## Pump Station M Rehabilitation and Force Main Improvements

CHBIOA Master HOA Meeting February 26, 2020

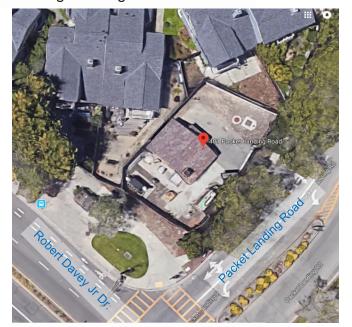
## Agenda



- Background
- Project Objectives
- Design
- Project Schedule
- Construction Impacts



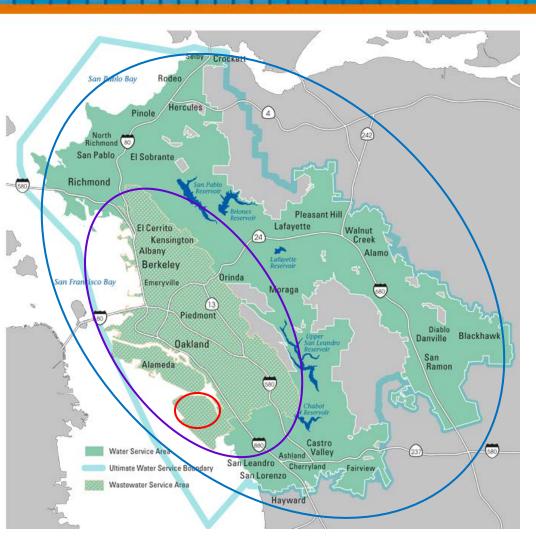
Existing Building



Plan View

### **About EBMUD**





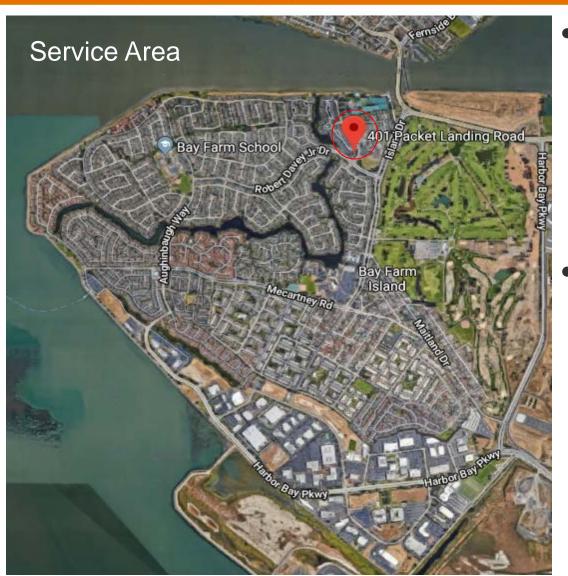
#### EBMUD provides:

- Drinking water to

   1.4 million customers
   in Alameda and Contra
   Costa counties
- Wastewater treatment for 685,000 customers (average dry weather flow 60 million gallons/day)
- Bay Farm Island 1 mgd

## Pump Station M Background





- Station takes all wastewater from residential and commercial facilities on Bay Farm Island
- Pumps wastewater off Bay Farm Island to EBMUD main interceptor pipe in Alameda

## Pump Station M Background





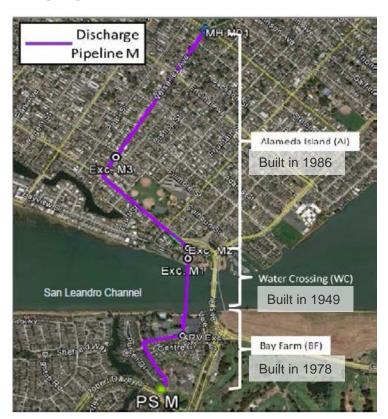
- Underground pumping station built in 1978 by original Harbor Bay Isle developer
- Above grade building added in 1988
- Ownership transferred from City of Alameda to EBMUD in 1989
- EBMUD operates and maintains pump station

## Pump Station M Background



#### Force Main M (Pressurized Pipe):

 Conveys wastewater from Pump Station across San Leandro Channel to Alameda through large diameter pipes



- · 3 pipe segments (BF, WC, AI)
- · Built in 1949, 1978, 1986
- WC section is under San Leandro Channel

## **Objectives**



#### Why are we doing this?

- Replace equipment and facilities at the end of useful life
- Bring facilities up to current electrical, mechanical and building codes
- Provide new facilities to allow Force Main pipes cleaning and condition assessment
- Overall will improve the reliability, operational capability, safety, maintenance accessibility of the pump station

## Objectives



 Preparing for flooding from potential Sea Level Rise at Pump Station by raising electrical equipment



Source: https://explorer.adaptingtorisingtides.org/about

### Pump Station M Existing Conditions





Building Exterior Ground Level



Building Exterior Ground Level



Inside Building Ground Level



Inside Building Ground Level



Motor Level (Underground)



Pump Level (Underground)

## Pump Station M New Building Exterior



• Fiber cement siding, wood trim, steel doors (from BLH HOA Color Palette)

#### **EXTERIOR MATERIALS & COLORS**

COMPOSITION ASPHALT SHINGLE ROOF
GAF Timberline HD, Mission Brown

B FIBER CEMENT SIDING Benjamin Moore

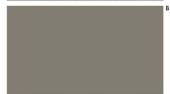
Carter Gray, CW-80

C TRIM Beniamin Moore

Natural Wicker, OC-I











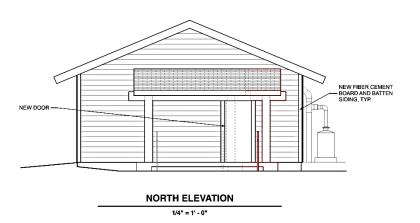
h performance, wall mount LED Vaporproof foxure. A classic design with cutting ye LED technology. Comes with die cast guard and frosted globe.

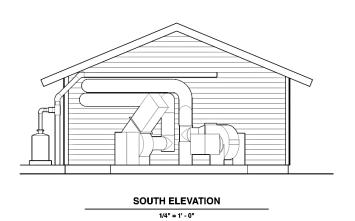
Color: Natural Weight: 6.3

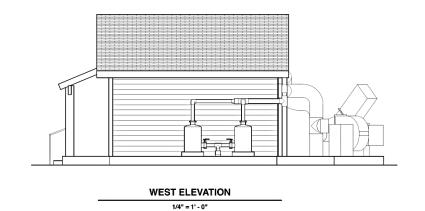
## Pump Station M New Building Elevations



Same building footprint and dimensions









## Pump Station M New Street View

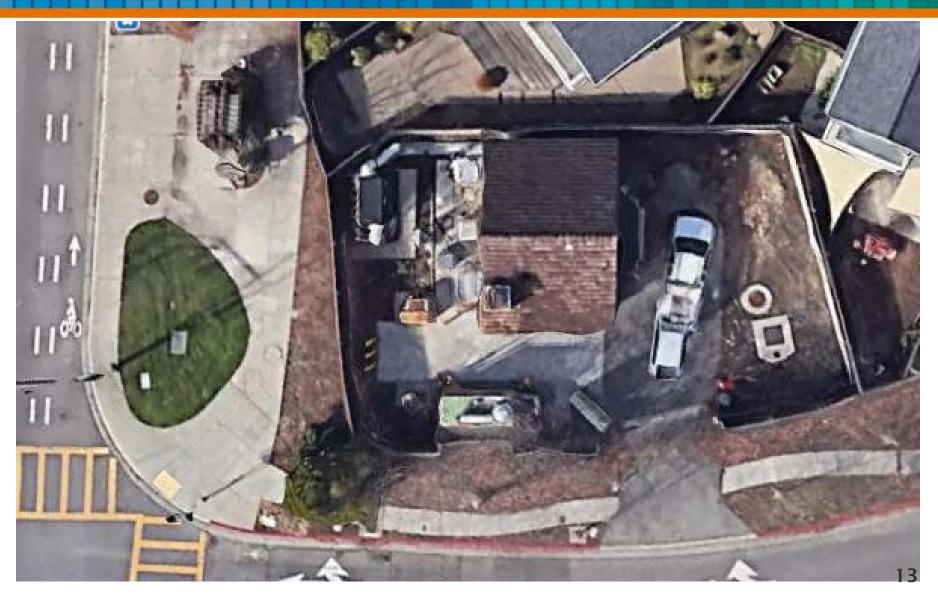




https://www.google.com/maps/@37.7443111,-122.2391342,3a,75y,289.02h,86.17t/data=!3m6!1e1!3m4!1sZQMvXowcFVXQttQH3WFDvw!2e0!7i16384!8i8192

## Pump Station M Current Site Layout





## Pump Station M New Site Layout

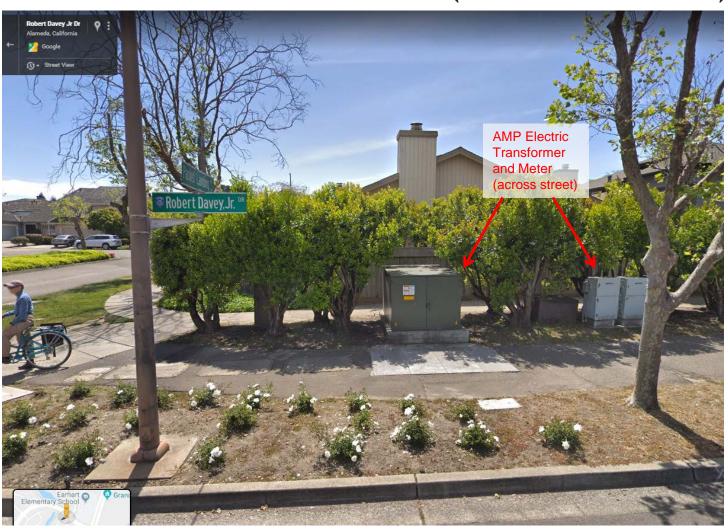




## Pump Station M New Site Layout



Similar Transformer and Meter (across the street)



## Pump Station M Ventilation Fans



- Ventilation fans sized for required air changes per Electrical code
- Fan noise rating meets the residential air conditioning units approved by HOA Architectural Committee
- Estimated fan noise is lower than noise standard in City of Alameda ordinance

## Pump Station M Exterior Lighting



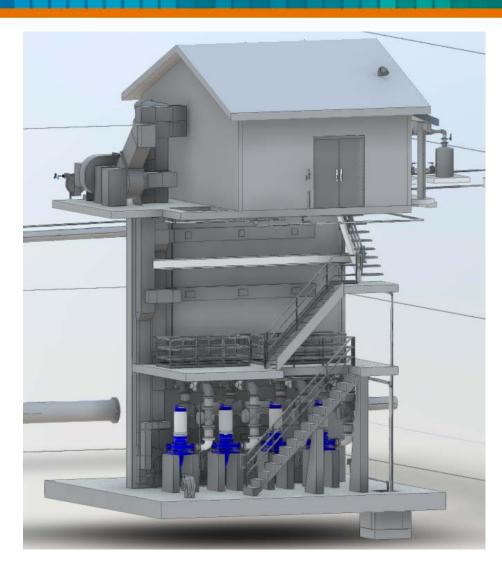


- Low intensity LED; keep it backyard residential
  - Decorative light at doors on photocell
    - Use pathway bollard for area lighting

### Pump Station M Interior Scope of Work

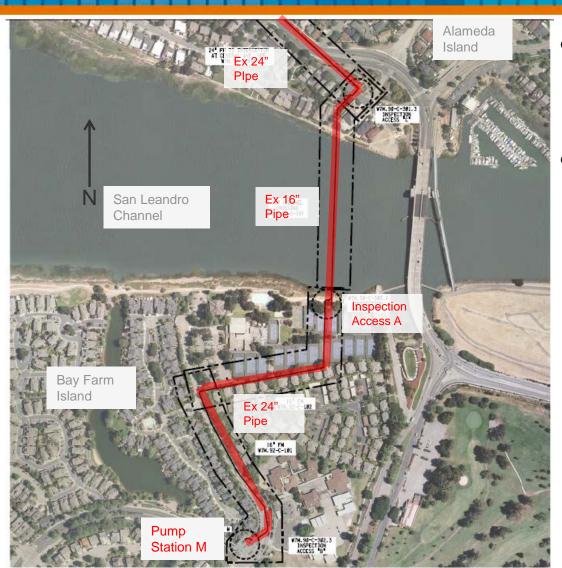


- 4 Submersible pumps
- Structural reinforcement
- Ventilation ductwork
- Control and monitoring equipment
- Electrical panels and rewiring
- Access stairs to all levels
- Odor control equipment
- Concrete repairs and recoating



## Overall Map - Bay Farm Island and San Leandro Channel

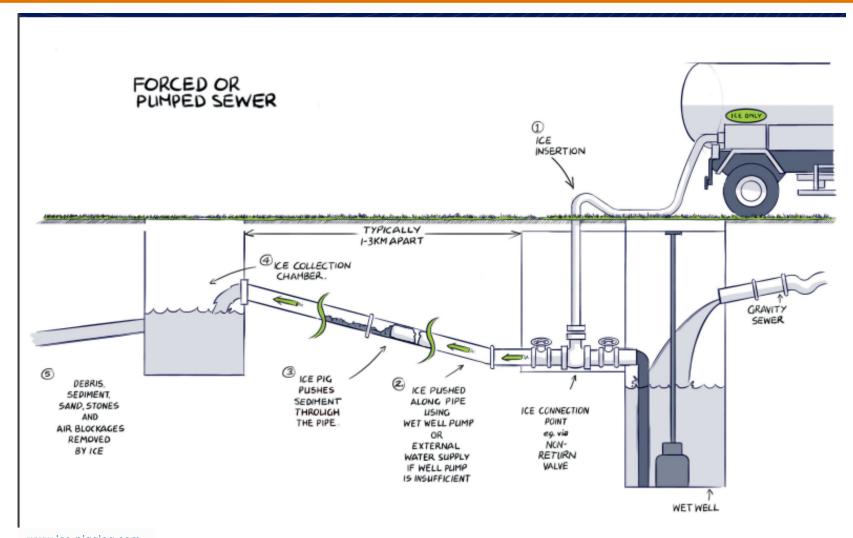




- Force Main pipes are 35 to 70 years old
- Pipes require cleaning and internal condition assessment to determine rehabilitation needs

# Force Main M Cleaning Ice Pigging





### Inspection Access A **Bay Farm Shoreline**



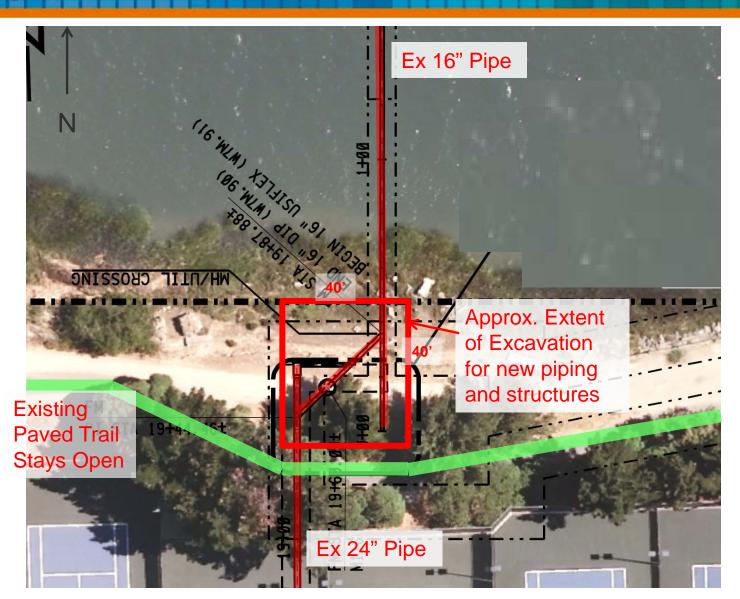
#### Scope of Work

- Construct Access Structure to insert pipe cleaning and inspection tools
- Replace existing piping and isolation valves
- Perform condition assessment to determine pipe wall thickness and internal defects



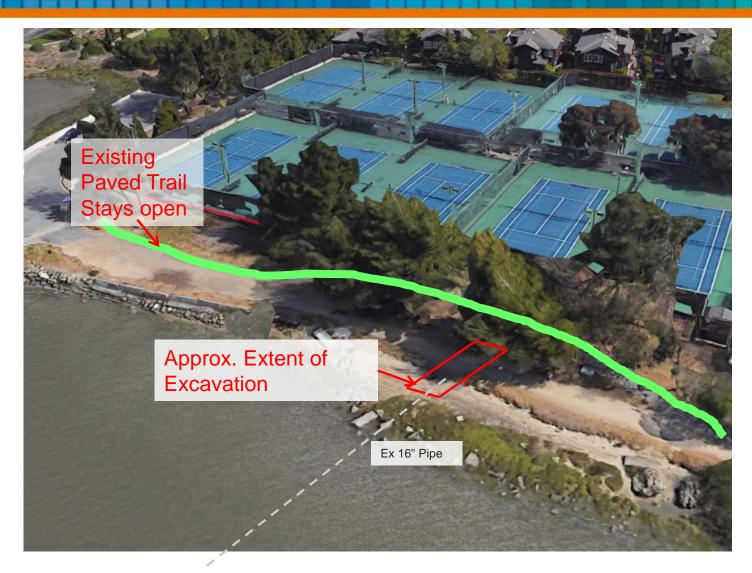
# Inspection Access A Bay Farm Shoreline





# Inspection Access A Bay Farm Shoreline





## Inspection Access A Bay Farm Shoreline



- Obtain permits for shoreline construction work from regulatory agencies (Army Corp, RWQCB, BCDC)
- Due to permitting process shoreline construction may be done separately from Pump Station construction

## **Project Coordination**



Agency	Project Impact	Status
HOAs	Architectural and site changes, construction traffic, trail access	Met with HOAs in 1/8, 1/16, 2/26, to provide info on project
Earhart Elementary School	Construction traffic, access to school, staging and street parking	Met with school management to discuss traffic, access issues
City of Alameda Public Works	Work on city streets/sidewalks, traffic, parking	Provide design updates to City engineering, obtain permits
Alameda Municipal Power	Relocation of main electric service	Submit plans to AMP for approval
Harbor Bay Tennis Club	Construction traffic	Met with club management to discuss
AC Transit	Temp bus stop relocation	Will meet and discuss

## **Construction Impacts**



- Construction vehicles
- Noise
- Occasional traffic lane closure
- Loss of street parking near work site for staging
- Intermittent odors during pump bypass

#### **Project Plans to include:**

- Construction safety plans
- Work hour restrictions (per City code)
- · Traffic control, parking and access plans
- Odor control during bypass
- Timely notifications to neighbors of impacts
- On-going Communications and Outreach

### Schedule



Design and Bid Complete: October 2020

Construction Start: November 2020

Construction Finish: Spring 2022

#### **Contacts**



#### Comments and Questions?

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Associate Civil Engineer

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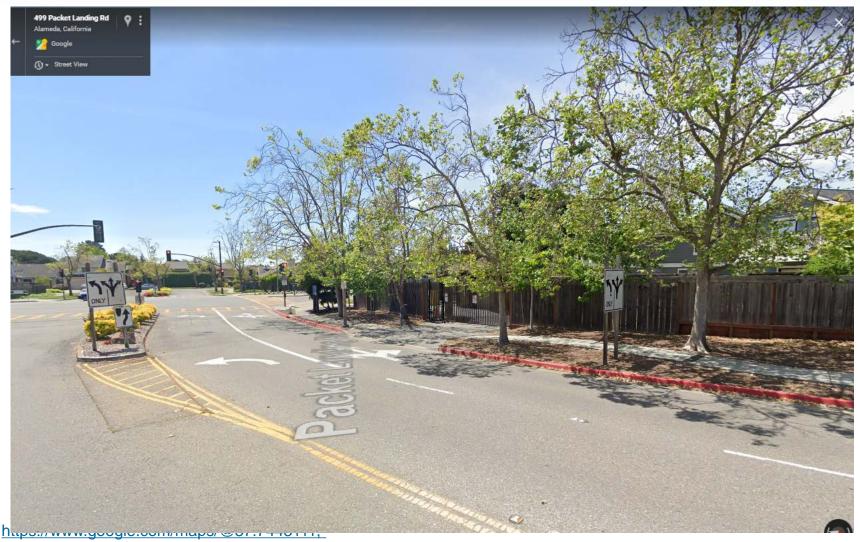
Ben.Glickstein@EBMUD.com

## Back up Slides Follows



## Pump Station M Existing Street View





# Inspection Access A Existing piping

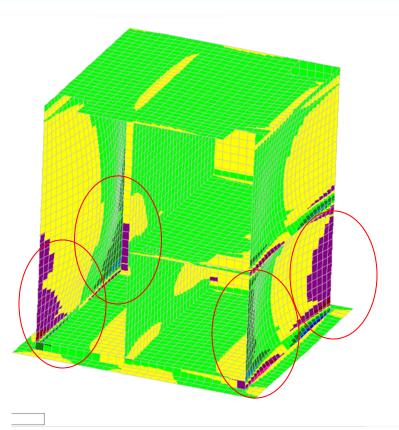




### Pump Station M Structural Upgrade



 Underground concrete structure is overstressed and need wall strengthening to meet current building code

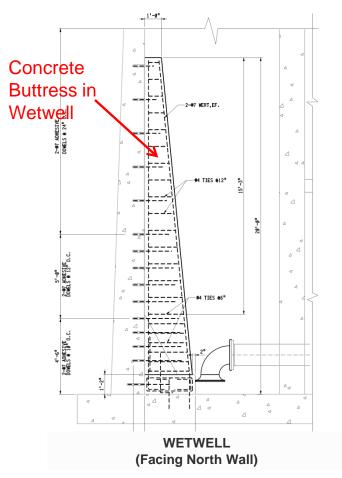


Original Structure Shear Stress and Deformation

3-D Structural Analysis

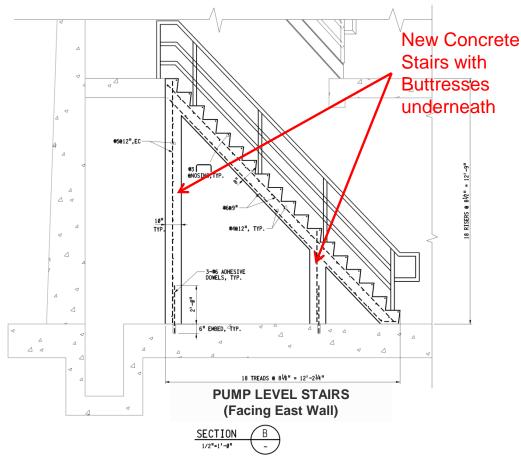
### **Pump Station M** Structural Reinforcement





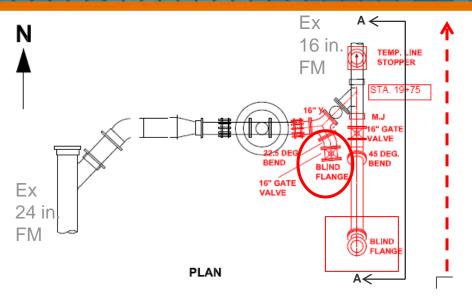


Concrete recoating inside Wetwell

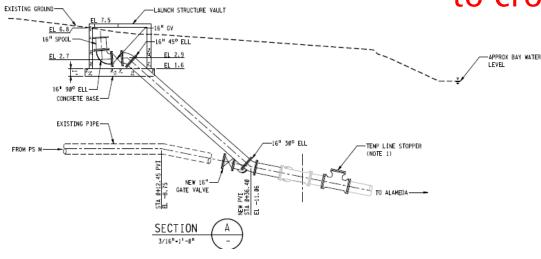


## Inspection Access A Bay Farm Island





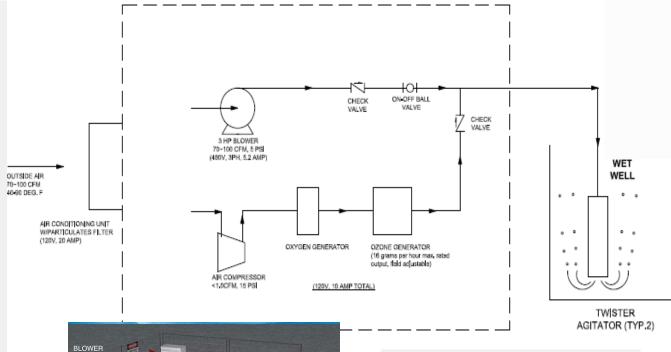
- For launching inspection tool through 16 in. FM (WC)
- Use SeeSnake inspection (pipe is full of water)
  - Provisions for future FM to cross channel



### **Ozone Schematic**



- Replaces Hypo for odor control and eliminates FRP tank rehab and pumps
- Ozone Generator: 16 grams/hr max, per unit, 2 units
- SST enclosure with Noise reduction padding
- Air conditioning cooling/particulate filter to control enclosure climate
- Shutdown on High/Low wet well level, High Ozone in Vent atmosphere

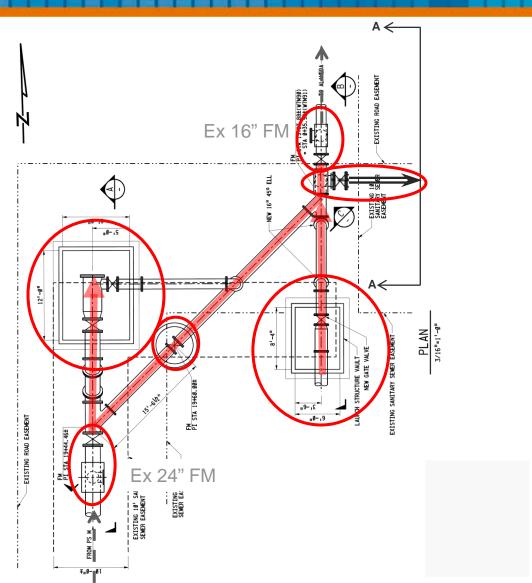




\*O&M cost about ½
of Hypo System
\*Visited WCSD PS
for O&M experience
\*Will require Air
Board permit

# Inspection Access A Bay Farm Island





### 3-D Model



https://drive.autodesk.com/de29c7522/g/shares/SH9 19a0QTf3c32634dcf290e8c32ca50731c

### Pump Station M **New Building Exterior**



• Fiber cement siding, steel doors, composite shingle roof

#### **EXTERIOR MATERIALS & COLORS**

A. COMPOSITION ASPHALT SHINGLE ROOF Stateline HD, English Gray Slate

B. FIBER CEMENT SIDING HardiePlank Lap Siding Smooth - Boothbay Blue

C. TRIM

HardieTrim Boards Smooth - Light Gray

D. STEEL DOOR

Sherwin-Williams Paint Medium Grav

E. WALL SCONCE

RAB Lighting LED, 13 Watts, 729 Lumens









High performance, wall mount LED Vaporproof fixture. A classic design with cutting edge LED technology. Comes with die cast guard and frosted globe. Weight: 6.3 lbs





## Pump Station M New Site Layout



