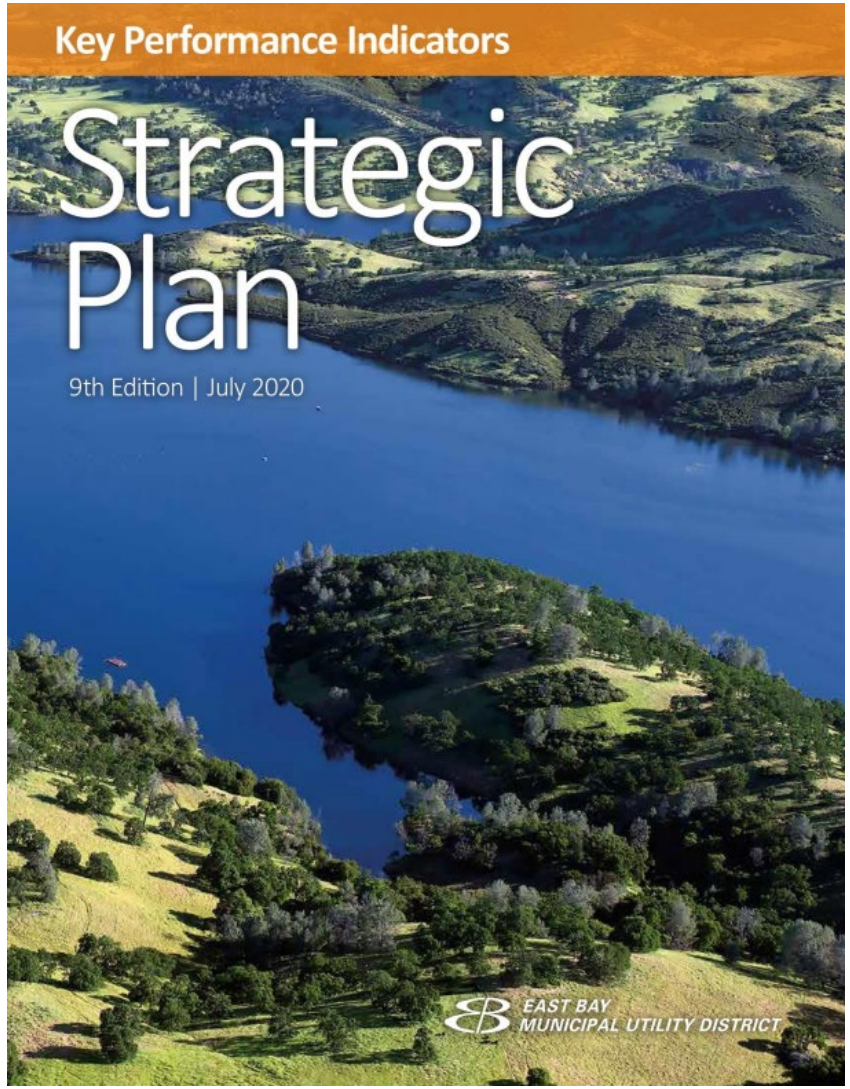
Infrastructure Investment Drivers

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.



EBMUD

Community Outreach

Extensive outreach completed prior to construction

- Meetings with cities/communities, agencies, neighborhood groups, in-person and virtual
- Provide project updates to the using email, social media, website

Develop an outreach plan

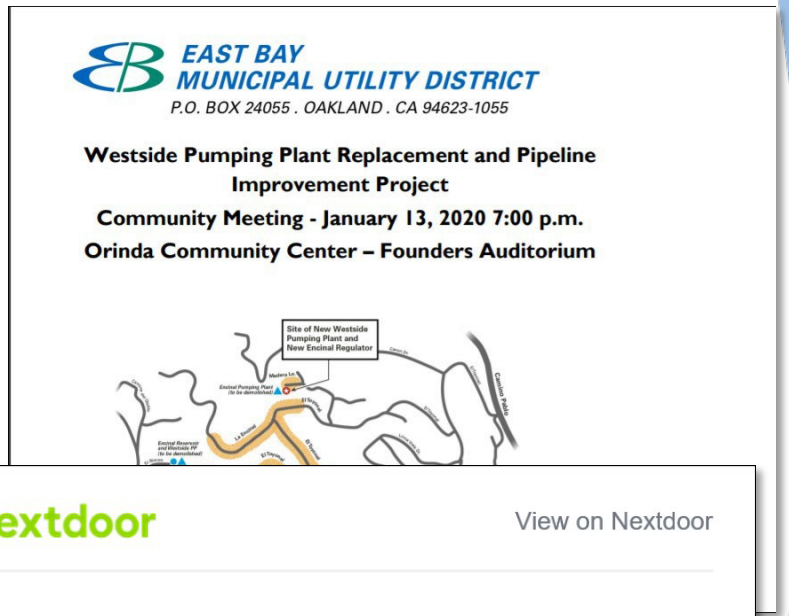
- Prepare project map and communication list
- Community outreach via mailers, customer messaging, individual emails, social media, and phone calls
- Respond to residents' questions and concerns

Regular updates

- Update the cities/communities on project status using email, social media, webpages, and direct mail; use visuals (photos/video)
- Media advisories to alert residents of project impacts
- Open house events and tours during and after major projects

Media outreach

- Feature significant/interesting projects to illustrate infrastructure renewal


EAST BAY MUNICIPAL UTILITY DISTRICT
P.O. BOX 24055 . OAKLAND . CA 94623-1055

Westside Pumping Plant Replacement and Pipeline Improvement Project
Community Meeting - January 13, 2020 7:00 p.m.
Orinda Community Center – Founders Auditorium


nextdoor View on Nextdoor

EBMUD Public Affairs, East Bay Municipal Utility District AGENCY

EBMUD and our contractor Teichert are continuing road restoration on El Toyonal between Alta Vista through tomorrow, July 30th with a road closure on El Toyonal from Alta Vista and Loma Vista. Below is the anticipated schedule for the next two weeks. Phase 1- El Toyonal – Alta Vista to Loma Vista... See more

General · Jul 29 to subscribers of East Bay Municipal Utility District in 5 neighborhoods

Like Private message Share

Water System

Water System Infrastructure Overview

Raw Water System

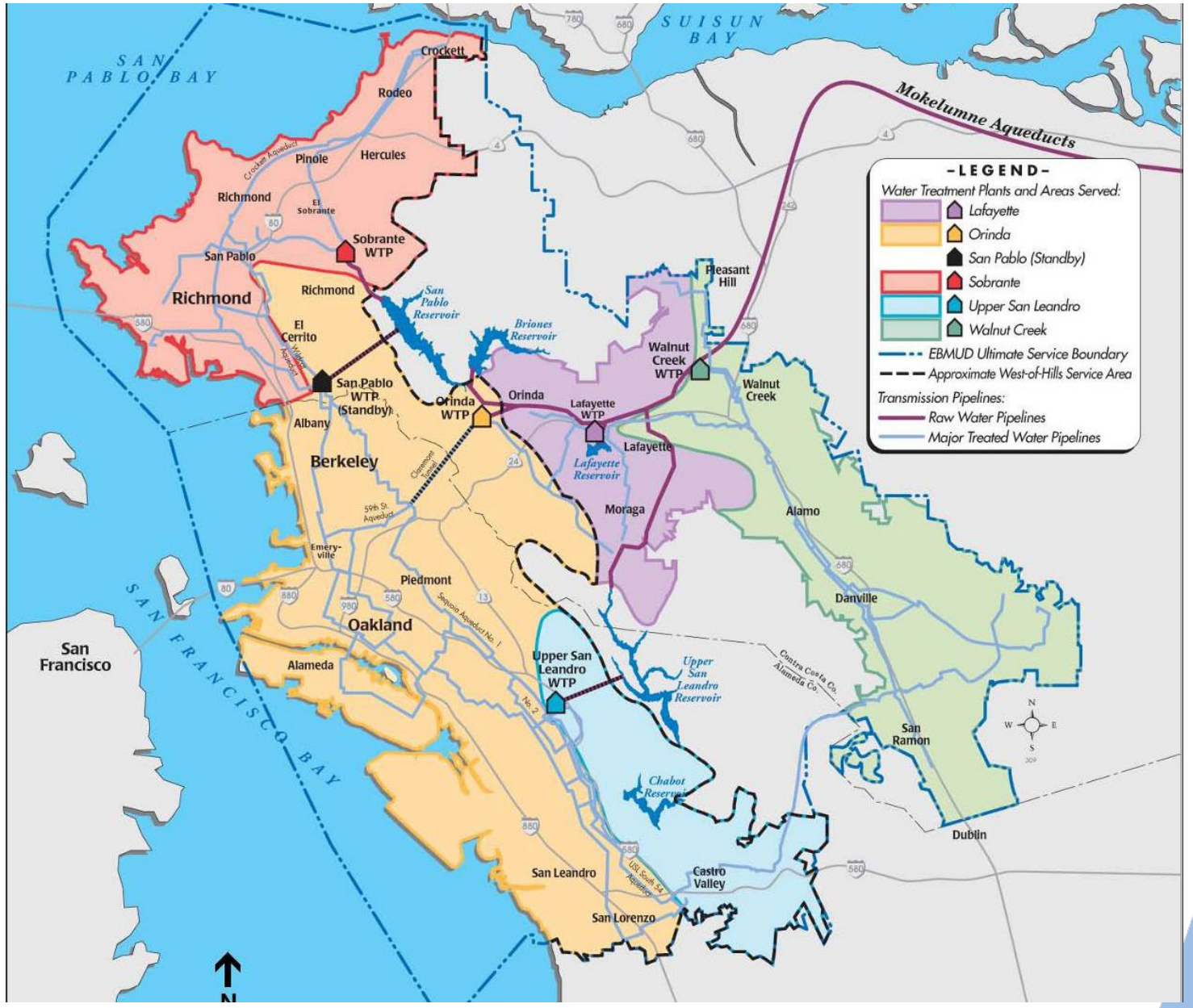
- 7 reservoirs
- Aqueducts

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



1. Raw Water

Raw Water Supply Improvements

Pardee Chemical Plant Improvements

Why is this project critical?

- Reduces corrosion in the Mokelumne Aqueducts and protects over $3 billion in assets.

Scope

- Upgrade and add lime and CO2 System
- Upgrade standby generator
- Construct new operations and storage building

Drivers

- Water Quality
- Maintenance and Reliability

Schedule

- Design FY 2023 - 2025
- Construction FY 2025 - 2029

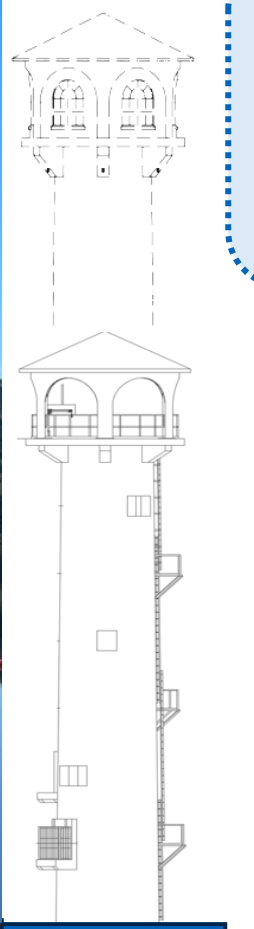
Pardee Chemical Facility Site Layout

Lime Slaker System

Raw Water Supply Improvements
Lafayette Tower Seismic Safety Project


Tower during construction


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.

Drivers

- Safety: Functions as the spillway
- Regulatory: California DSOD mandate
- Maintenance and Reliability

Schedule

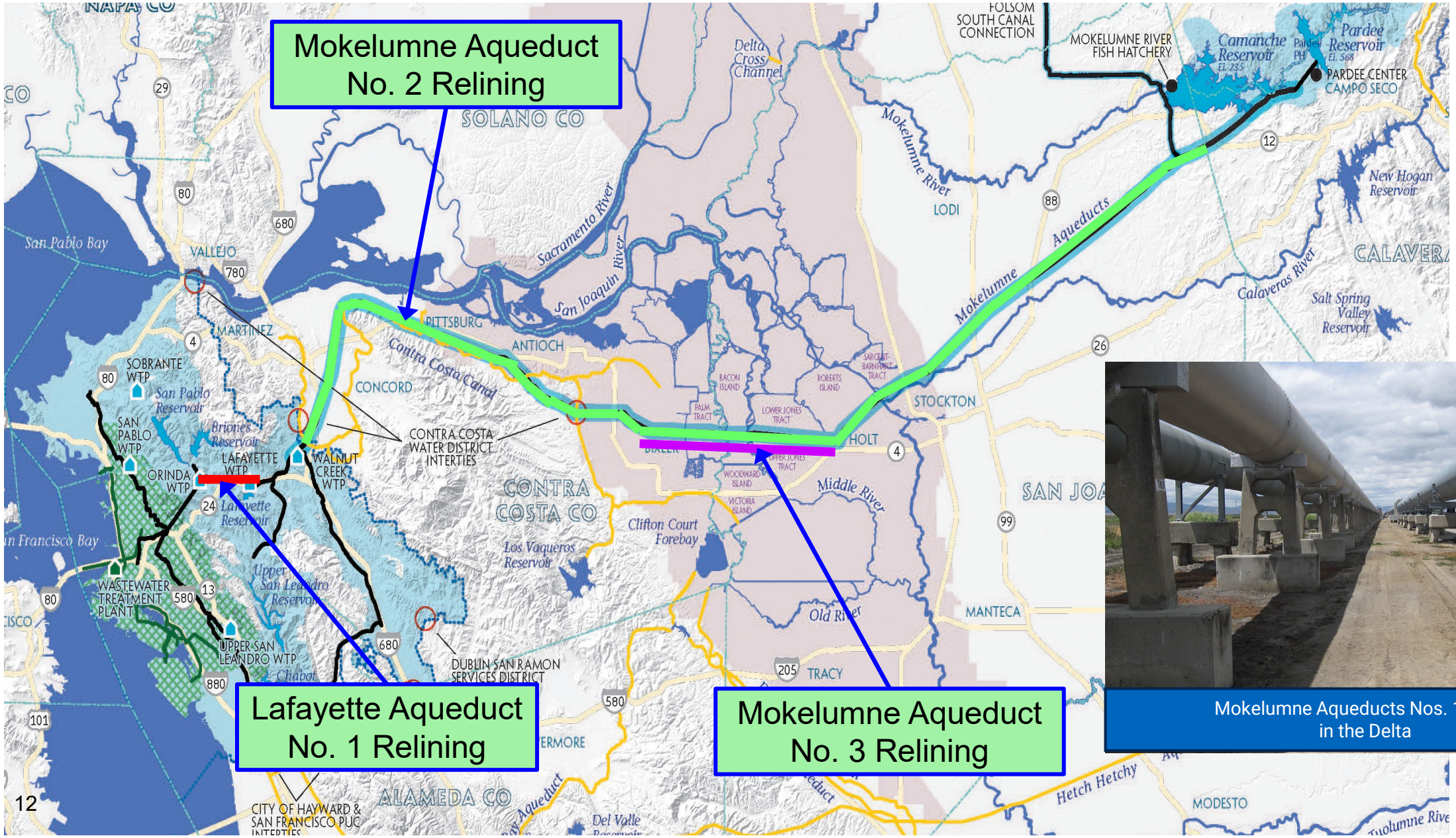
- Public Outreach Continues
- Construction in FY 2025 - 2026


Existing


Metal Operating House

DSOD = Division of Safety of Dams

Raw Water Transmission



Mokelumne Aqueducts Nos. 1, 2, & 3 in the Delta

Raw Water Transmission

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

Scope

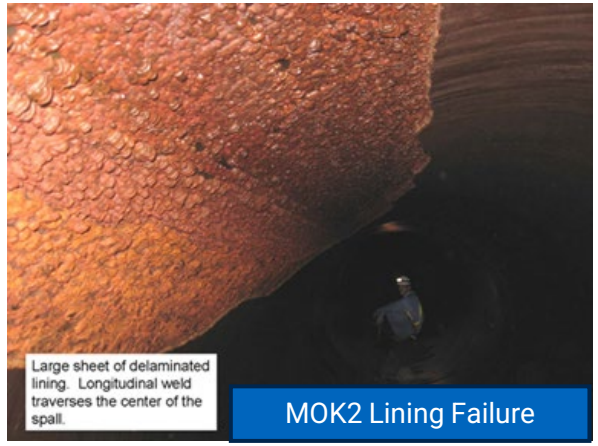
- Remove and replace failed cement mortar lining in above ground pipelines in the Delta
- Reline 20 miles of MOK2/MOK3 above ground in the Delta
- Reline 55 miles of MOK2 below ground

Drivers

- Maintenance and Reliability
  - Reduce internal corrosion in the aqueducts
  - Increase flow capacity (currently an 11% reduction in capacity due to the condition of the mortar)

Schedule

- MOK2 Ph 1 (2 miles below ground) construction completed in 2023
- MOK2 Ph 2 (1.5 miles above ground) Award March 2025



MOK2 Lining Failure


MOK3 Lining Failure
Delaminated lining accumulated on pipe invert


In-situ CML Installation Equipment

Raw Water Transmission
Lafayette Aqueduct No. 1 Relining

Why is this project critical?

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

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)

Drivers

- Maintenance and Reliability
  - Renew aging infrastructure
  - Eliminate annual repair activities and reduce water loss
  - Necessary to operate the future Walnut Creek pre-treatment system

Schedule

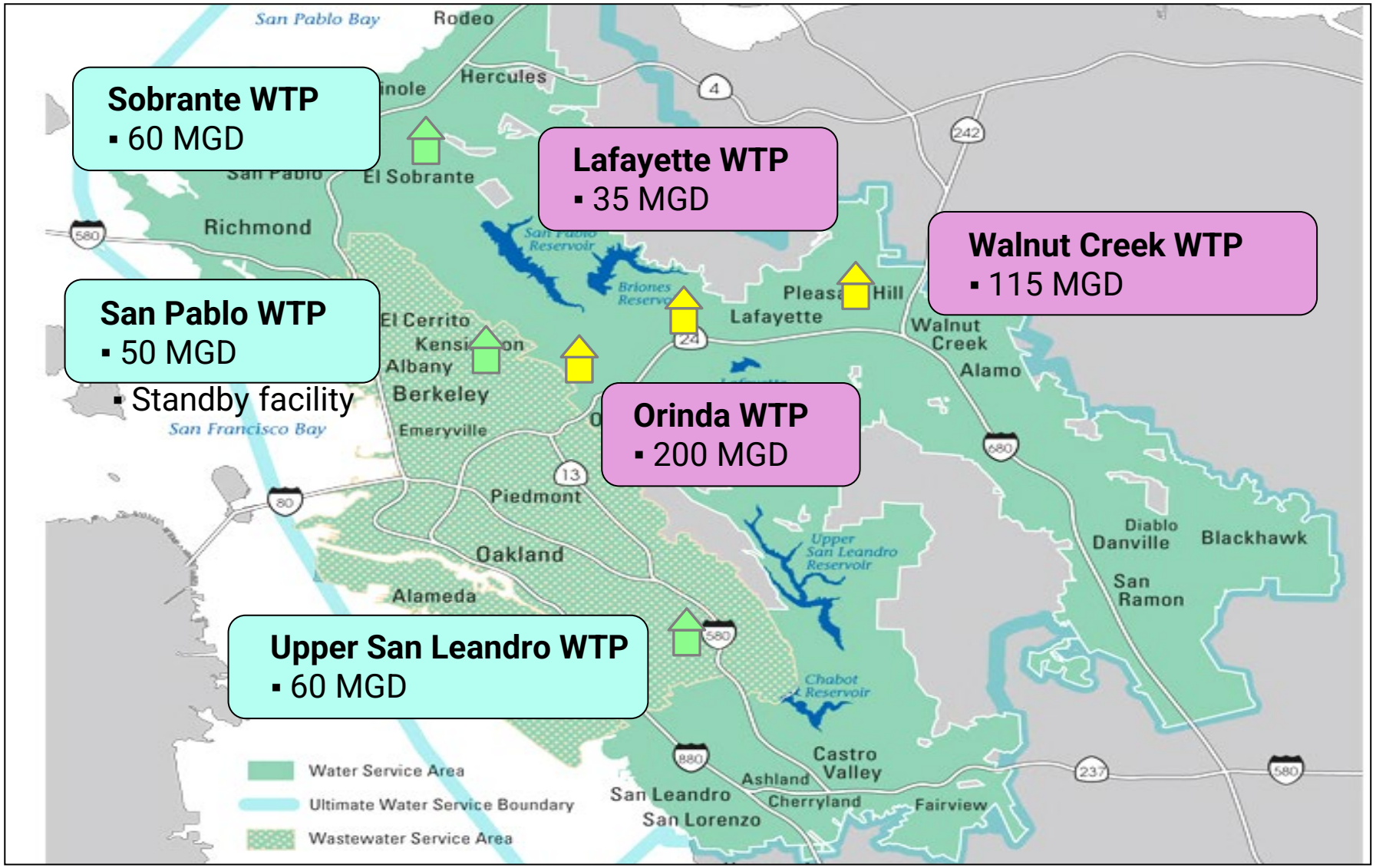
- Design: FY 2025 – FY 2026
- Construction: FY 2029 – FY 2032

District Forces Repairing Leak on LAF 1 Pipeline

Typical Tunnel Lining Defect

2. Water Treatment Plants

Treatment Plant Upgrades



WTP = Water treatment plant

Treatment Plant Upgrades

Lafayette and Walnut Creek WTPs Chemical Systems Safety Improvement Projects (CSSIP)

Why is this project critical?

- WTPs do not meet current safety codes and standards.
- Increased requests for chemical systems at Lafayette WTP

Scope

- Replace and upgrade chemical storage, feed, piping, injectors
- Temporary facilities to maintain operation during construction
- HVAC, fire, electrical, containment, and seismic improvements

Drivers

- Safety
- Maintenance and Reliability
- Water Quality

Schedule

- Design: Complete FY 2025
- Construction: FY 2025 – 2028

Concave tank at Walnut Creek WTP

WTP = Water treatment plant
HVAC = Heating, ventilation, and air conditioning

Treatment Plant Upgrades

Orinda WTP Disinfection and CSSIP

Scope

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

Drivers

- Safety
- Maintenance and Reliability
- Resiliency
- Water Quality

Schedule

- Construction FY 2023 - 2027

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

New Consolidated Maintenance and UV Building

Air Scour Equipment

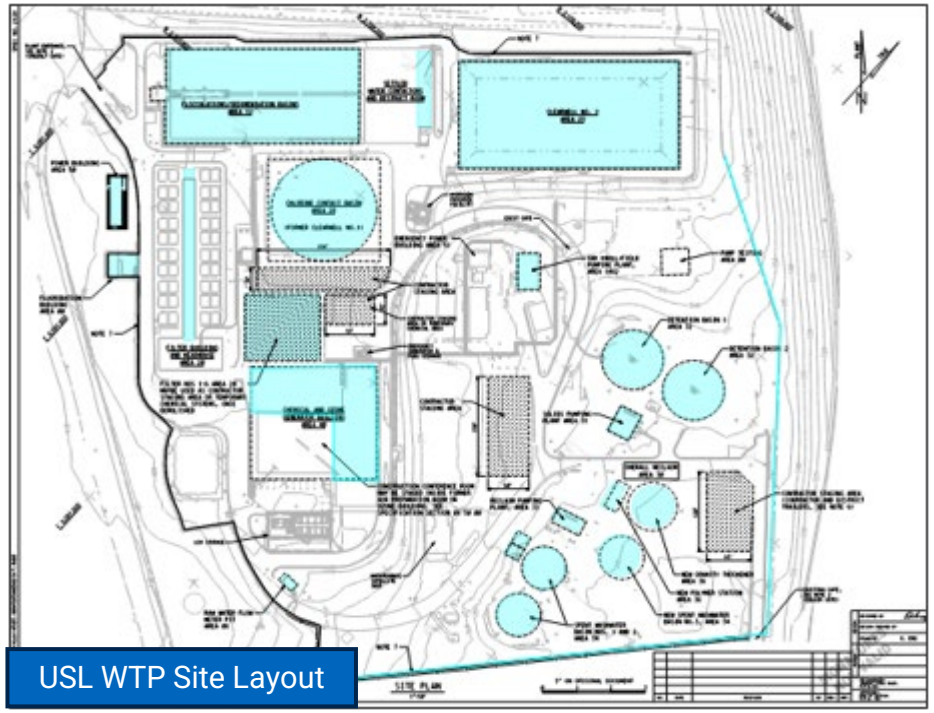
WTP = Water treatment plant
UV = Ultraviolet

Treatment Plant Upgrades

Upper San Leandro WTP Maintenance & Reliability and USL/Sobrante WTPs CSSIP

Why is this project critical?

- Includes improvements across entire WTP to remove capacity limitations.
- Bolsters water supply for customers west-of-hills.
- Improves drought operations by allowing additional use of Freeport water supplies during prolonged drought.



USL WTP Site Layout

Scope

- Remove plant capacity limitations
- Rehabilitate chlorine contact basin, clearwell, raw water valve, reclaim, and electrical equipment
- Upgrade chemical system

Drivers

- Maintenance and Reliability
- Safety
- Resiliency
- Water Quality

Schedule

- Construction FY 2023 - 2028

WTP = Water treatment plant
USL = Upper San Leandro
CSSIP = Chemical system safety improvement project

Treatment Plant Upgrades

Lafayette WTP Interim Improvements & Bryant PP Power Reliability

Scope

- Power system improvements at Bryant PP (switchgear, transformers, load bank, generator fuel tank)
- Build dedicated Chlorine Contact Basin (CCB) and larger Equalization (EQ) basin
- Rebuild filters 7-8

Drivers

- Safety
- Maintenance and Reliability
- Capacity
- Water Quality

Schedule

- Design: Complete FY 2026
- Construction: FY 2027 - 2030

Why is this project critical?

- Electrical safety improvements at a critical pumping plant.
- Increases operational flexibility.
- Increases WTP capacity to meet current demands.

Bryant No. 2 PP existing electrical equipment

WTP = Water treatment plant | PP = Pumping plant

Treatment Plant Upgrades

WCWTP Filters Rehabilitation Project

Why is this project critical?

- Modernizes all filters for maintenance and reliability
- Improves resilience against water quality upsets.
- Improves filtered water quality.

Scope

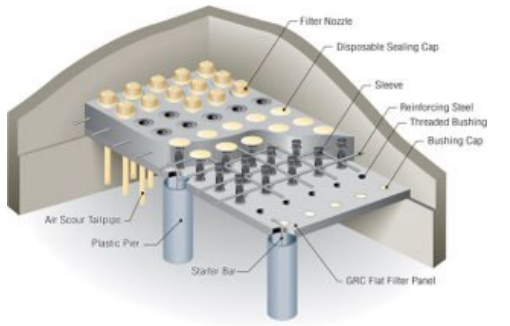
- Rehabilitate filters
- Add air-scour to 1960s filters

Drivers

- Maintenance and Reliability
- Water Quality

Schedule

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



New Robust Filter Underdrain Design

WCWTP Pretreatment Project

Why is this project critical?

- Improves drought operations.
- Provides resilience against water quality upsets.
- Removes precursor material and turbidity

Scope

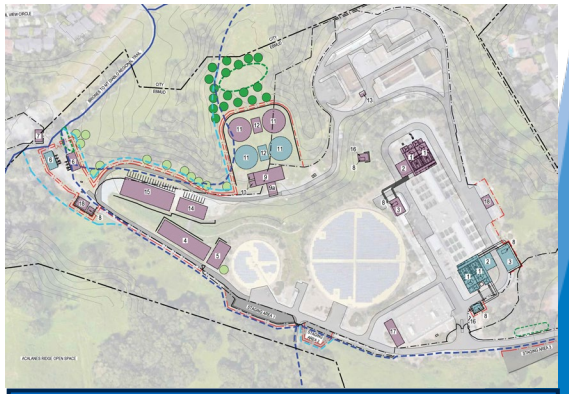
- Add pretreatment and ozone treatment
- Upgrade solids handling system, reclaim improvements
- Consolidate Maintenance Building
- Upgrade Lafayette Weirs No. 1 and No. 2

Drivers

- Maintenance and Reliability
- Resiliency
- Water Quality

Schedule

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



Site Layout

WCWTP = Walnut Creek water treatment plant

3. Distribution Facilities

Water Distribution Facilities Overview

Fire Trail & Jensen PPs

Madrone Regulator

Castenada Reservoir No. 1

Facility Class	Quantity	Class Scale/Characteristics	Key Performance Indicators
Pumping Plants	131 Pumping Plants	60-MGD, 2000-hp pumps 20-GPM, 5-hp pumps	2 per year Since FY 2015: Avg 2.9/yr
Reservoirs	167 Reservoirs	150-MG open-cut reservoir 2,000-gallon pressure tank	2 per year Since FY 2011: Avg 3.2/yr
Regulators	70 Regulators	12-in to 0.5-in regulator valves	N/A
Rate Control Stations	30 RCSs	48-in to 6-in rate control valves	N/A

GPM = Gallons per minute | hp = Horsepower | MGD = Million gallons per day | MG = Million gallons

EBMUD

Pumping Plant Rehabilitation

New Wildcat Pumping Plant (PP)

Scope

- Construct new 25 MGD Wildcat PP
- Space plan for in-conduit hydro
- Space plan for portable generator
- Improve capacity of Wildcat Aqueduct

Drivers

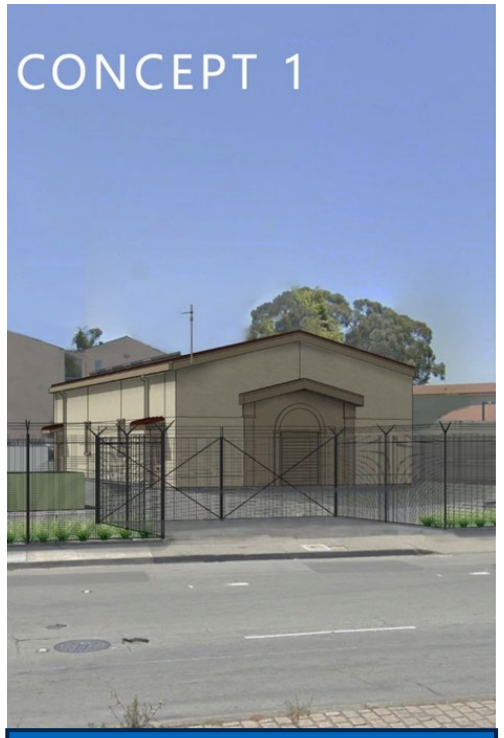
- Maintenance and Reliability
- Capacity

Schedule

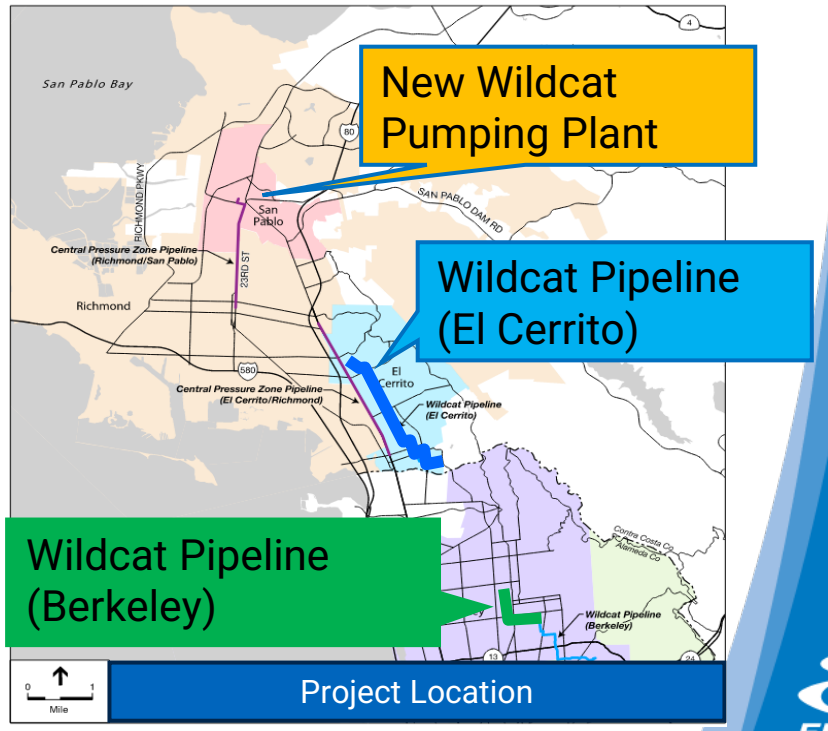
- MND Approved in FY 2023
- Wildcat Aqueduct Improvement Construction Completed FY 2025
- Design: FY 2025 to 2026
- Construction: FY 2028 to 2030

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.



Rendering of new Wildcat PP



Project Location

MGD = Million gallons per day
WTP = Water treatment plant
MND = Mitigated Negative Declaration

Pumping Plant Rehabilitation

Fay Hill Pumping Plant Replacement

Scope

- Fay Hill Pumping Plant (PP) Relocation
- Rheem PP Improvements

Drivers

- Safety
- Maintenance & Reliability

Schedule

- Awarded: November 12, 2024
- Construction: FY 2025 – FY 2027

Why are pumping plant projects critical?

- Addresses safety, operational efficiency, and maintenance reliability.

Rendering of Fay Hill PP at Rheem PP

PP = Pumping plant

Pumping Plant Rehabilitation

Ongoing & Upcoming Projects

Ongoing Construction

- Happy Valley
- Sunnyside
- Palo Seco
- Madrone
- Westside
- Encinal
- Rheem
- Ridgewood
- Scenic East

University PP Construction

Upcoming Construction in FY 2026 - 2035

- Castenada Standby Generator
- Donald
- Summit West
- Berryman West
- Larkey
- Bryant No. 2
- Dos Osos
- Summit North
- Stott
- Quarry
- Fontaine
- Withers
- Southern Loop
- Pearl

Sunnyside PP Construction

Existing Larkey PP

PP = Pumping plant

Open Cut Reservoir Replacement

Central Reservoir Replacement

Scope

- Replace existing 150 MG reservoir with three 14-MG prestressed concrete tanks and valve structure
- Replace undersized Central RCS
- Construct bioretention area, paving, fencing

Drivers

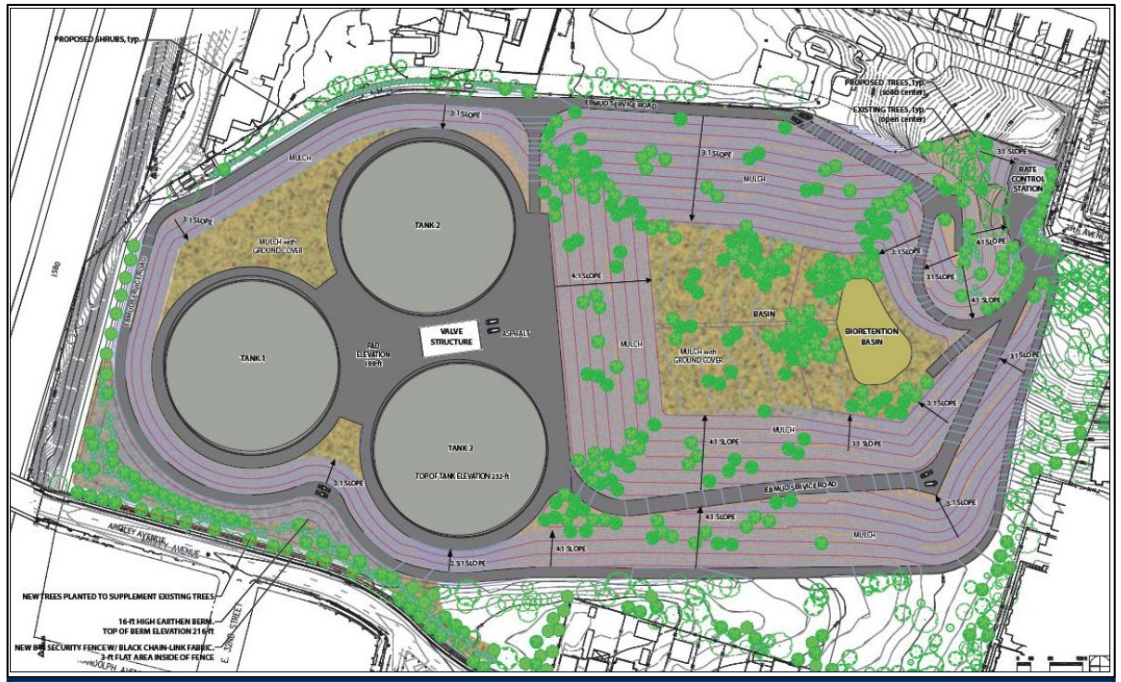
- Maintenance and Reliability
- Water quality

Schedule

- Planning: EIR certified April 2021
- Design: FY 2025 to FY 2028
- Construction: FY 2028 - 2032

Why is this project critical?

- Oldest storage reservoir in the distribution system serves >50,000 customers.
- Oversized and low elevation creates water quality and operational challenges.



Central Reservoir site plan rendering

RCS = Rate Control Station | EIR = Environmental Impact Report

Reservoir Rehabilitation

Grizzly Reservoir Replacement & Castle Hill Reservoir Demolition

Scope

- Grizzly Reservoir: Replace the existing tank with two steel tanks.
- Castle Hill Reservoir and Regulator: Demolish the existing tank and construct a new regulator.

Drivers

- Maintenance and Reliability
- Water Quality
- Safety

Schedule

- Construction: FY 2025 to 2027

Why are reservoir projects critical?

- Steel tanks must be recoated to protect structural integrity.
- Oversized tanks can lead to poor water quality.

Grizzly Reservoir (Lafayette)

Castle Hill Reservoir (Walnut Creek)

Reservoir Rehabilitation

Ongoing & Upcoming Reservoir Projects

Ongoing Construction

- Carter
- Arroyo
- Crest
- Hill Mutual
- Knife No. 1
- Wiedemann No. 1
- Danville

Upcoming Construction in FY 2026 - 2035

- Dos Osos
- Swainland

Knife No. 1 Reservoir Corrosion

Dos Osos Reservoir

Infrastructure Workshop

4. Pipelines

Treated Water Transmission
Alameda Crossing Projects

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

Oakland Inner Harbor, Phase 1 (Crossing #1)

- 2 miles of 24-inch welded steel in Oakland and Alameda
- 3,000 ft 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 and Alameda
- 1,400 ft of 32-inch HDPE installed by HDD under the estuary
- Start design FY 2026

San Leandro Channel (Crossing #2)

Scope

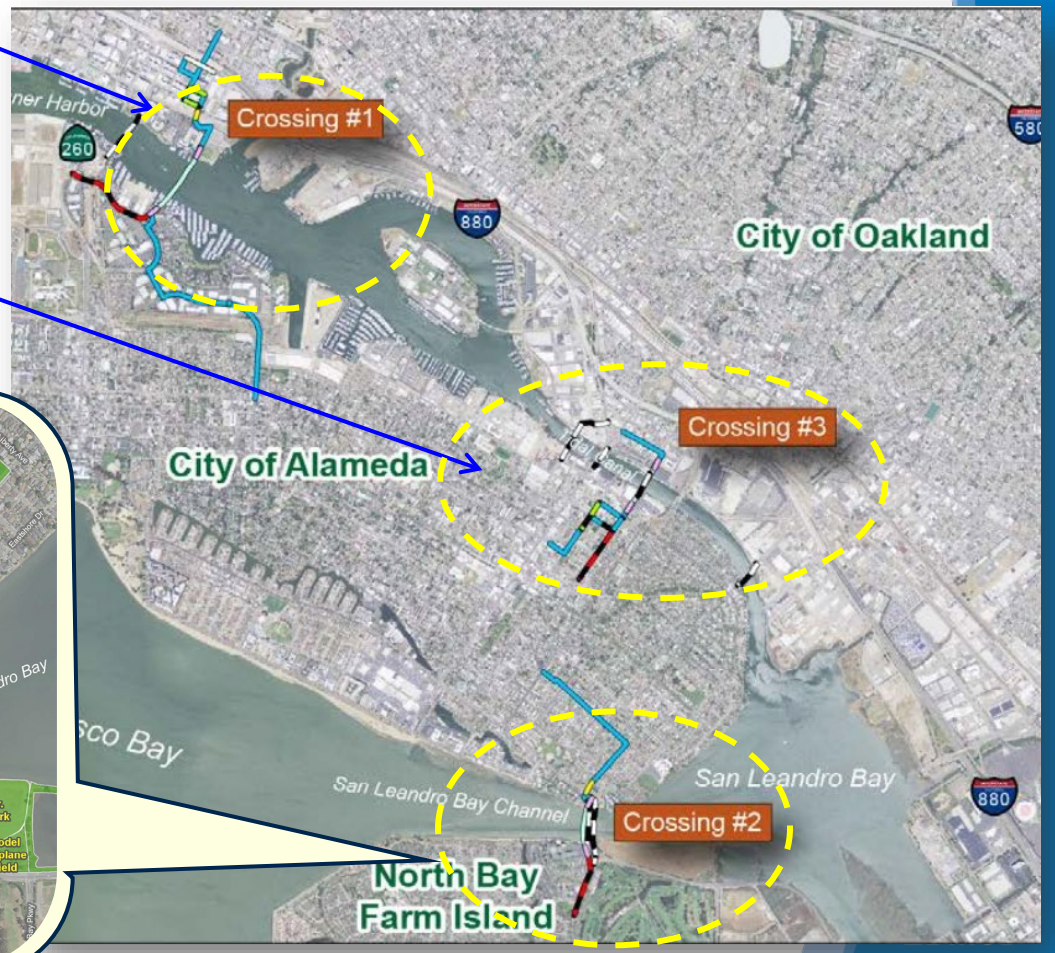
- 1 mile of 24-inch welded steel in Alameda
- 2,000 ft of 32-inch HDPE installed by HDD under the estuary

Drivers

- Seismic resilience in areas susceptible to earthquake induced liquefaction
- Improve transmission reliability to Alameda

Schedule

- Complete design end of 2025
- Complete construction end of 2028



Pipeline Rebuild

Goal: To reduce main breaks and water loss

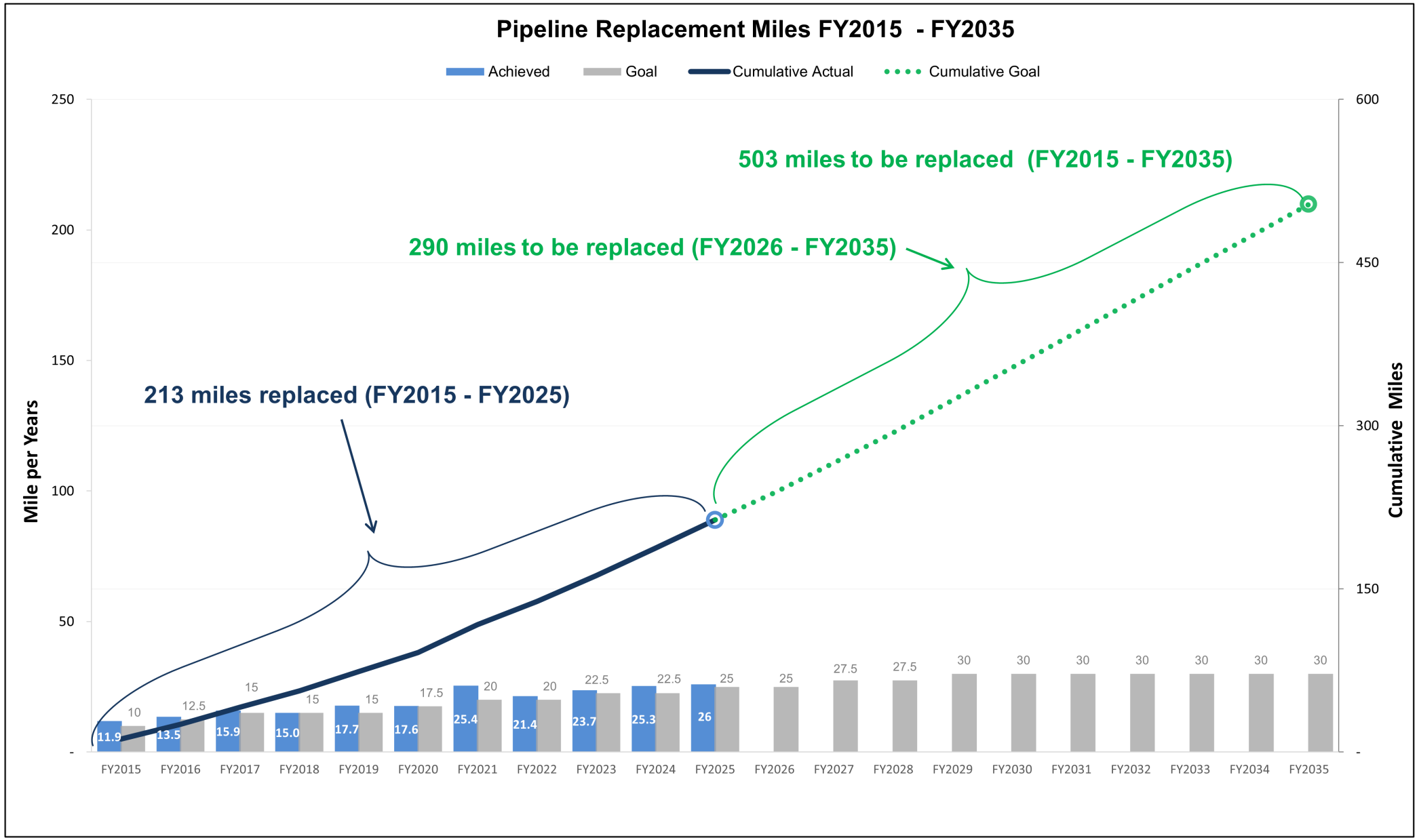
Why is this project critical?

- 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

Distribution System Material Breakdown

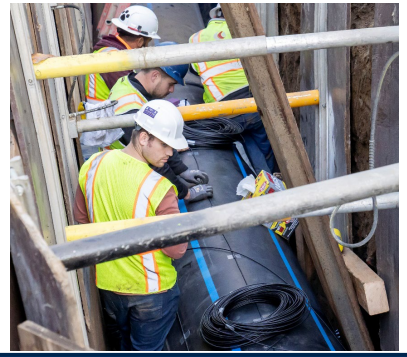
Material	Miles	% of System	2023 Main Breaks /100 miles/year
Cast Iron	1,161	30%	60
Asbestos Cement	1,124	29%	18
Steel	1,030	27%	8
PVC	483	13%	2
Other	52	1%	13

Pipeline Rebuild Summary

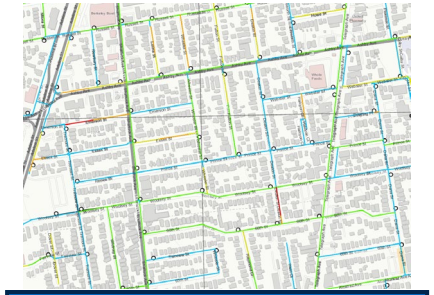


Innovation, Prioritization, and Resiliency

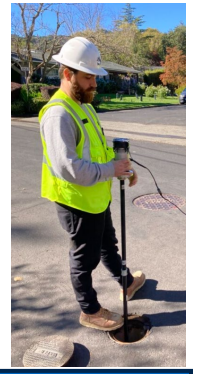
- **Project Selection and Prioritization**
  - Likelihood of Failure (LOF) and Consequence of Failure (COF) Model Research with UC Berkeley
  - Condition Assessment Program Development
  - Participation in Water Research Foundation (WRF) Project on condition assessment technologies comparison
- **Resilient Material Testing and Monitoring**
  - Hazard resilient material testing in coordination with UC Berkeley
    - Tension/Compression, Biaxial Bending, Four-point Bending
    - Fault Rupture Split Basin Testing
  - Installation of fiber optics on hazard resilient materials near faults



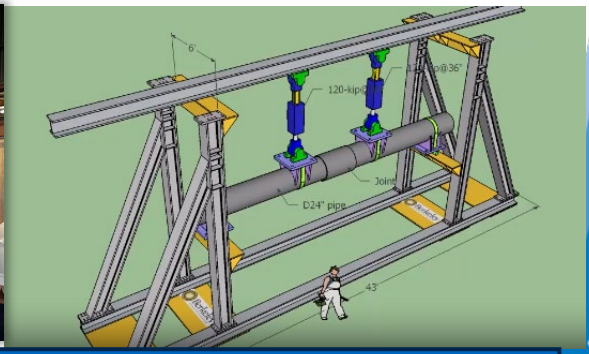
Fiber Optic Cable Installation on Summit Pipeline in Berkeley



LOF Risk Model



Non-Invasive Condition Assessment



Large Scale Four-Point Bending Testing

5. Building Facilities

Building Facilities Projects

Maintenance and Reliability – AB Roofing Project, AB Fire Wall Repairs, Conditions Assessments and Rehabilitation Plans

Operational Efficiencies

- **Efficient Systems** – AMC HVAC Replacement, ZEV Masterplan
- **Efficient locations** – Fleet Maintenance East, New Central Area Service Center

Regulatory - ADA or Building Code Compliance – Occupied Building and WTP ADA accessibility improvements

Security – Cameras, Card Readers and Fencing and AB, AMC, Oakport and Service Yards

Pre-Bid Site Walk – AB Roofing Rehabilitation

Fleet ZEV Master Plan – ZEV parking in AB

Fencing and Security Improvements (Oakport)

Access Card Reader Upgrades (AB and AMC)

Security Camera Upgrades (AB and AMC)

AB Ceiling Inspections for Future Fire Wall Repairs

New Central Area Service Center

Why is this project critical?

- Additional secure space is needed to support maintenance in the West-of-Hills area and to support Pipeline Rebuild

Street Level View of Proposed Willow Service Center

Scope

New Service Yard in West Oakland

- 6,000 SF Administration Building
- 750 SF Warehouse
- Parking & Storage areas
- Photovoltaic Infrastructure and Electrical Vehicle Charging Stations

Drivers

- **Operational Efficiency and Reliability:** Additional crew facilities in proximity to service area and AMC campus.
- **Security:** Provide safe workspaces and safe storage for materials, equipment and vehicles.

Aerial View of Proposed Willow Service Center

Schedule

- Design: FY 2024 – FY 2025
- Construction: TBD

Oakport - SupplyBank.org

Why is this project critical?

- Additional secure space for materials storage
- Updated Pipeline Academy training site needed to support Workforce Development

Scope

Ground Lease Development Project with SupplyBank.org

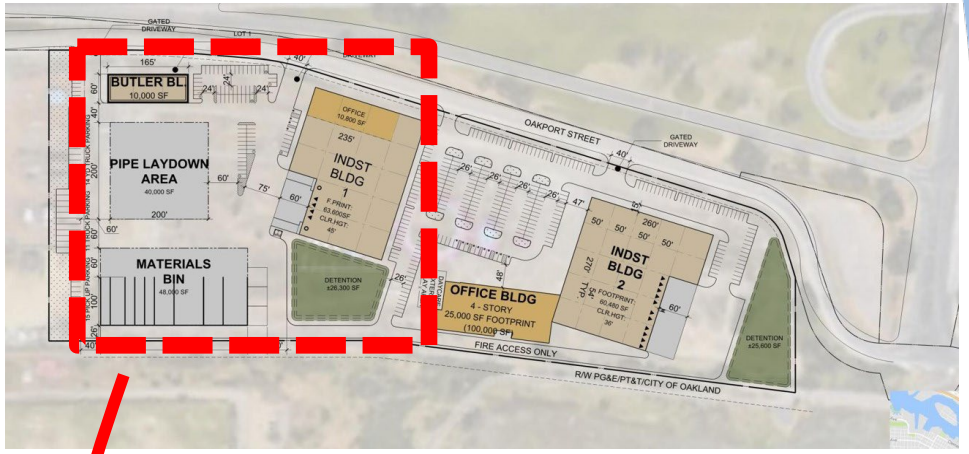
- 63,000 sf Warehouse and
- 10,000 sf Training Facility in East Oakland,
- Pipe and materials storage space and parking

Drivers

- **Operational Efficiency and Reliability**: Expanded warehouse for the West of Hills area, additional crew space and upgrades for the Pipeline Training Academy facility
- **Security:** Improved security for staff, equipment and materials

Schedule

- Design: FY 2025 – FY 2026
- Construction: FY 2027 – FY 2029



Proposed Property Development by Supply Bank

Area of Property for District Corporation Yard and Training Center

6. Water and Natural Resources Projects

Recycled Water Service Expansion

DERWA/San Ramon to Danville

Scope

- New recycled water pump station
- 5 miles new pipelines
- Customer retrofits

Drivers

- Expand non-potable deliveries to reduce potable water demand

Schedule

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

Rendering of recycled water pump station

East Bayshore to Alameda

Scope

- Repurpose and line 2500 feet of pipeline to Alameda
- 4.6 miles of new pipelines
- Customer Retrofits

Drivers

- Expand non-potable deliveries to reduce potable water demand

Schedule

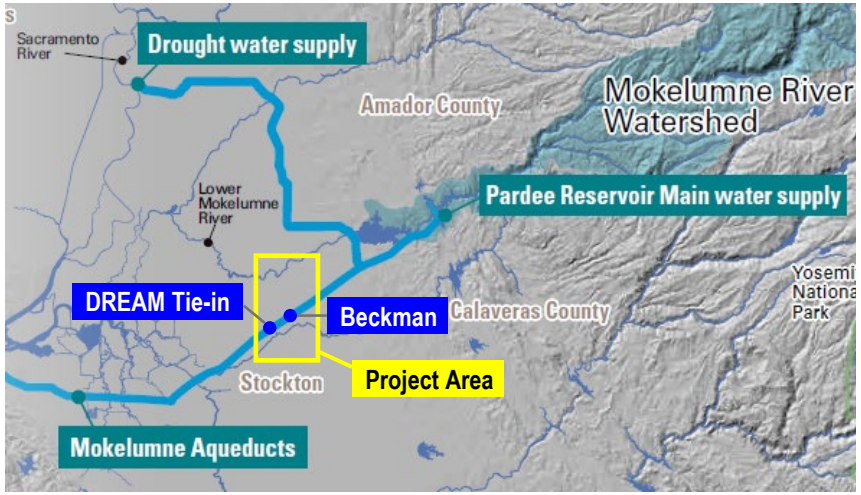
- Design FY 2028 - 2040
- Construction FY 2028 - 2040

Recycled water user signage

San Joaquin County Groundwater Banking

Why is this project critical?

- Secure supplemental water supplies for droughts.
- Continue DREAM partnership momentum.



Scope

- Retrofit pilot facilities to make them permanent
- Design and construct new facilities to increase capacity
  - Recharge facilities, extraction wells, pump station, Mokelumne Aqueduct interconnection

Drivers

- Supplemental water supply during droughts
- Adapt to climate change

Schedule

- Planning complete FY 2035
- Design complete FY 2035
- Construction FY 2033 to FY 2040

DREAM Aqueduct Tie-in Facility

Beckman Turnout

DREAM: Demonstration Recharge Extraction and Aquifer Management
NSJWCD: North San Joaquin Water Conservation District
SEWD: Stockton East Water District

Healthy Rivers and Landscapes (HRL) Restoration Projects

Why is this project critical?

- Improves outcomes for native fish on the Lower Mokelumne River

Scope:

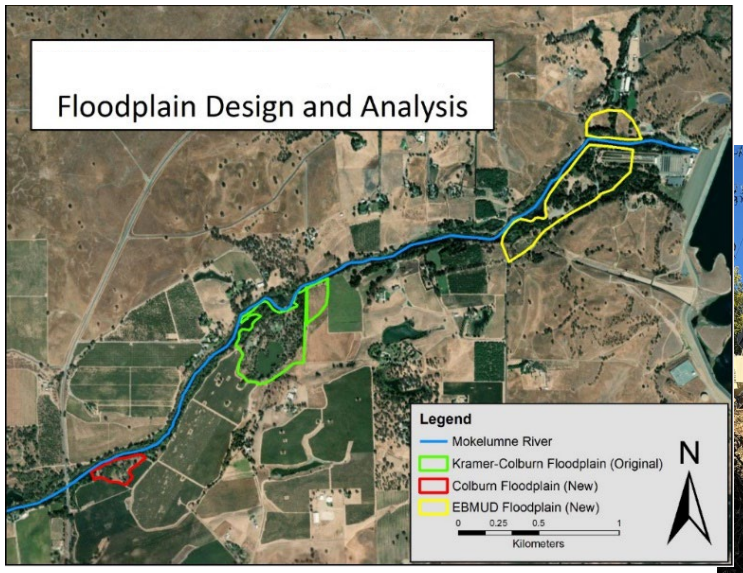
- Two ~50 acre floodplain projects
- Install 3 riparian diversion fish screens
- Two gravel restoration projects and annual maintenance
- McCormack Williamson Tract (MWT) habitat monitoring

Drivers:

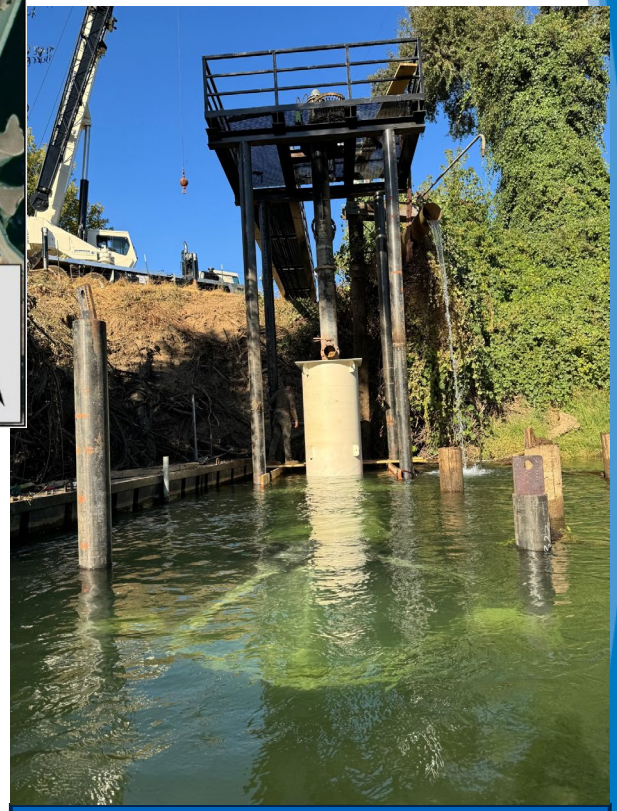
- Non-flow Commitments in HRL MOU
- Regulatory requirement under expected Bay Delta
- $8.1 million in State and Federal Grants

Schedule:

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



Gravel Restoration FY 2025



Installed Riparian Diversion Fish Screen

FY = Fiscal Year

Camanche Temperature Control Device

Why is this project critical?

- Reduce river temperatures for salmon at key life stages to improve in-river salmon production.

Scope:

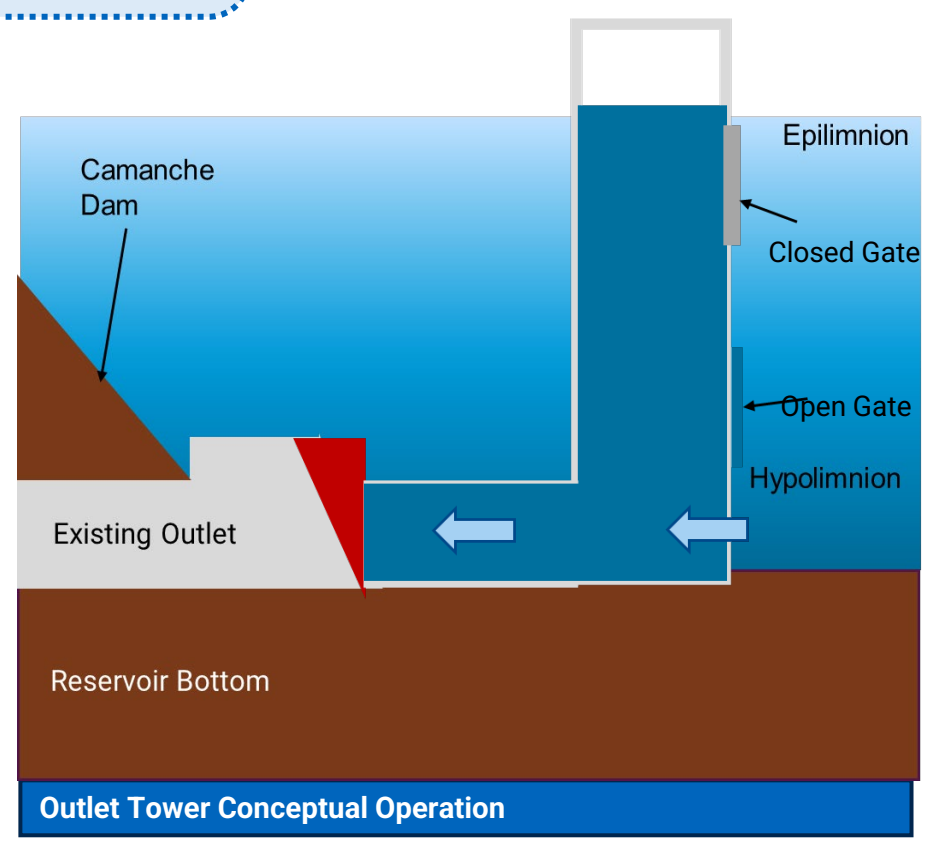
- New outlet tower or other temperature management structure

Drivers:

- Selective withdrawal to conserve cold water
- Improve salmon egg survival in the fall
- Comply with Mokelumne Joint Settlement Agreement (JSA)
- Climate change, future increased downstream deliveries

Schedule:

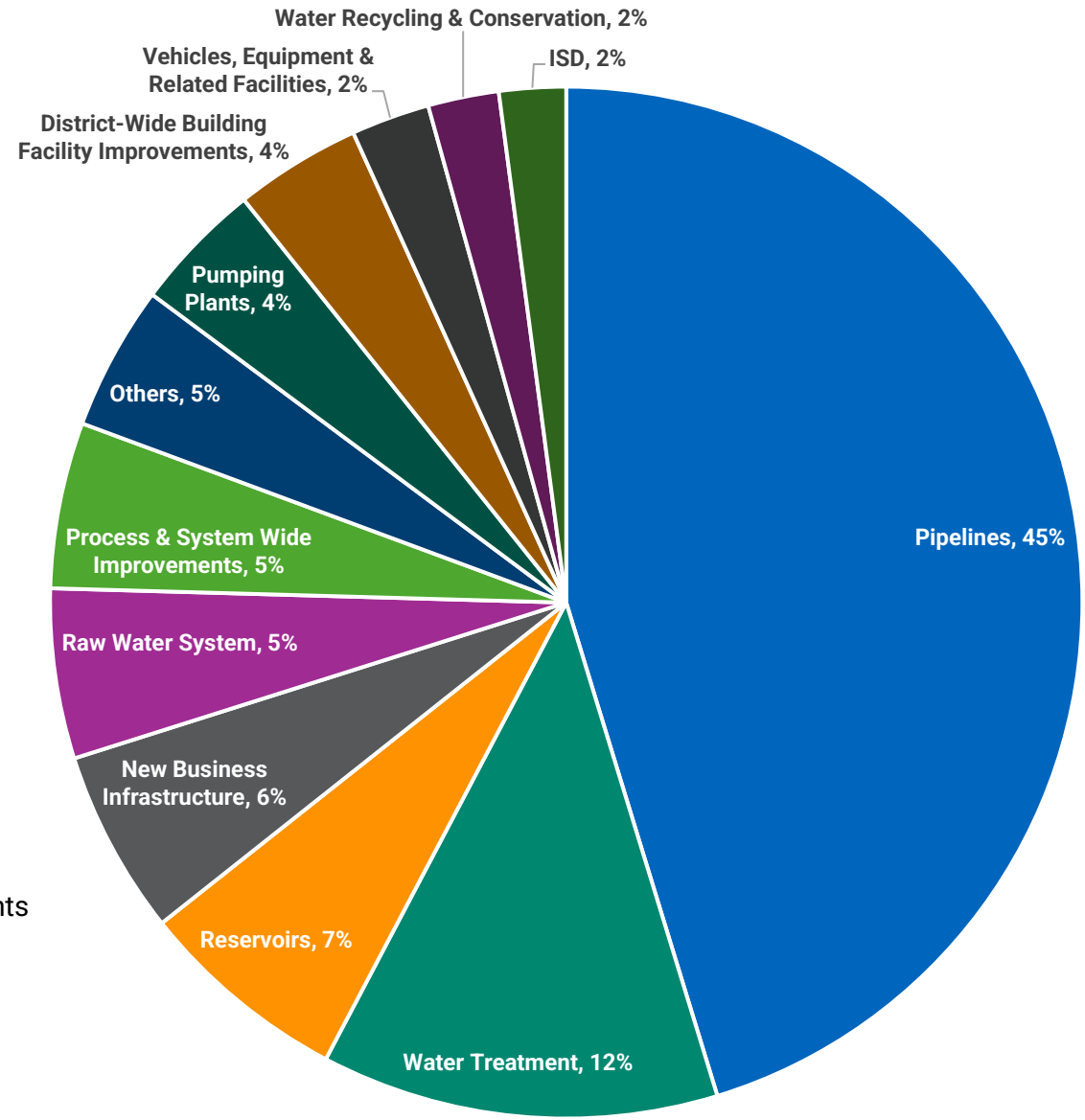
- Planning complete FY 2033
- Design and Permitting complete FY 2033



FY = Fiscal Year

Water System Wrap-up

FY 2026 - FY 2035 Water Infrastructure Preliminary CIP Breakdown for Scenario A



Others (less than 2%):
Pressure Zone Studies
Supplemental Supply, Regional Agreements
Regulators & Rate Control Stations
Recreation Areas & Facilities
Sustainable Energy

What Does the Water CIP Buy?

- 290 miles of replaced Pipeline over the next ten years
- Pardee Chemical Plant and Lafayette Tower Seismic Safety Improvements
- Relining of Mokelumne Aqueduct No. 2 and Lafayette Aqueduct No. 1
- Orinda Water Treatment (WTP) Improvements
- Upper San Leandro (USL) WTP Reliability Improvements
- Additional WTP Improvements
- Alameda Crossing #2, Montana, Summit Pressure Zone, and South 54 Large Diameter Replacements
- Central Reservoir Replacement
- Reservoir and Pumping Plant Replacements and Rehabilitations
- Recycled Water Improvements

. . . A More Sustainable and Resilient Water System.

Workshop Break

Gone Fishing at San Pablo Reservoir (2006)

Infrastructure Workshop

Wastewater System

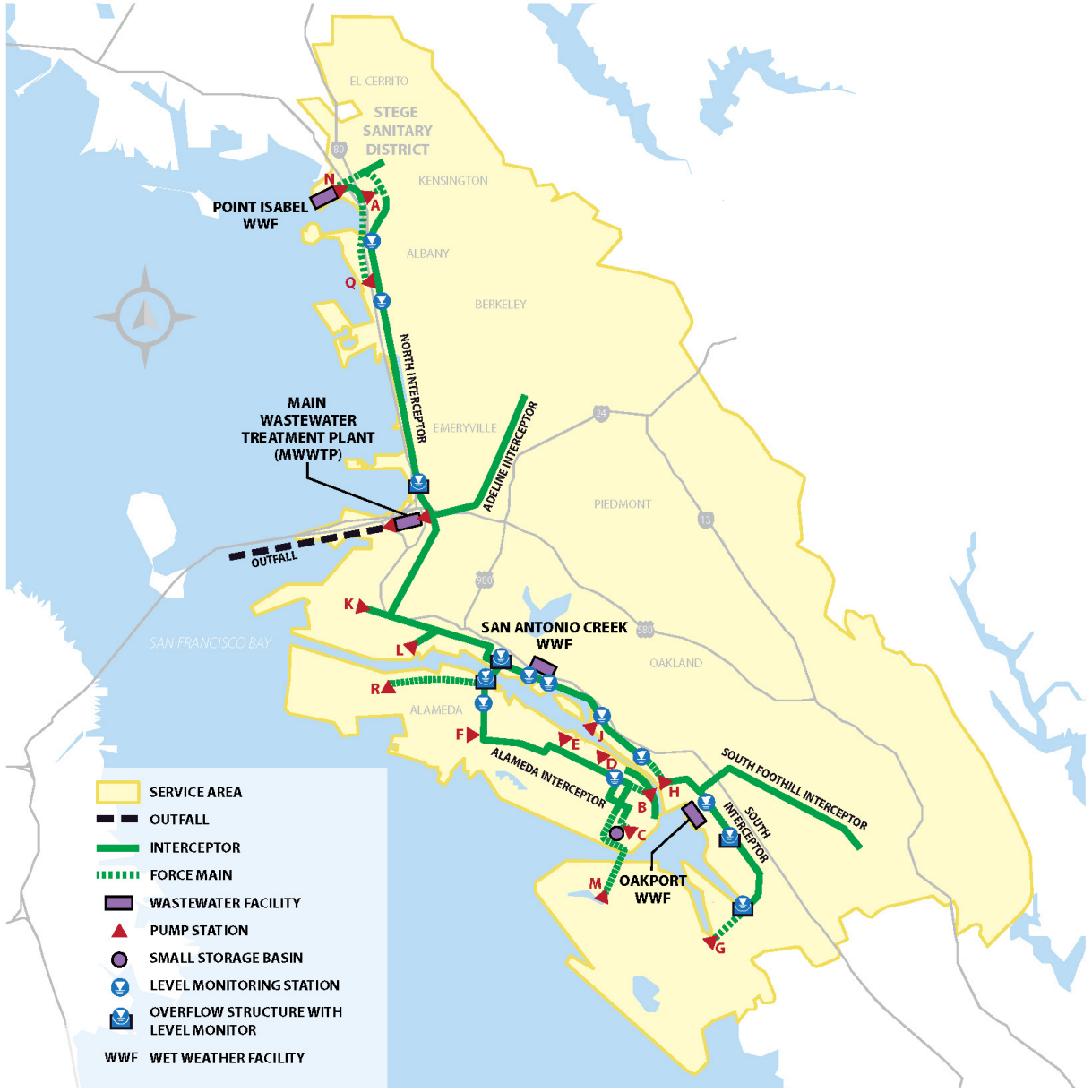
Wastewater System Infrastructure Summary

Interceptor System

- 37 miles of interceptors and force mains
- 15 pump stations

Treatment Facilities

- 1 Main Wastewater Treatment Plant
- 3 Wet Weather Facilities



Main Wastewater Treatment Plant Facilities

Key Takeaways

1. Most MWWTP and Interceptor facilities were built 50 – 70 years ago.
2. The MWWTP has an ongoing need for aging infrastructure renewal in a challenging, corrosive environment.

50

Wastewater Challenges

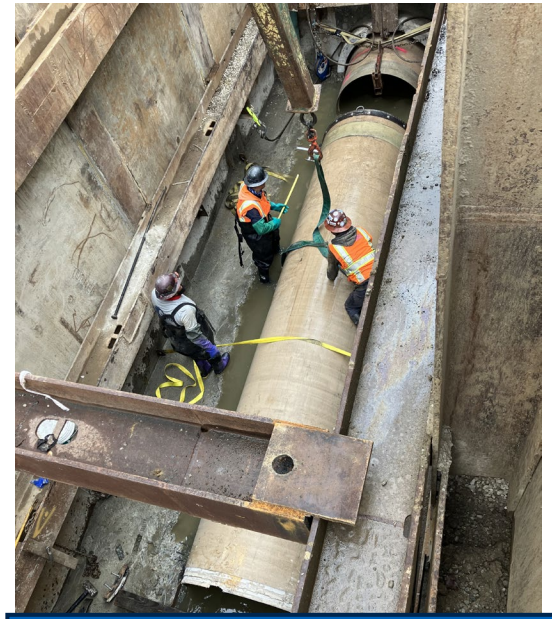
Obsolescence

Corrosion

Increasing Frequency of Failures

EBMUD

Wastewater Infrastructure Renewal



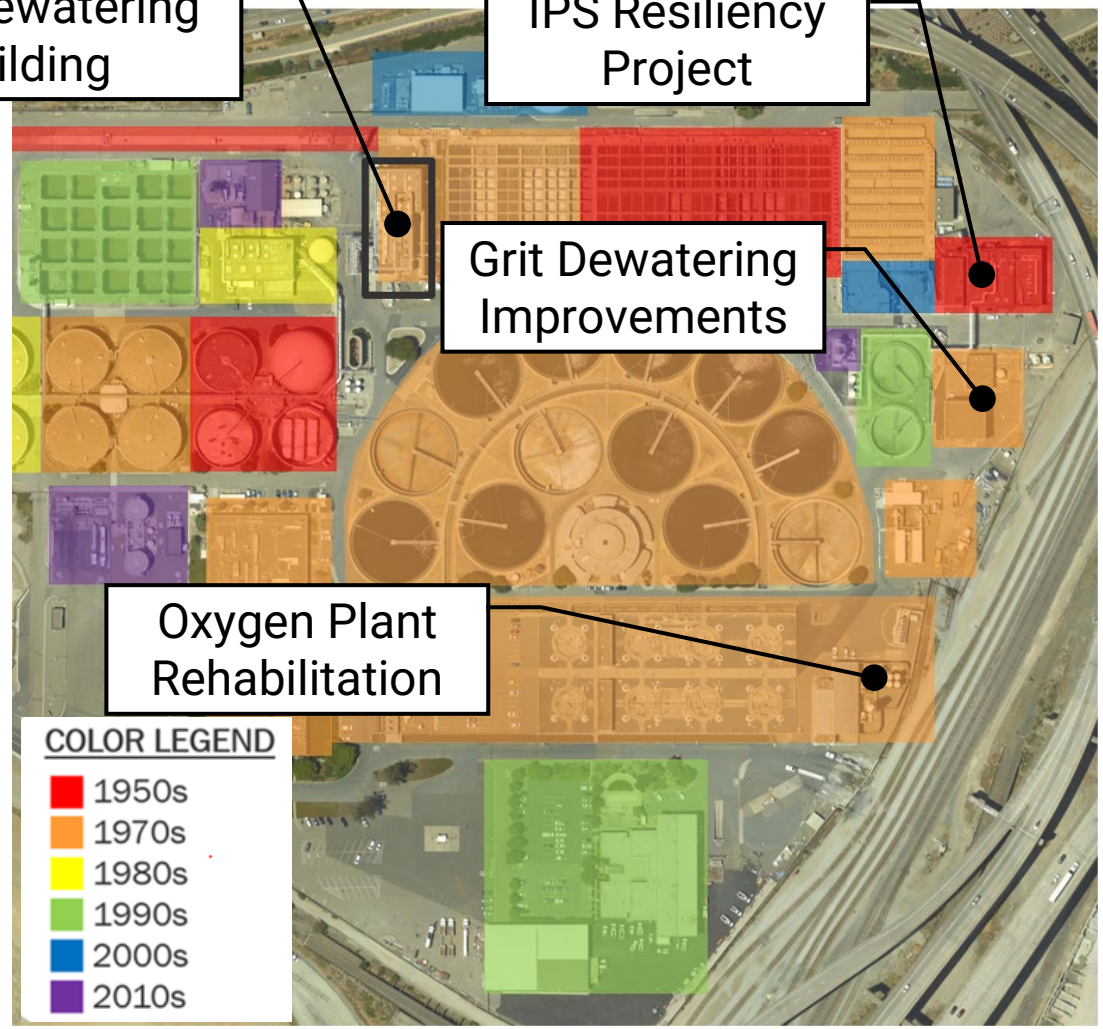
Clarifiers

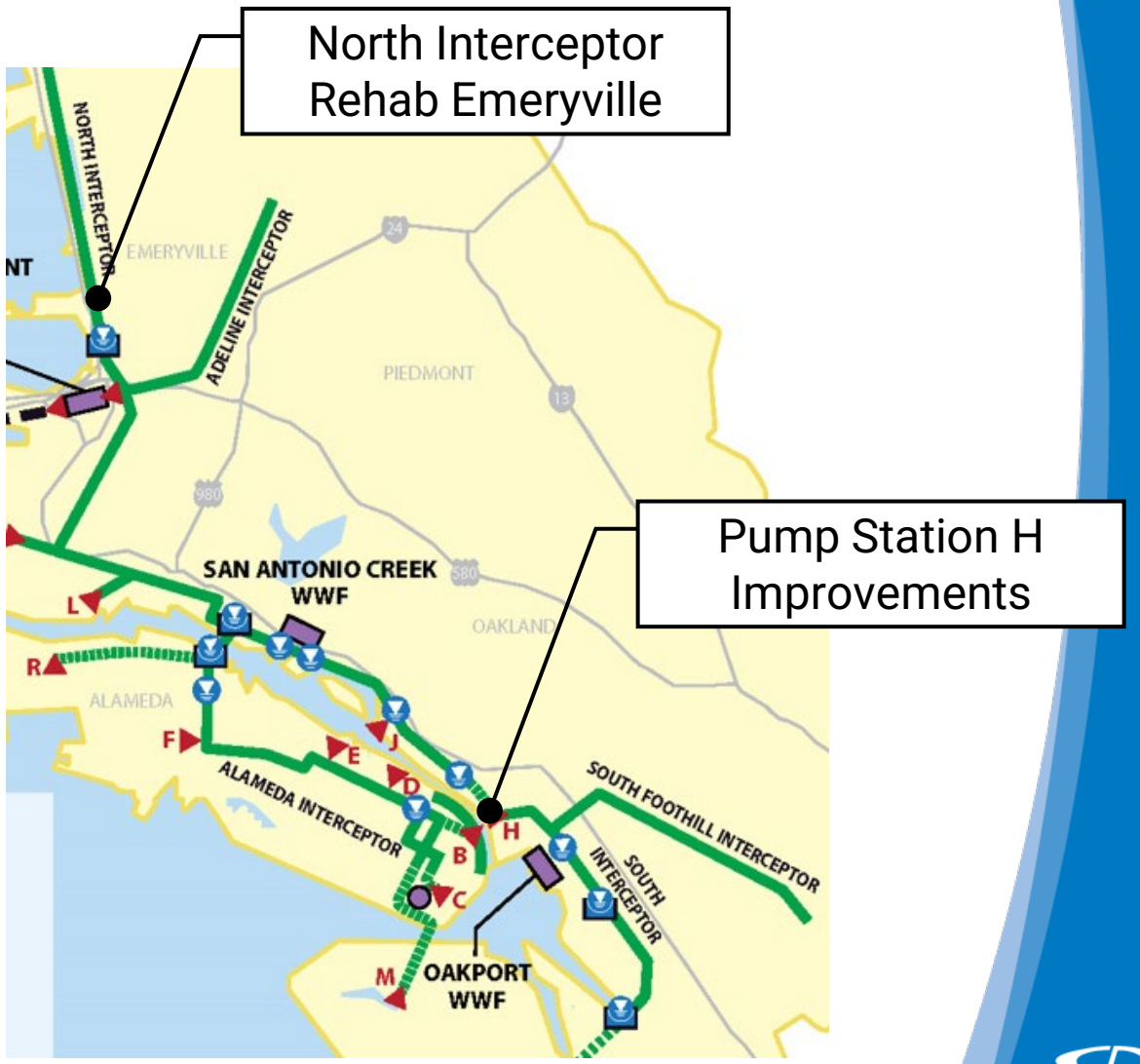
Interceptors

Dechlorination

Nutrients

Near Term Critical Projects





Influent Pump Station (IPS) Resiliency Project

Why is this project critical?

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

- **Scope:**
  - Seismic retrofit of structure, anchorage of equipment
  - Replacement of obsolete equipment with modern
- **Drivers:**
  - Aging Infrastructure
  - Maintenance and Reliability
  - Resiliency
  - Safety
- **Schedule:**
  - Design: Complete FY 2026
  - Construction: FY 2027 to FY 2031

Obsolete Equipment

Seismic Vulnerabilities

Increasingly Difficult to Maintain

New Dewatering Building Project

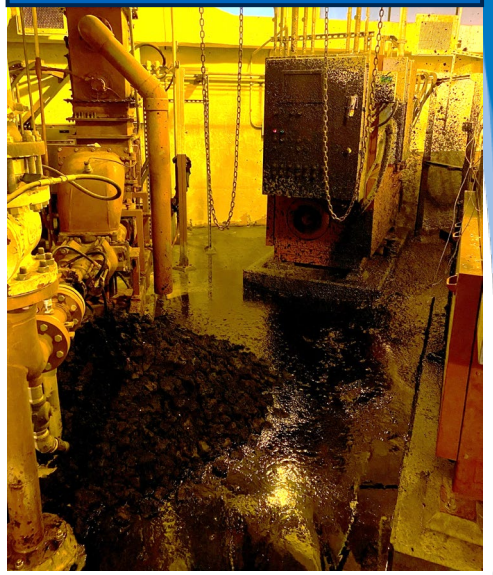
Why is this project critical?

- 7000+ labor hours of unplanned, corrective maintenance on dewatering equipment 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 vulnerable to an earthquake

- **Scope:**
  - Completely new dewatering building
- **Drivers:**
  - Aging Infrastructure
  - Maintenance and Reliability
  - Resiliency
  - Safety
- **Schedule:**
  - Design: Complete FY 2028
  - Construction: FY 2028 to FY 2031

Failing Equipment

Failing Pipes



High Maintenance

Oxygen Plant Rehabilitation

Why is this project critical?

- Oxygen production is essential to the core biological treatment process; regulatory violations can result from controls 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
- **Drivers:**
  - Aging Infrastructure
  - Regulations
  - Maintenance and Reliability
  - Safety
- **Schedule:**
  - Design: Complete
  - Construction: FY 2025 to FY 2029

Obsolete Equipment

Failing/Leaking Pipes

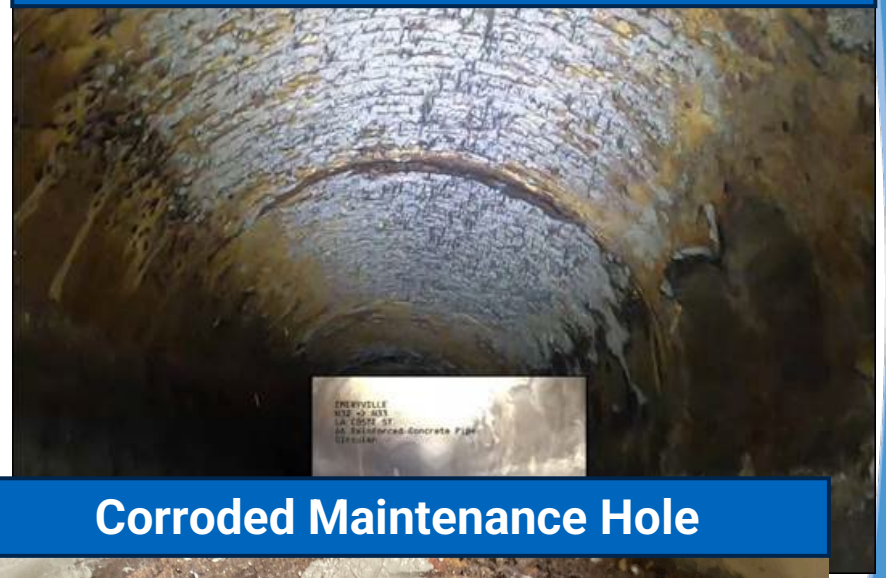
North Interceptor Rehabilitation Emeryville

Why is this project critical?

- Worst condition segment of pipe in the entire Interceptor System
- Location is on the shoulder of I-80 interstate in Emeryville; failure/sinkhole would have major impacts to traffic
- Harsh, corrosive conditions mean condition is degrading

- **Scope:**
  - Rehabilitate large diameter concrete pipe with cured-in-place liner
  - Rehabilitate five large maintenance hole structures
  - Bypass pumping at high traffic highway interchange (Powell Street)
- **Drivers:**
  - Aging Infrastructure
  - Maintenance and Reliability
- **Schedule:**
  - Design: Complete in FY 2025
  - Construction: FY 2025 to FY 2029

Corroded Concrete Pipe



Corroded Maintenance Hole

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 10-20% of system flows
- Lack of redundancy means failures can have outsized impacts
- Obsolete pumps and motors prone to failure

- **Scope:**
  - Rehabilitate degraded, repaired piping and concrete
  - Replace two pumps and motors
  - Construct new bypass connections to improve redundancy
- **Drivers:**
  - Aging Infrastructure
  - Maintenance and Reliability
- **Schedule:**
  - Design: Complete
  - Construction: FY 2025 to FY 2027

Obsolete Pumps & Motors

Failed piping

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

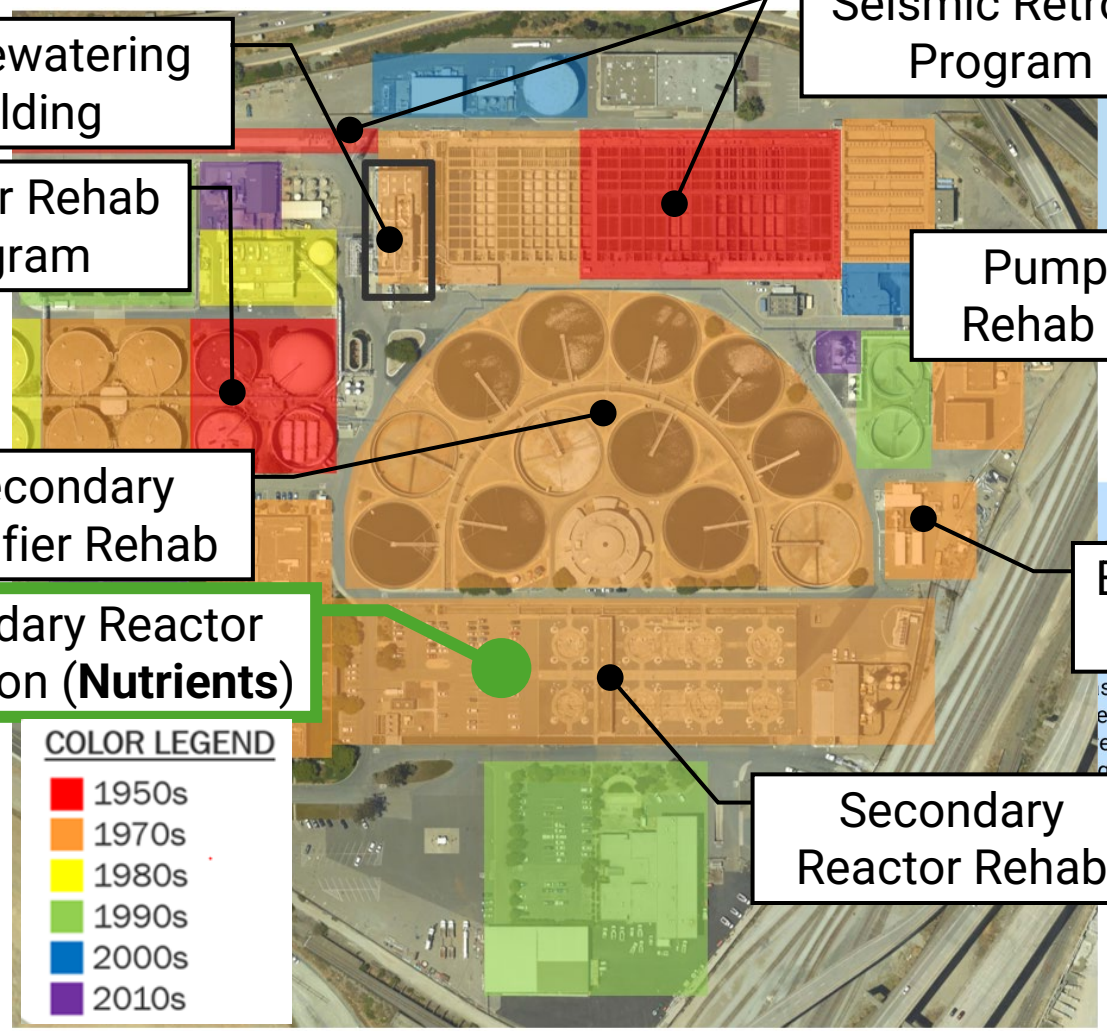

Corroded hoppers, leaking

- **Scope:**
  - Replace grit dewatering equipment
  - Rehabilitate grit hopper and install new mobile grit bin equipment
  - Rehabilitate drainage systems
- **Drivers:**
  - Aging Infrastructure
  - Maintenance and Reliability
- **Schedule:**
  - Design: Complete
  - Construction: FY 2025 to FY 2027


Repaired grit dewatering equipment


Damaged grit screws

Future Projects Affecting Capital Budget



New Dewatering Building

Seismic Retrofit Program

Digester Rehab Program

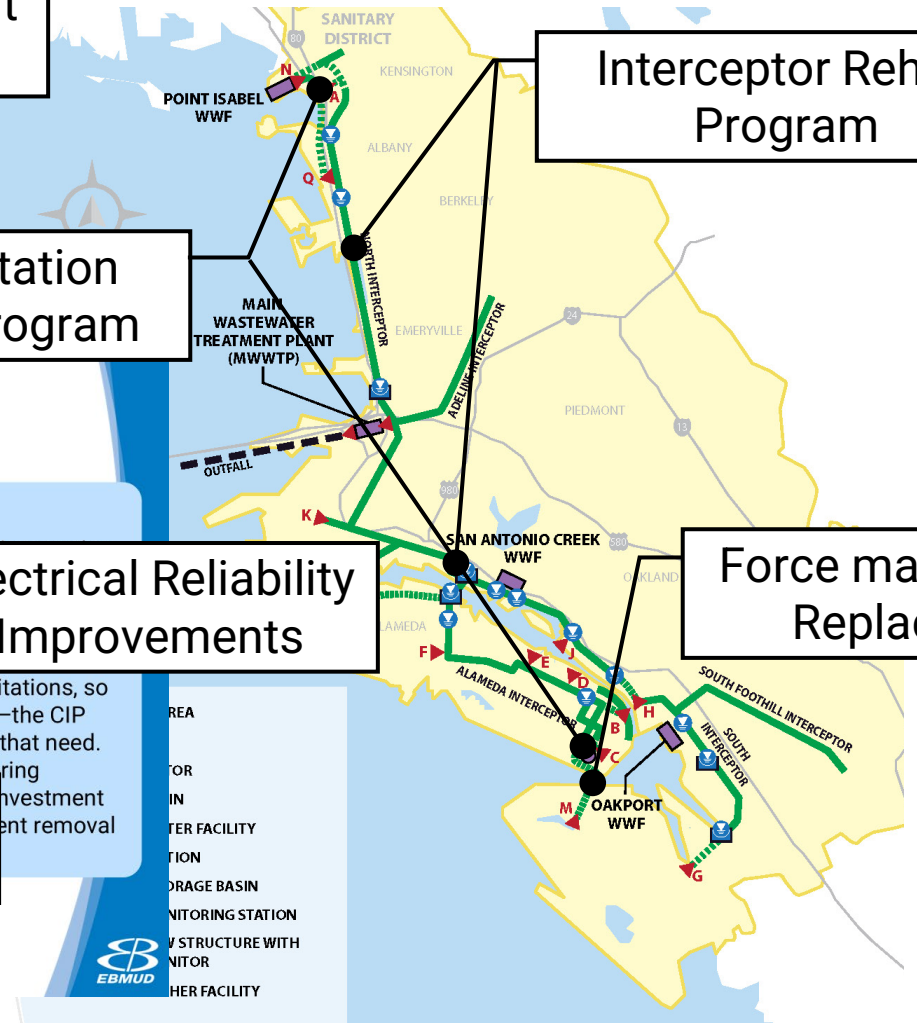
Pump Station Rehab Program

Secondary Clarifier Rehab

Secondary Reactor Expansion (**Nutrients**)

Electrical Reliability Improvements

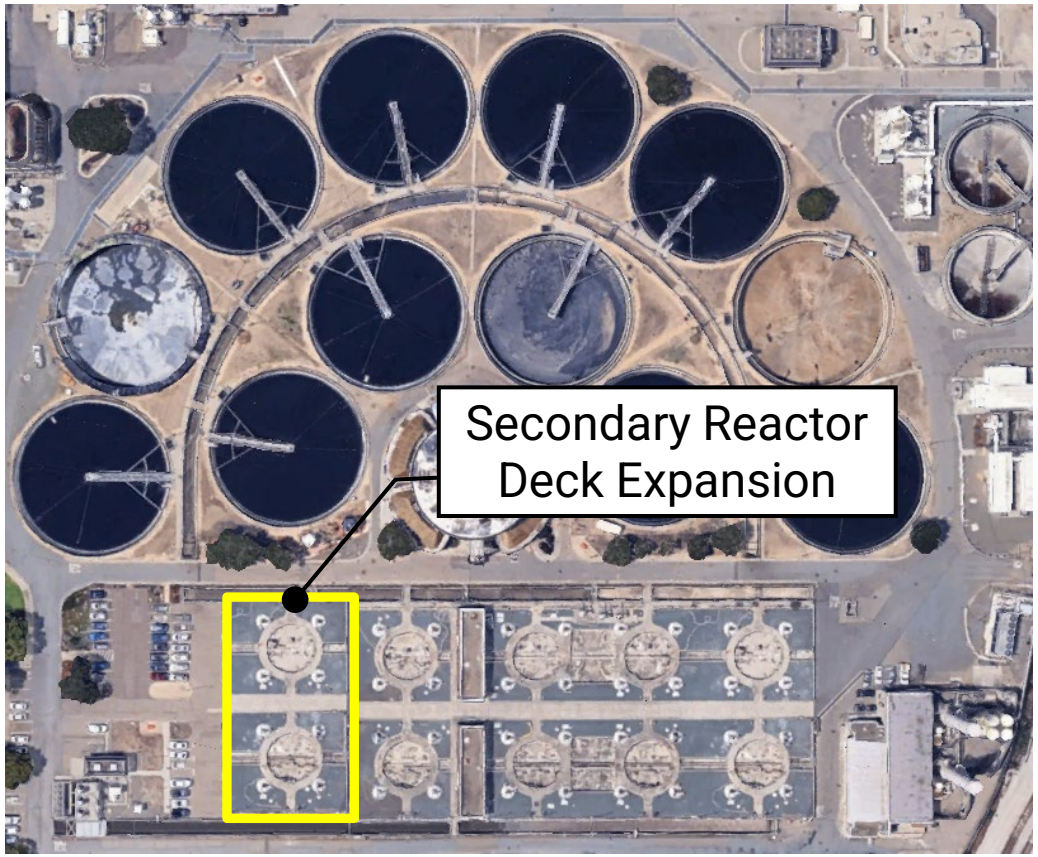
Secondary Reactor Rehab



Interceptor Rehab Program

Force main Rehab & Replacement

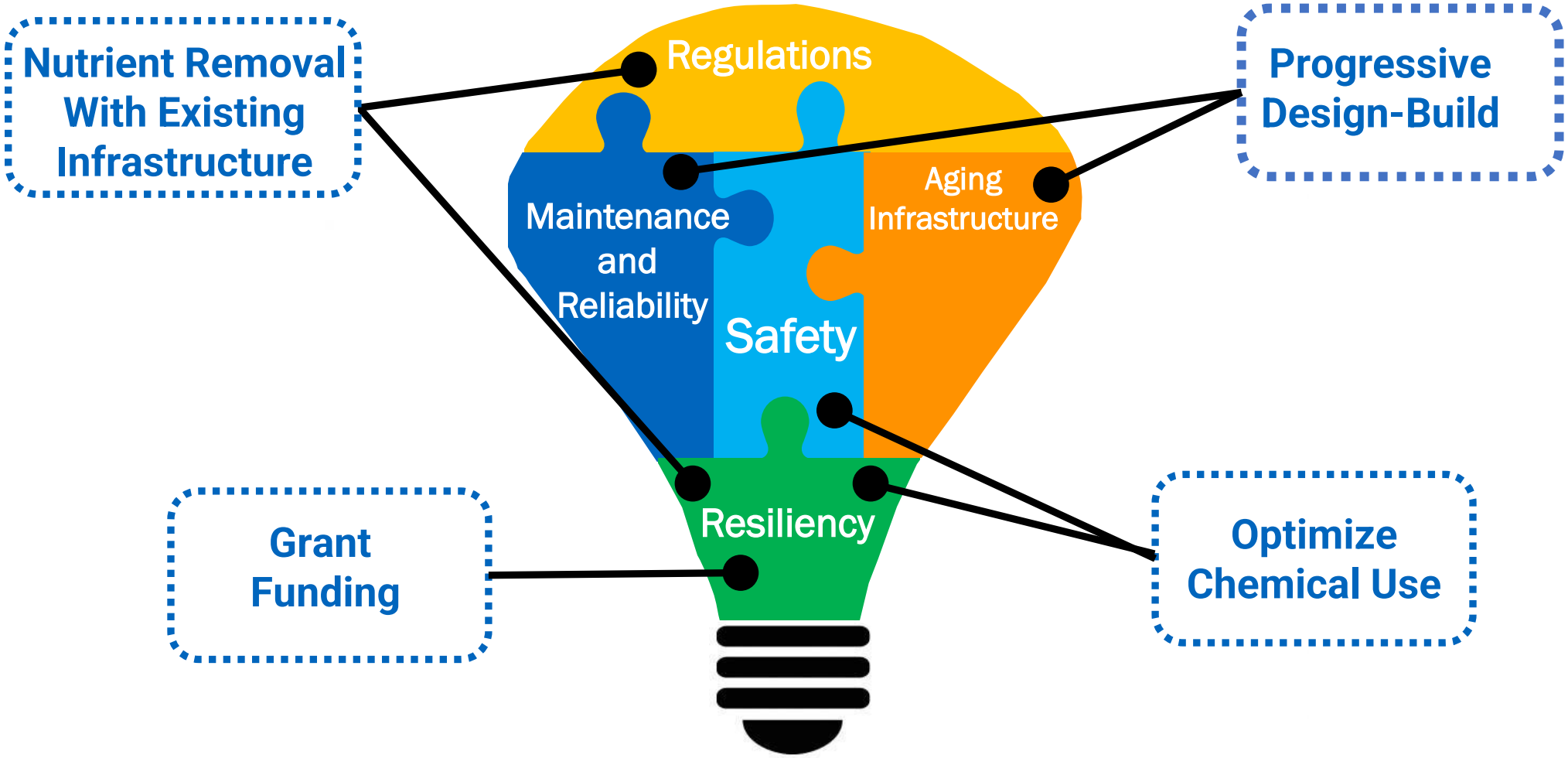
Spending Uncertainty: Nutrients



Key Takeaways

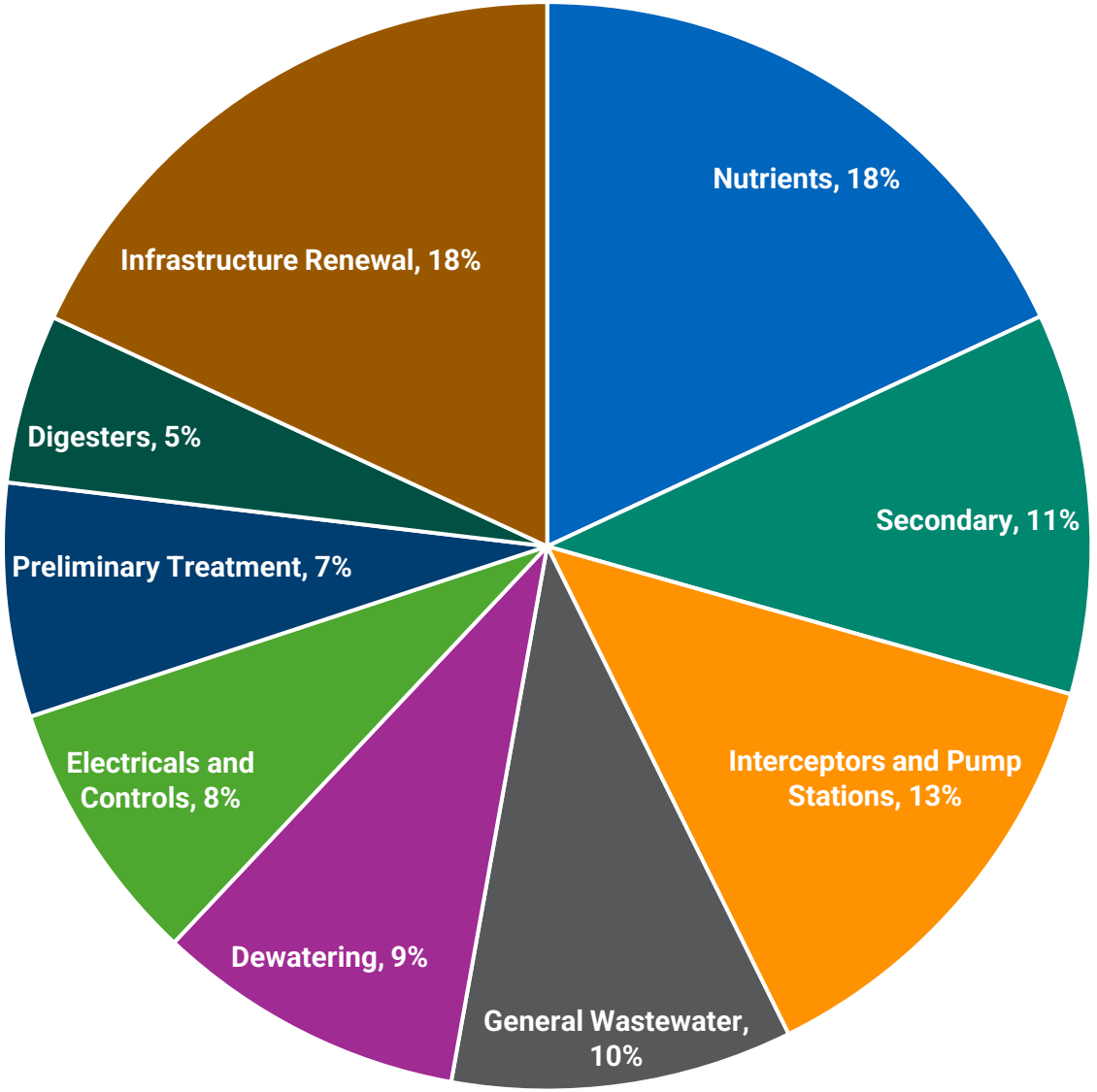
1. New nutrient regulations are a Bay Area region-wide issue—out of the District's control.
2. Innovative testing of nutrient-removal using existing infrastructure will avoid a multi-billion dollar project.
3. However, some capital investment may be needed—the CIP has a $200M project to prepare for that need.
4. Our next step is a thorough engineering evaluation of the complete capital investment solution to comply with future nutrient removal requirements

Smart Spending Through Innovation



Wastewater System Wrap-up

FY 2026 - FY 2035 Wastewater Infrastructure Preliminary CIP Breakdown for Scenario A



Infrastructure Renewal (less than 5%):
Power Generation and Biogas
Utilities and Sitework
Primary Treatment
Effluent Discharge
Wet Weather Facilities
North Richmond Water Recycling Plant
Resource Recovery

What Does the Wastewater CIP Buy?

- A more reliable, more resilient, more sustainable Wastewater System
- 20,000+ linear feet (LF) of rehabilitated interceptor pipe over the next ten years
- 6 rehabilitated pump stations
- 2,000 LF of new forcemain pipe
- A modernized, seismically retrofitted IPS
- $30M in power system reliability upgrades
- 6 rehabilitated secondary reactors
- 8 rehabilitated secondary clarifiers
- 2 new secondary reactor decks to ensure future nutrient regulatory compliance
- 1 new, efficient, reliable dewatering building
- 7 rehabilitated, upgrade digesters

. . . A More Sustainable and Resilient Wastewater System

New Capital Prioritization Process and Funding Scenarios

Improved CIP development process

- Water and Wastewater Capital Steering Committees:
  - Developed a new prioritization process and framework
  - Scored all capital projects based on the framework
  - Will provide ongoing review and monitoring of all projects' budgets
  - Will incorporate financial lessons-learned for large projects and major variances
  - Ongoing prioritization to manage the CIP between budget cycles

Capital Spending Scenarios

- Moving to a 10-year CIP, compared to 5-year CIP previously presented
- Balance competing priorities:
  - A robust infrastructure plan that does not defer critical projects and necessary infrastructure renewal
  - Customer affordability, especially as conservation continues to drive costs higher for those who cannot further reduce their water use
  - Long-term sustainable finances that are even-more resilient to future risks
  - Spreading out the impact of capital spending through debt issuance, without reducing future capacity for major, not-yet-funded projects
- Full proposals will be presented in future Budget Workshops in spring 2025

Water Funding Scenarios

Water: Scenario A vs Scenario B

Scenario A ($5.59 billion 10-Year)		Scenario B ($6.16 billion 10-Year)
Complete all critical projects and not defer projects that produce the greatest reduction in risk to resiliency or operations	=	Complete all critical projects and not defer projects that produce the greatest reduction in risk to resiliency or operations
Defer lower-ranked projects and reduce the scope of medium-priority projects	=	Defer low-ranked projects and reduce the scope of medium-priority projects
Further defers lower-ranked projects and **reduces scope** on medium-ranked projects	≠	**Includes** lower-ranked projects and **keeps scope** for medium-ranked projects

Water: CIP & Rate Comparisons

	FY 2024 – FY 2028 Adopted	FY 2026 – FY 2030 Scenario A	FY 2026 – FY 2030 Scenario B
5-year CIP	$2.48 billion	$2.87 billion	$3.17 billion
10-year CIP	n/a	$5.59 billion	$6.16 billion

Rate Proposals

Fiscal Year:	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Prior Budget	**8.5%**	**8.5%**	6%	6%	6%	-	-	-	-	-	-	-
A	-	-	6.5%	6.5%	6.5%	6.5%	6.5%	5%	5%	5%	5%	5%
B	-	-	8.5%	8.5%	8.5%	8.5%	8.5%	6%	6%	6%	6%	6%
	Adopted											

Prioritizing for Scenarios A and B

- Both scenarios optimize timing and scope to align priorities, projects, and resources
- Deferrals and reductions are carefully planned to ensure the continued performance and reliability of the system
- **Scenario A** includes the projects presented in the first half. Major deferrals or phasing to reduce costs include:
  - Some open-cut reservoir projects, while preserving projects that address concerns associated with deferring these projects
  - Managing the outcomes of slowing KPI-driven projects through mitigation measures and more active maintenance plans
- **Scenario B** would accelerate and/or add scope to some projects beyond what was presented
- Both scenarios provide a more resilient Water System, with **Scenario A** providing reserved capacity for future unplanned projects

Wastewater Funding Scenarios

Wastewater: Scenario A vs Scenario B

Scenario A ($1.04 billion)		Scenario B ($1.25 billion)
Complete all critical projects and not defer projects that produce the greatest risk	=	Complete all critical projects and not defer projects that produce the greatest risk
Defer or reduce the scope of some projects in ways that does not introduce significant risk	=	Defer or reduce the scope of some projects in ways that does not introduce significant risk
Today, assumes “Secondary Reactor Deck Expansion” ($200M) project is **not** necessary to meet nutrient regulations, and that regulations go into effect by May 2035	≠	Today, assumes “Secondary Reactor Deck Expansion” ($200M) project **will be** necessary to meet nutrient regulations, and that regulations go into effect by May 2035

Wastewater: Outcome 1 vs Outcome 2

Regardless of the Scenario selected in the budget process, we will know more about the need for the project in the next few years…

Outcome 1 (Needed)		Outcome 2 (Not Needed)
"Secondary Reactor Deck Expansion" ($200M) project **is** necessary	≠	"Secondary Reactor Deck Expansion" ($200M) project **is not** necessary

Wastewater: Combined Potential Outcomes

Current Budget Cycle Rate Scenario (Years 1-5)	6.5% for first five years (Scenario A)		8.5% for first five years (Scenario B)	
Future Decision on Nutrient-Related Project	Needed (Outcome 1)	Not Needed (Outcome 2)	Needed (Outcome 1)	Not Needed (Outcome 2)
Rate Increases Needed for Years 6-10	11.5% (Scenario A1)	5% (Scenario A2)	6% (Scenario B1)	2.5% (Scenario B2)

Wastewater: CIP & Rate Comparisons

	FY 2024 – FY 2028 Adopted	FY 2026 – FY 2030 Scenario A	FY 2026 – FY 2030 Scenario B
5-year CIP	$334.9 million	$459.9 million	$459.9 million
10-year CIP	n/a	$1.04 billion	$1.25 billion

Rate Proposals

Fiscal Year:	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Prior Budget	8.5%	8.5%	6%	6%	6%	-	-	-	-	-	-	-
A1	-	-	6.5%	6.5%	6.5%	6.5%	6.5%	11.5%	11.5%	11.5%	11.5%	11.5%
A2	-	-	6.5%	6.5%	6.5%	6.5%	6.5%	5%	5%	5%	5%	5%
B1	-	-	8.5%	8.5%	8.5%	8.5%	8.5%	6%	6%	6%	6%	6%
B2	-	-	8.5%	8.5%	8.5%	8.5%	8.5%	2.5%	2.5%	2.5%	2.5%	2.5%

Adopted

Next Steps

Next Steps

- Today: Requesting Board input on the capital funding scenarios

	Milestone	Date
☑	Infrastructure Workshop	November 26, 2024
☐	Budget Workshop #1	January 28, 2025
☐	Budget Workshop #2	March 25, 2025
☐	Budget Workshop #3 (if needed)	April 8, 2025
☐	GM Report on Rates and Charges	May 13, 2025
☐	Budget Approval and Public Hearing on Rates and Charges	June 10, 2025

Questions?

EBMUD

Flowing into the Future