



# Major Capital Improvement Project Updates

Board of Directors Meeting  
November 18, 2020



TRANSFORMING WASTEWATER TO RESOURCES

# Overview

- Staff is beginning development of the new 5-year CIP (FY21/22-FY25/26) to ensure critical infrastructure needs are prioritized and addressed
- Current 5-year CIP = \$81.3M
- FY20/21 Board authorized CIP expenditures = \$28.7M
  - Headworks Improvements (\$5.0M); new estimate = \$8.0M
  - Bridgehead Pipeline Replacement (\$1.5M)
  - Treatment Plant Switchgear Replacement (\$0.3M)
  - Resource Recovery Facility Master Plan (\$1.0M)
    - Infrastructure Condition Assessment
    - Plant Capacity Expansion and Nutrient Management Project

# Headworks Improvements Project

- In November 2019, Board awarded \$9.5M construction contract to rehabilitate existing headworks facility and replace mechanical equipment to ensure long-term operational reliability
- Construction activities require plant influent flow to be diverted through temporary pumping/screening system
- Construction is expected to clear a significant milestone by the end of November 2020 (prior to wet weather season) with final completion in early 2021
  - Current construction schedule will require additional CIP budget authorization in FY20/21

5-year CIP	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25
FY20/21-FY24/25	5.0	3.0	-	-	-
Updated CIP Estimate	8.0*	-	-	-	-

\* Staff will recommend authorization to transfer \$3.0M in funding at December 2020 meeting



# Headworks Improvements Project Construction Progress Photos



25.5 MGD  
temporary  
pumping and  
screening



Rehabilitated  
headworks  
channels



New bar  
screens

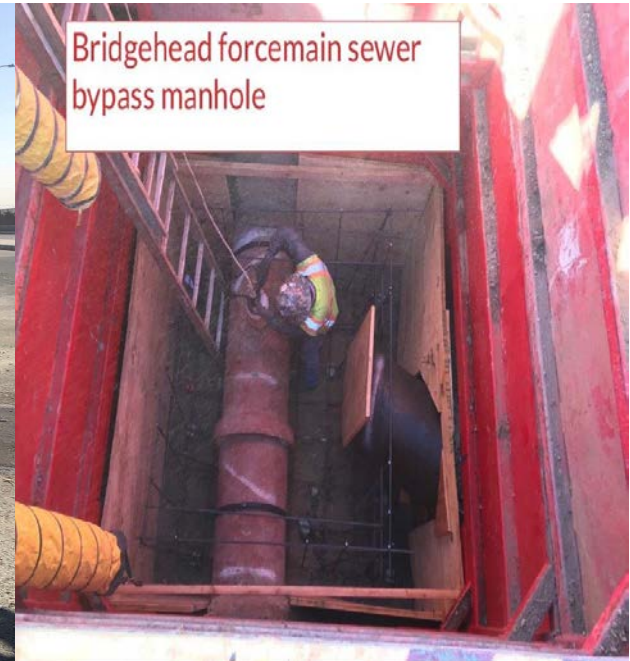
# Bridgehead Pipeline Replacement Project



- In September 2020, Board authorized \$1.5M to install a temporary parallel pipeline and initiate planning and design activities for a permanent replacement line
  - Project funding needs will be updated during CIP development
- Temporary pipeline construction is complete and was placed in service on 11/13
  - ~1,400 feet of 24-inch HDPE pipe w/traffic protection
  - Capable of conveying wet weather flows (~6 MGD)
- Fast-track design of the 18-inch permanent replacement pipeline is in progress
  - Preliminary indication from BNSF is that new pipeline can be reinstalled on Wilbur Avenue bridge
  - Construction start expected by May/June 2021



# Bridgehead Pipeline Replacement Project Construction Progress Photos



24-inch HDPE temporary parallel pipeline on north side of Wilbur Avenue (upstream and downstream locations)

Downstream connection to existing gravity sewer

# Treatment Plant Switchgear Replacement Project



- Critical upgrade to existing electrical power distribution system to maintain operational reliability
- Currently in public bid phase with recommended construction contract award in January 2021
  - Construction cost estimate = \$6M (two-year period)
  - CIP budget estimate may be adjusted based on bid

5-year CIP	Prior FY	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25
FY20/21-FY24/25	2.6	0.8	3.0	-	-	-

# Treatment Plant Switchgear Replacement Project (cont'd)



- Significant organizational focus on identifying and mitigating risks during design given system criticality
  - Identified protocols and construction sequencing
- Key outstanding risk is compatibility w/existing cogeneration engine and associated electrical equipment
  - Staff is working to develop parallel planning and design activities for replacement of existing cogeneration engine to minimize loss of on-site cogeneration revenue (~\$15,000 to \$30,000 per month)
- Design of new cogeneration system will begin in FY21/22



# Infrastructure Condition Assessment Resource Recovery Facility Master Plan



- Consultant (Hazen & Sawyer) completed a condition assessment of critical WWTP infrastructure
- Utilizing asset management principles to evaluate and prioritize capital investment in WWTP infrastructure, while integrating recommendations from prior efforts for the wastewater collections and conveyance systems
- New projects will be incorporated into the upcoming CIP development
- Existing project costs and implementation schedules will be revised, as necessary, to ensure effective use of ratepayer funds

# Capacity Expansion with Nutrient Management Project

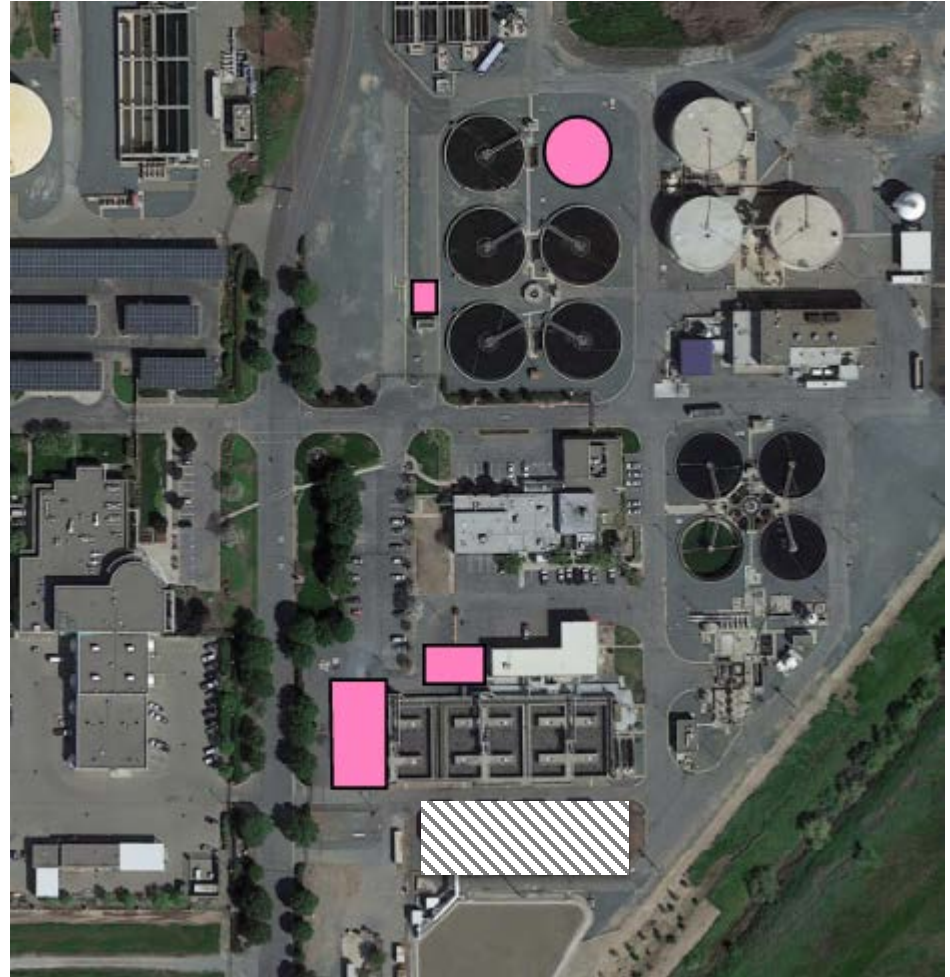


- As part of RRFMP, preliminary analysis of nutrient removal alternatives in concert with secondary capacity expansion needs has been completed
- Key RRFMP Preliminary Findings
  - WWTP is currently at ~80% of secondary treatment loading capacity, which triggers need for planning under NPDES permit
  - Continued major investment in existing Tower Trickling Filters does not support flexibility for future nutrient removal
  - Focus on trigger-based, phased implementation of major treatment process upgrades at WWTP
    - Phase 1: Expand secondary treatment capacity and provide limited nutrient management capability (~\$40M construction cost, ~\$56M total project cost)
    - Phase 2: Add nutrient removal capabilities (~\$45M construction cost, ~\$63M total project cost)

# Capacity Expansion with Nutrient Management Project (cont'd)

## Phase 1: Secondary Capacity Expansion Improvements

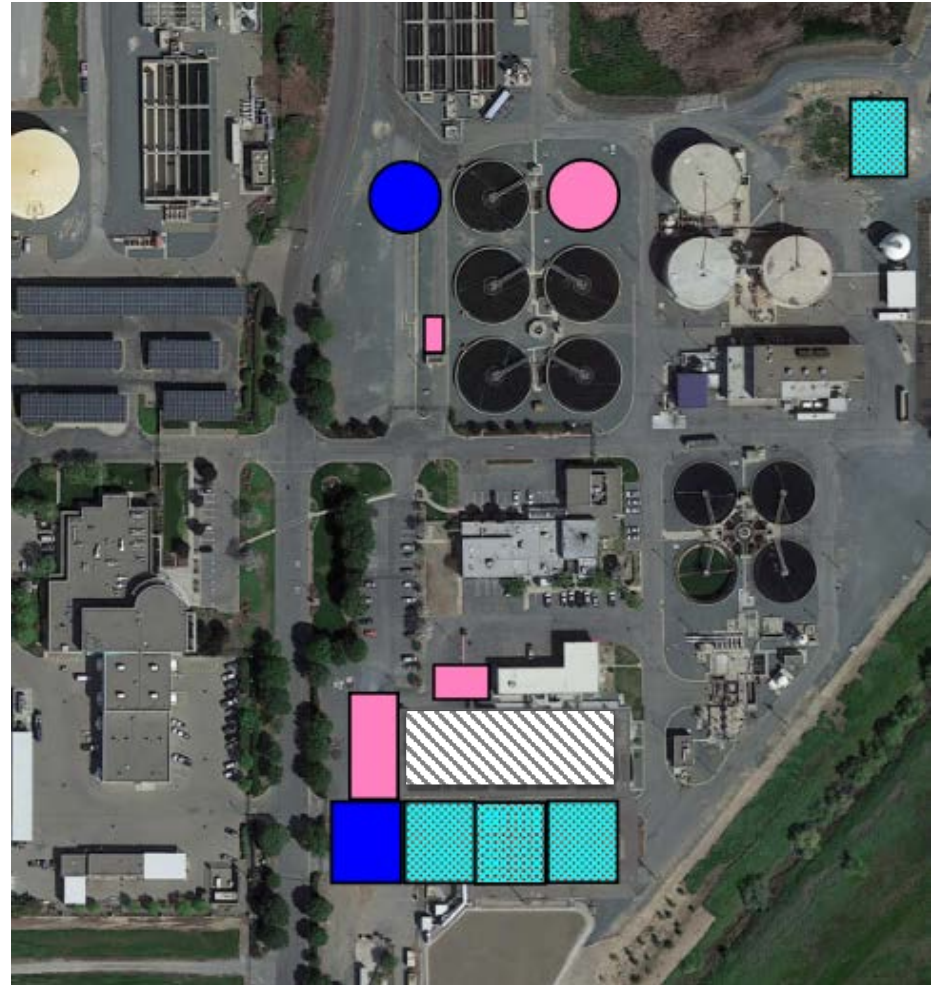
- New aeration basin, blower building, and secondary clarifier (pink)
- Tower Trickling Filters would be decommissioned as performance is reduced over time (hatched area)



# Capacity Expansion with Nutrient Management Project (cont'd)

## Phase 2: Nutrient Removal Improvements

- Demolish Tower Trickling Filters for new BNR basins and decommission existing aeration basins (hatched area)
- Construct new biological nutrient removal basins, secondary clarifier, and sidestream ammonia removal (blue and cyan)
- Designed to treat 100% of 2040 flow and loading





# Capacity Expansion with Nutrient Management Project (cont'd)



- Staff will recommend initiating Phase 1 (Secondary Capacity Expansion) design activities in FY21/22
  - Planning, design and regulatory permitting is anticipated to require approximately two years to complete
  - Approximately 2.5 years to construct
- Financial Impacts
  - Consultant will determine portion of Phase 1 project that can utilize available funding in Advanced Treatment (AT) Fund
  - Staff will explore various funding alternatives including State Revolving Fund (SRF) loans, California Infrastructure and Economic Development Bank (IBank), grant funding opportunities, and bond issuance
  - Staff will work to develop estimates of future increases in operating costs as part of RRFMP

# Next Steps



## Timeline

- Incorporate RRFMP findings in CIP Present to Mar 2021
- Review Draft CIP with Finance Committee Apr 2021
- Present proposed CIP to Board and Establish Public Hearing Date May 2021
- Conduct Public Hearing and Consider CIP Adoption Jun 2021