Pipeline Rebuild Program Update

Planning Committee

July 9, 2024

Agenda

- Pipeline Rebuild Mission
- Fiscal Year 2024 (FY 2024) Review
  - Project Selection, Design
  - Construction
  - Research and Innovation
- Next Steps

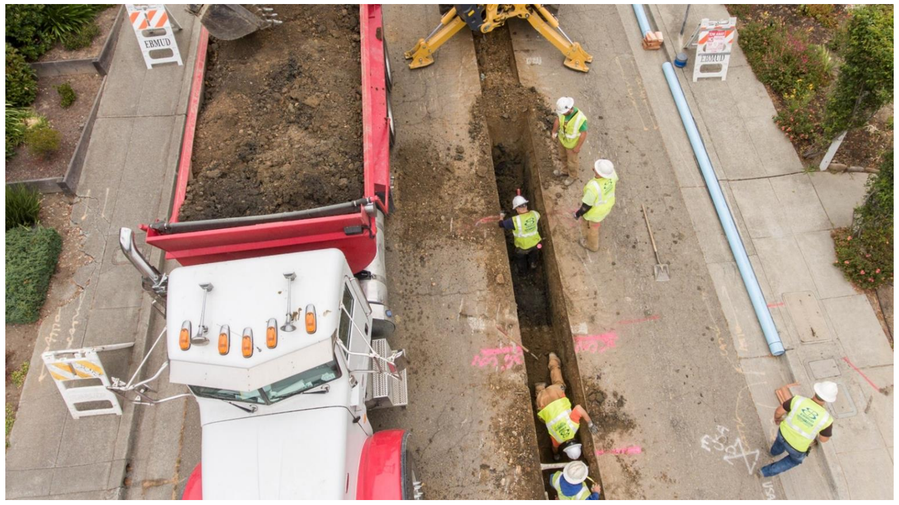
District Pipeline Construction

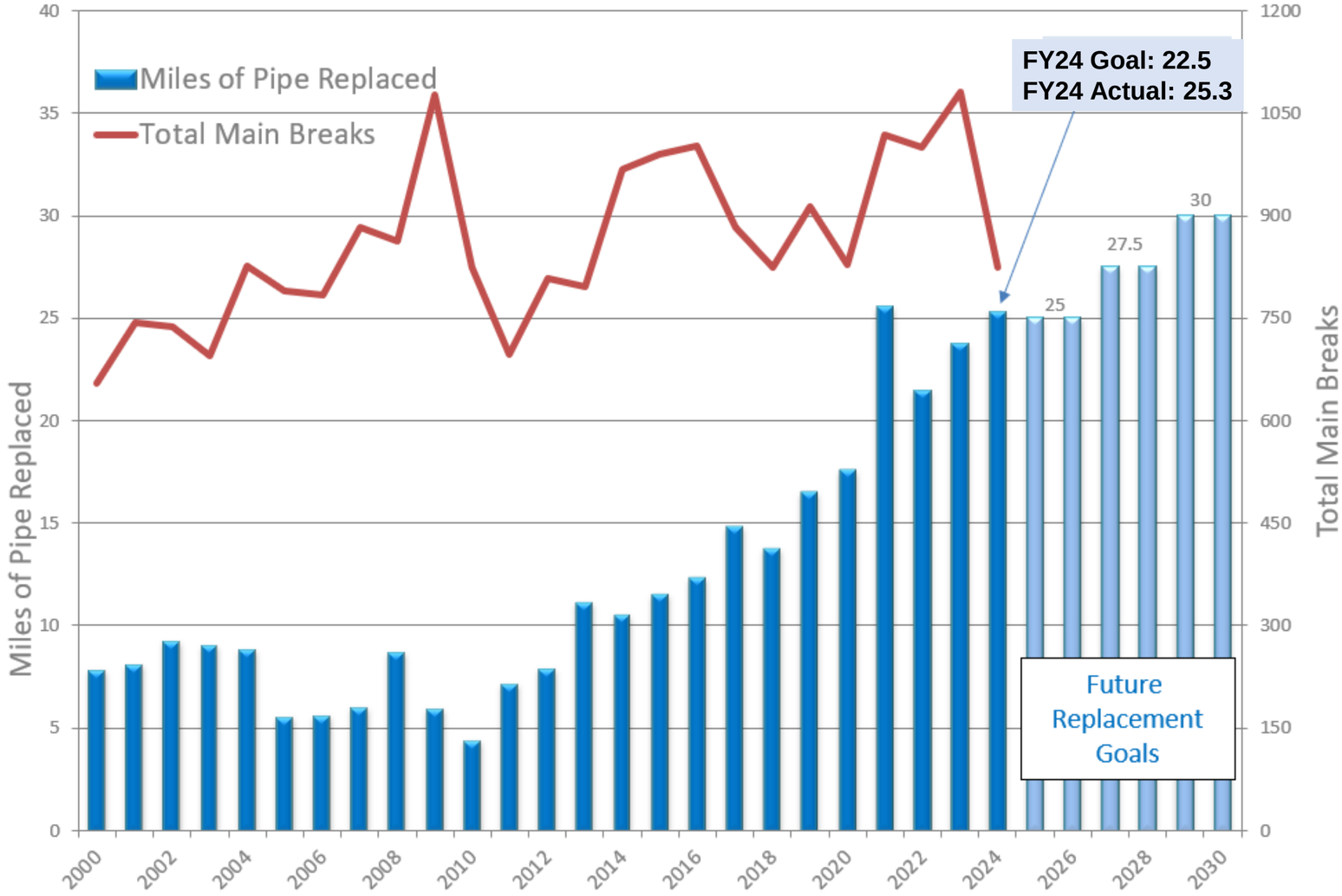
Pipeline Rebuild Mission

- Ramp-up to sustainable long-term pipeline replacement rate
- Reduce main breaks and water loss
- Perform pilot studies on new pipeline renewal technologies and process improvements
- Promote teamwork, research, and innovation across District
- Leverage improvements

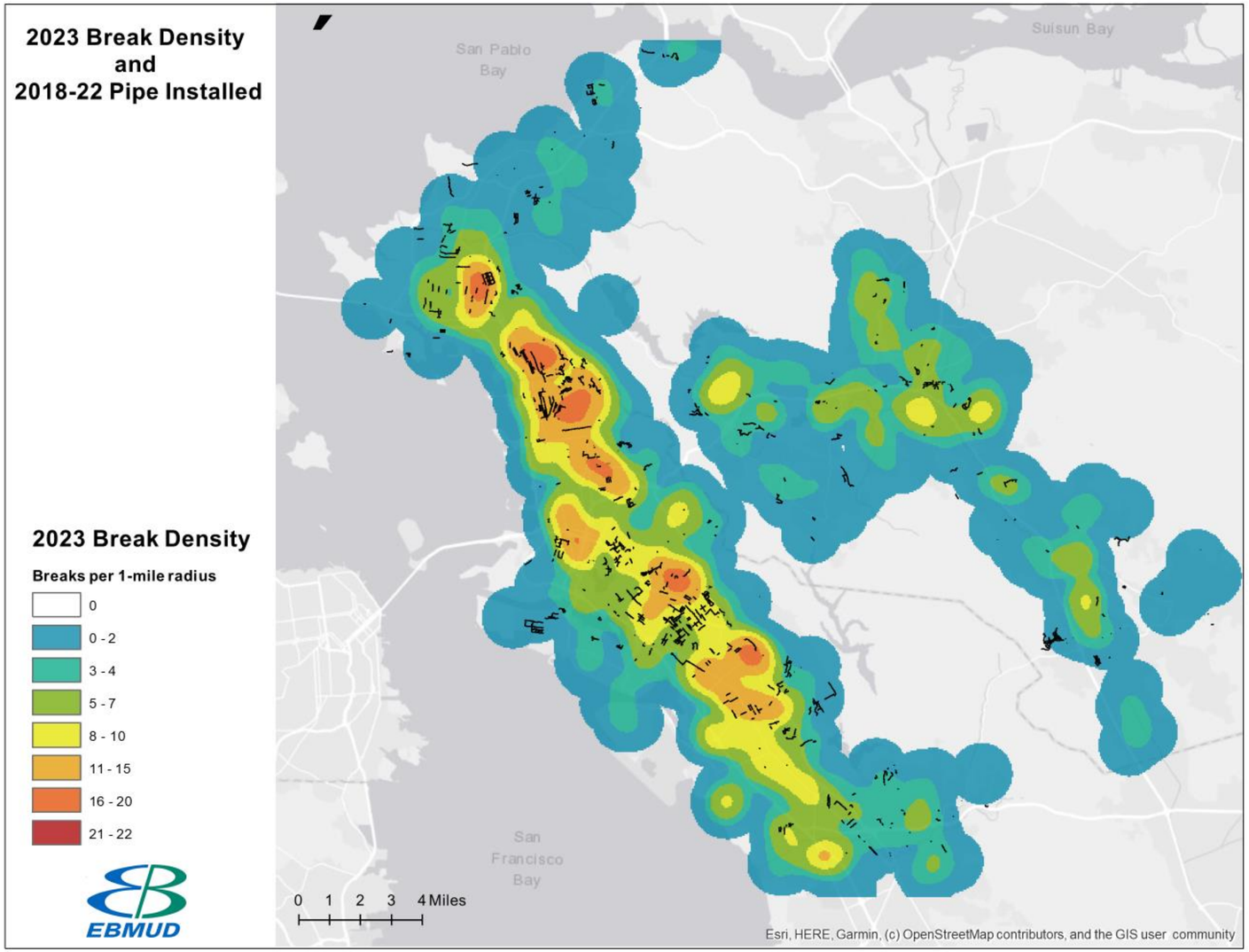
District Pipeline Construction

Pipe Replaced, Main Breaks, and Future Goals

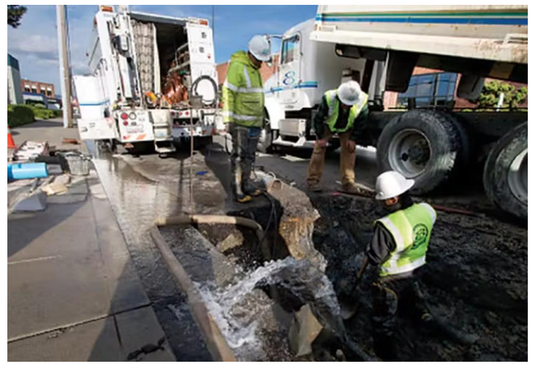




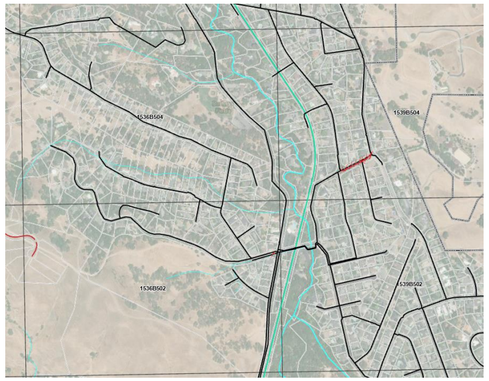
Main Break Density (2023) and Replacements (2018-2022)



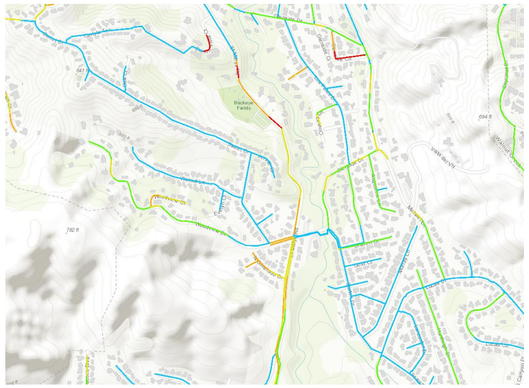
FY 2024 Project Selection and Design



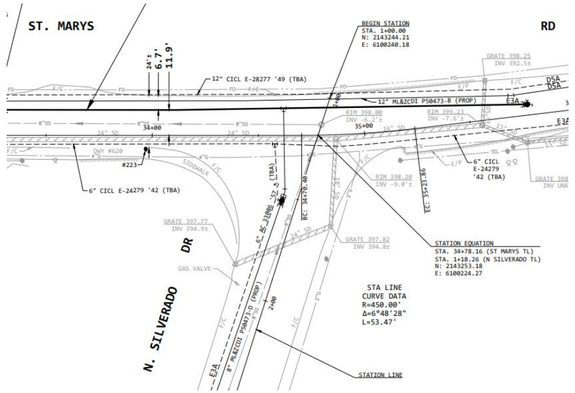
Evaluate main break data



Link main break data to GIS database



Run risk model and perform project selection



Prepare detailed design drawings

- Completed detailed design drawing packages for pipe replacement
- Performed close coordination with District pipeline crews
- Maintained ongoing coordination with cities and counties
- Coordinated with U.C. Berkeley and U.C. Davis on risk model migration analyses

FY 2024 Construction Highlights

- Improved Material Availability
- Hired 13th Pipeline Crew
  - Smaller service crew to support large mainline projects
- Piloted Direct Haul
  - 84th & B, Oakland
  - Juanita, Walnut Creek
  - Camino Tassajara, Danville
  - St. Marys Rd, Lafayette

Pipeline Construction crews installing ductile iron pipe

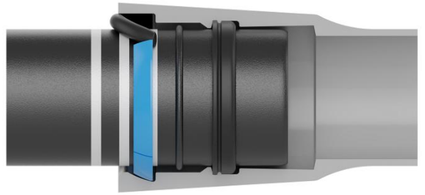
Pipe Materials

Material	FY 2025 Planned Miles
Ductile Iron Pipe	21
Earthquake Resistant Ductile Iron Pipe (ERDIP)	3
iPVC	1

Ductile Iron Pipe Installation

Field Lok Restrained Gasket Joint (Ductile Iron Pipe)

TR Flex Joint System (Ductile Iron Pipe)

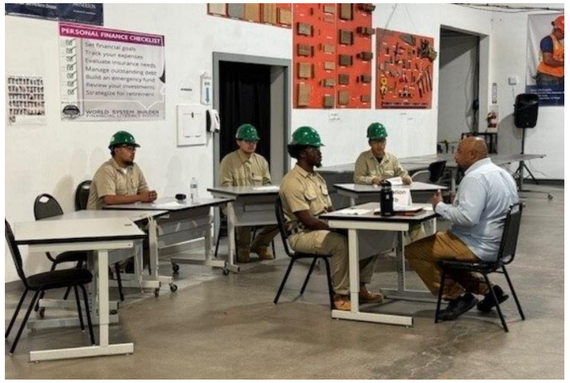


Earthquake Resistant Ductile Iron Pipe (ERDIP)

Pipeline Construction Recruitment

- Cypress Mandela Training Center
  - Summer Trades Fair (July 2023)
  - Plumber Bootcamp (Sep 2023)
  - OUSD Skilled Trades Fair (Dec 2023)
  - Mock Interviews (May 2024)
- Richmond Build Bootcamp (Sep 2023)
- Met with over 1,500 students and potential employees

Cypress Mandela plumber bootcamp



Cypress Mandela mock interviews

Cypress Mandela recruitment event

Oakland Unified School District = OUSD

Center for Smart Infrastructure (CSI)

- Completed bending test on 48” Ductile Iron Pipe (DIP)
- Performed fiber optic installation on Earthquake Resistant DIP
- Participated in workshop with U.C. Berkeley, utility partners and consultants
- Offered 2nd year of U.C. Berkeley fall semester class (CE 112)

ERDIP bending test

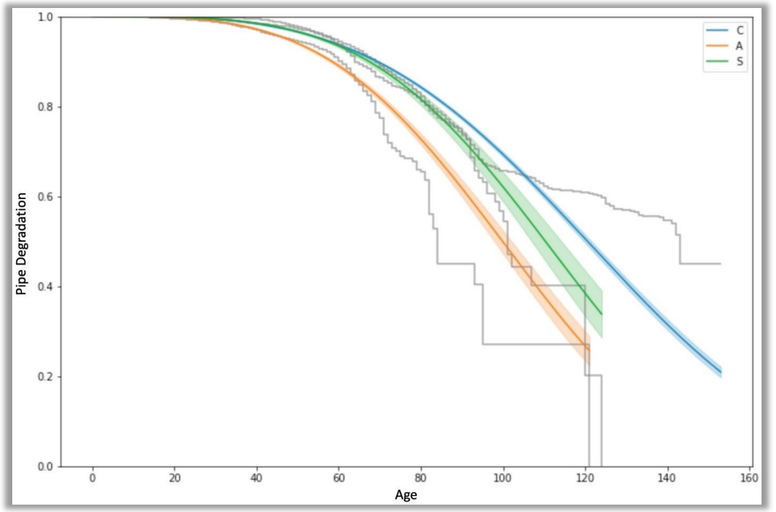
Fiber optic installation on ERDIP (Le Roy Cluster)

CE 112 Class (field trip to Pardee)

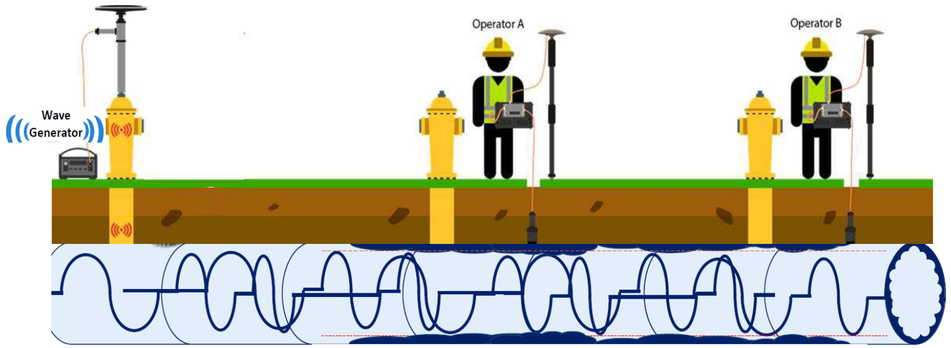
CSI workshop team (Dec 2023)

Research and Innovation

- Pipe degradation modeling
  - Statistical versus Artificial Intelligence model
  - Future migration rates
  - Inform long-term replacement goals
- Condition assessment
  - Pilot technologies
  - Integrate data into replacement decisions

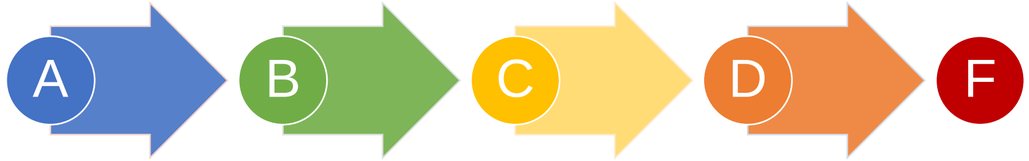


Example pipe degradation curves



Condition Assessment using Dynamic Response Imaging (DRI)

Pipe Migration



- Migration - movement from one risk category to the next
- Average annual migration miles to
  D & F is 21 miles

Risk Category	2024 Miles	Average Migration Miles
A	2744	
B	838	
C	387	
D	185	**16**
F	38	**5**

FY 2025 Construction Efficiencies Plan

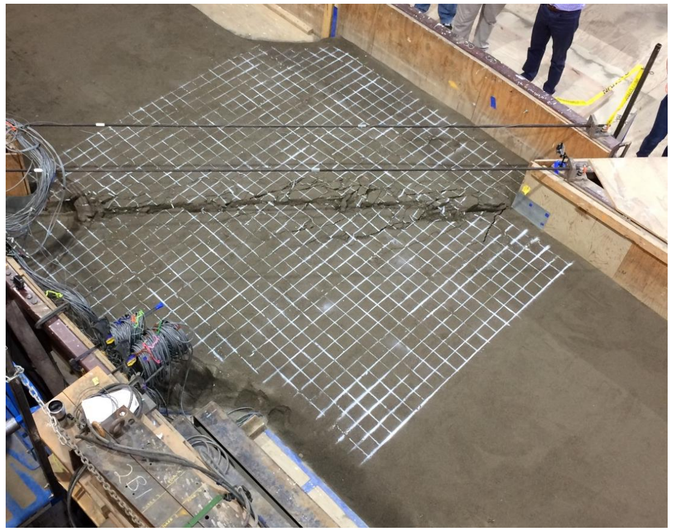
- Materials & Methods
  - Pilot Restrained Gasket DIP
  - Utilize equipment to expedite field adaptability
- Trench Soils
  - Continue Direct Haul
  - Pilot Native Slurry Backfill
- Crew Staffing
  - Implement flexible crew complements based on project needs

Next Steps

- FY 2025 goal of 25 miles
- CSI Fault Rupture Test and Pipe Migration Analysis
- New RFP for Ductile Iron Pipe

CIPP liner installation

CE112 Site Visit



CSI Fault Rupture Test

Questions?

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INTO
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Cull Creek Regulator Construction, and Campus, Keller, Gramercy, and Villareal Regulators Replacement Project

Specification 2180

Planning Committee

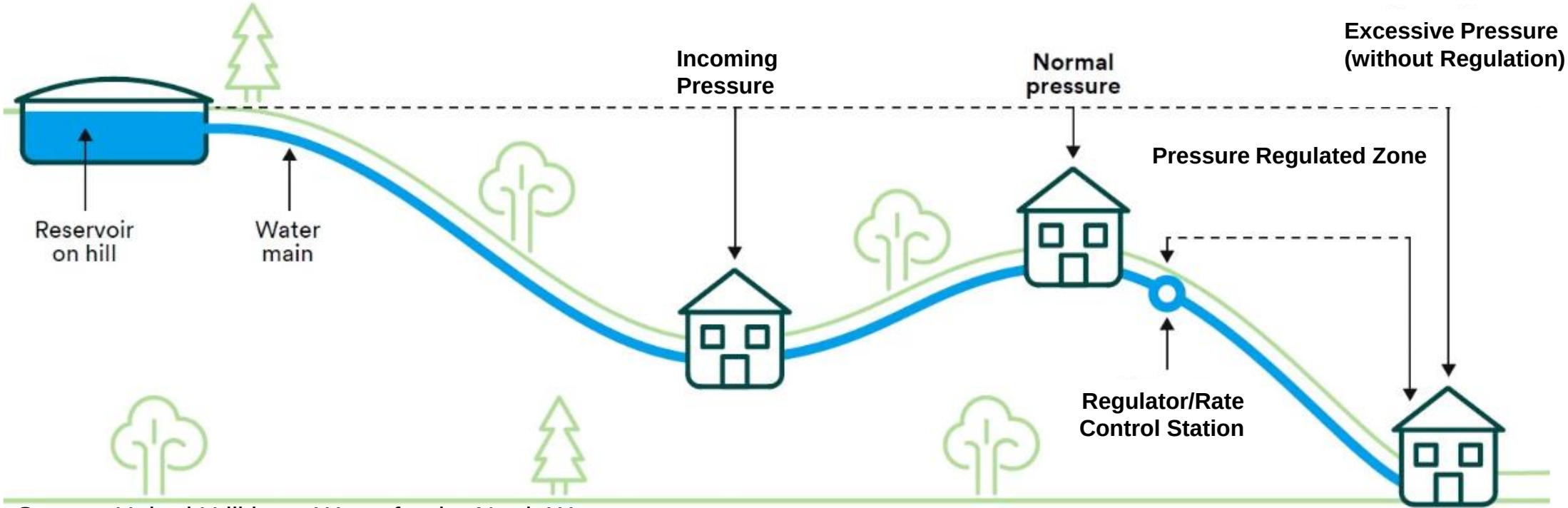
July 9, 2024

Agenda

- Rate Control Station and Regulator Rehabilitation - Program Overview
- Specification 2180: Project Overview
- Project Status and Next Steps

Rate Control Station and Regulator Rehabilitation: Program Overview

Rate Control Stations and Regulators Overview

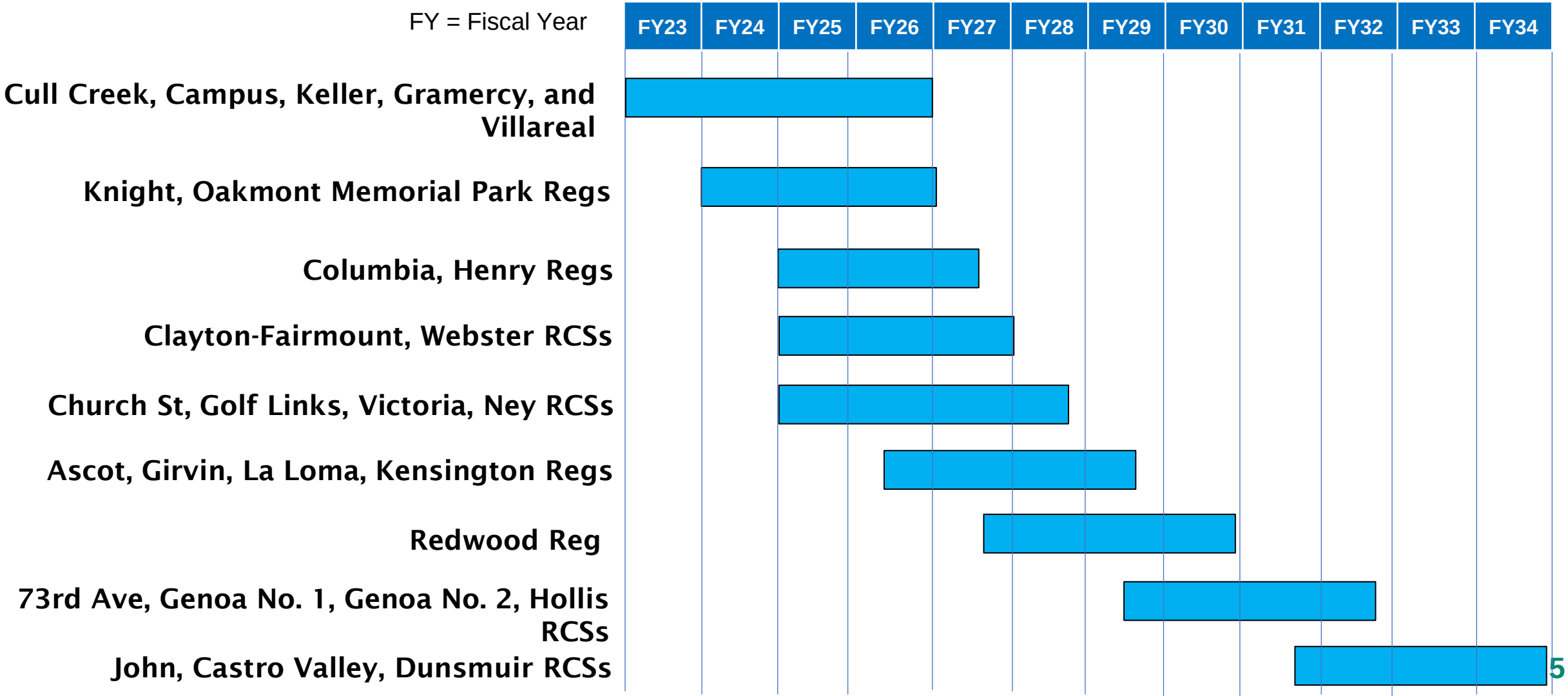


Source: United Utilities – Water for the North West

- Rate Control Stations (RCSs): Control flow to a pressure zone
- Regulators: Control pressure within a pressure zone
- 30 RCSs and 75 Regulators

Rate Control Station and Regulator Rehabilitation: Program Overview

FY = Fiscal Year



Specification 2180: Project Overview

Facilities Location

Campus, Keller, Gramercy, and Villareal Regulators

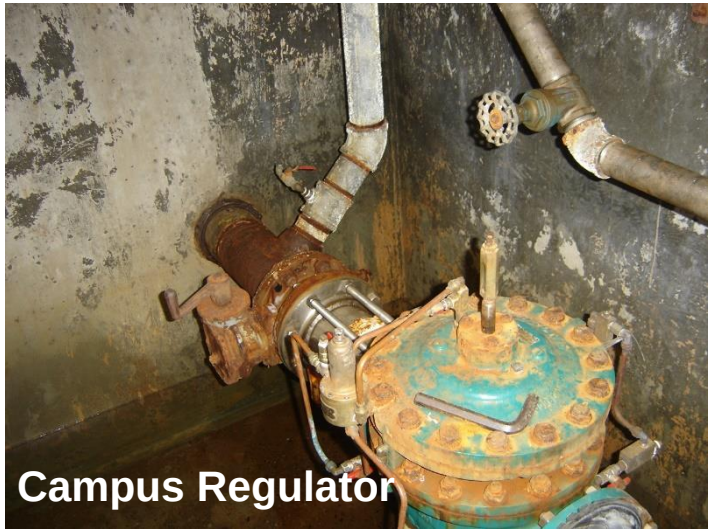
Existing Issues

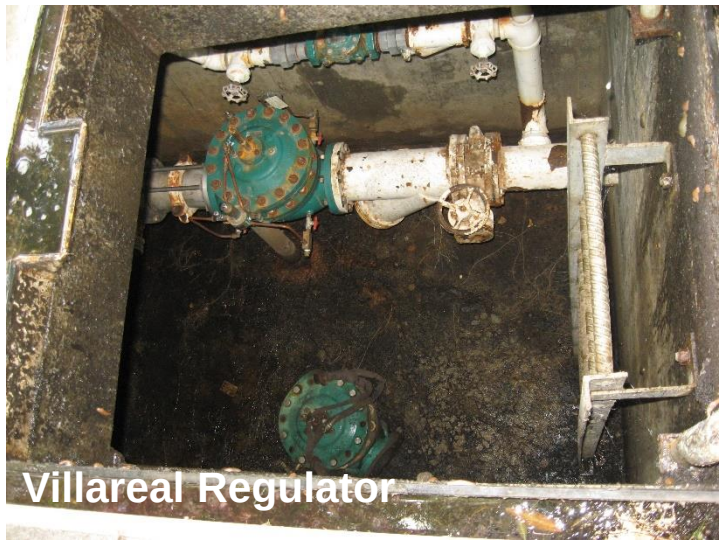
- Does not meet required fire flow
- Lack of redundancy
- Poor access and ventilation
- Flooding and corrosion

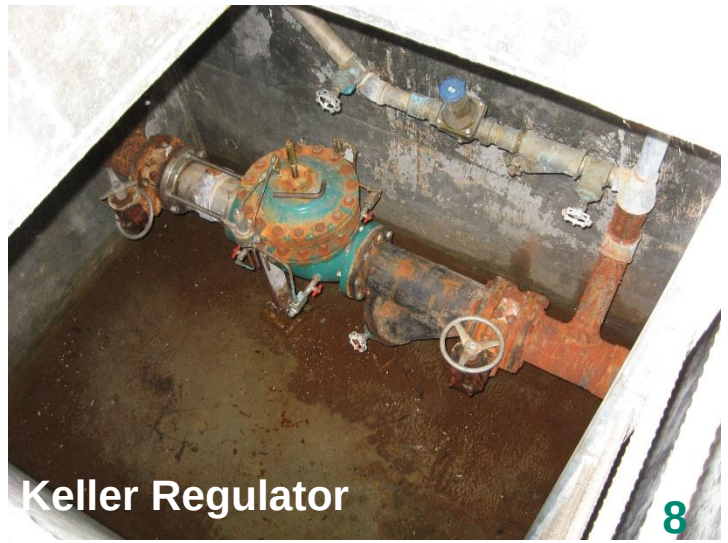
Planned Improvements

- Improve fire flow
- Improve redundancy
- Improve access and ventilation
- Add drainage and replace corroded equipment


Gramercy Regulator


Campus Regulator


Villareal Regulator


Keller Regulator

Temporary Cull Creek RCS

- Required during construction of $30M Almond Reservoir Replacement Project
- Construction of Almond Reservoir Replacement planned to start FY 2027
- Temporary 5-MGD Cull Creek RCS will supply water to approximately 20,000 customers
- RCS will be retrofitted as a permanent regulator following Almond Reservoir Construction


Almond Reservoir

Major Work Restrictions and Challenges

Site	Major Restrictions
Cull Creek	• During the summer months: 9:00 am to 3:00 pm • Non-summer months: At night from 10:00 pm to 6:00 am • Not concurrent with PG&E work • Street work: Traffic control, noise restrictions, and safety oversight
Gramercy	• During winter months: 9:00 am to 3:00 pm • Street work: Traffic control, noise restrictions, and safety oversight
Villareal	• Work to be performed 9:00 am to 3:00 pm • Street work: Traffic control, noise restrictions, and safety oversight
Campus	• Campus outage not concurrently with Keller outage • Street work: Traffic control, and safety oversight • Private property easement: Strict noise restrictions
Keller	• No demolition between 11:00 am and 1:00 pm on Wednesdays • Street work: Traffic control and safety oversight • Private property easement: Strict noise restrictions

Facilities Maintenance and Construction (FMC) Regulator Projects

- FMC has rehabilitated 8 RCSs
  - Primarily single-trade work
  - Existing vaults rehabilitation
- Staff collaborated with FMC to develop design standards
- Staff met with Local 444 four times to discuss contracting out


Madrone Regulator

- FMC focused on preventative maintenance, corrective maintenance, and supporting other high priority capital work

Project Status and Next Steps

Project Status and Next Steps

Item Description	Date
Project Advertised	April 23, 2024
Bids Opened	June 12, 2024
Construction Contract for Board Consideration	July 9, 2024
Construction Begins	September 2024
Construction Ends	March 2026

Questions?

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