

# **Wet Weather Consent Decree Implementation Update**

Planning Committee

January 14, 2020

# Agenda



- Background
- EBMUD Work
  - Regional Private Sewer Lateral (PSL) Program
  - Regional Technical Support Program (RTSP)
  - Capital Projects
- Compliance Progress
- Next Steps



# Background

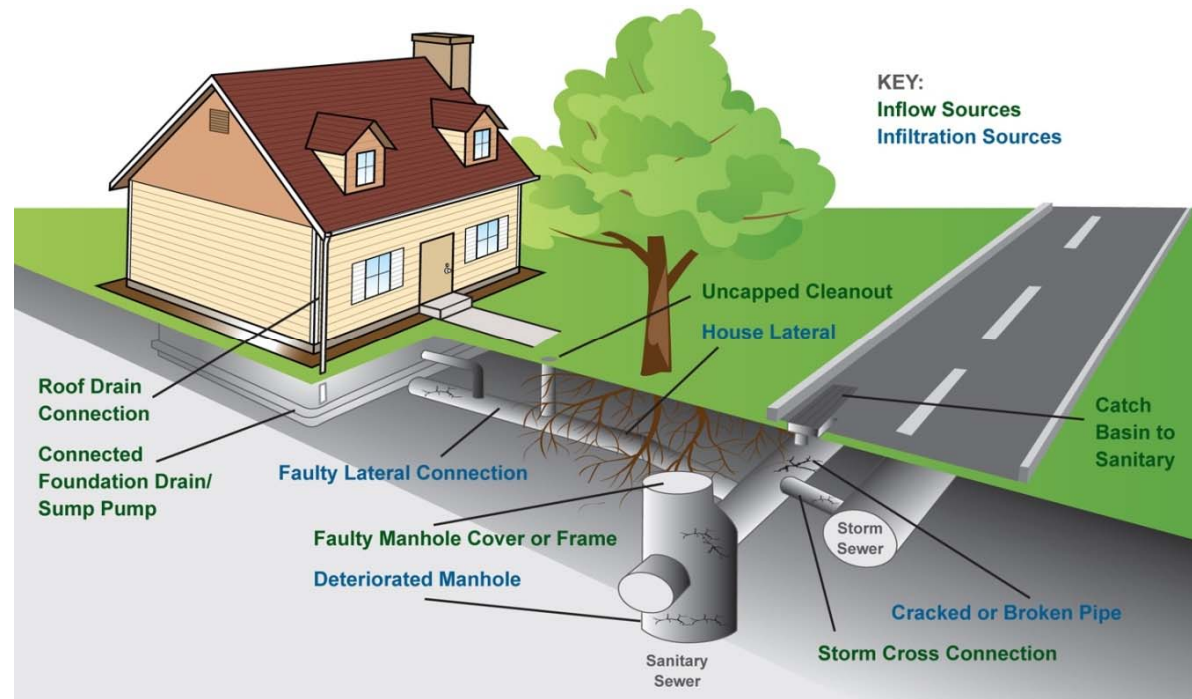


- September 22, 2014 – EBMUD and Satellite agencies enter into Consent Decree
- Consent Decree is designed to remove inflow and infiltration (I&I) from the regional collection system to prevent discharging from Wet Weather Facilities (WWFs)
- Rehabilitation/repair/replacement to be performed by the responsible party
  - Homeowners/business owners responsible for PSLs
  - Satellite agencies responsible for public sewer mains/manholes
  - District is responsible for the Interceptor System

# Background



## I&I: Inflow and Infiltration



# Background



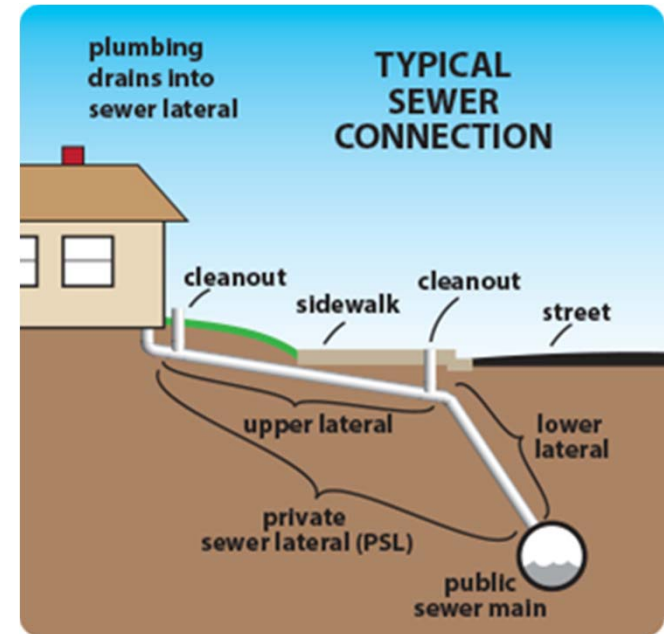
- Effective period of 22 years
- Key checkpoints throughout
  - Check-in #1 2022
  - Check-in #2 2030
  - Overall compliance 2036
- Failure to meet check-in targets results in revised work requirements with significant EPA discretion

- Regional PSL Program
- RTSP
- Capital Projects
  - Pump Station Q Force Main Flow Reversal Project
  - Urban Runoff Diversion Project

# EBMUD Work Regional PSL Program



- PSL is privately-owned pipe that conveys waste flows from property to publicly-owned sewer mains



- Collectively, PSLs in the region are equivalent in length to the publicly-owned regional collection system

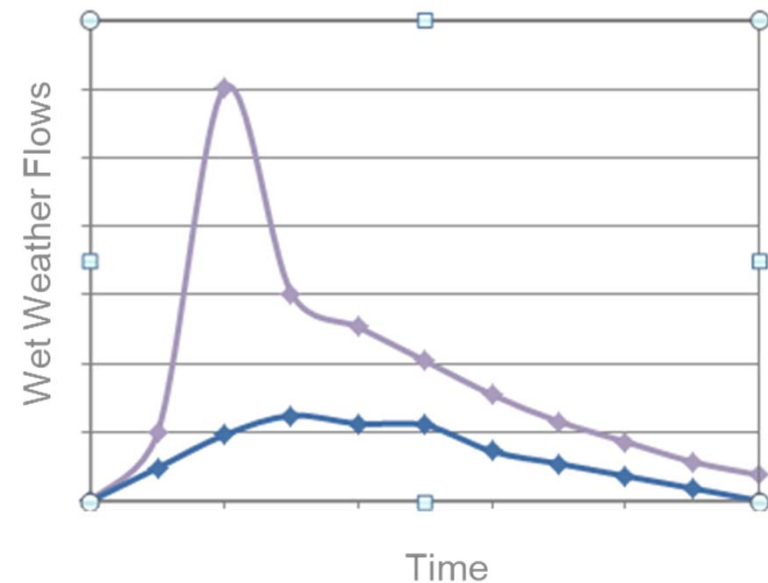
# EBMUD Work Regional PSL Program



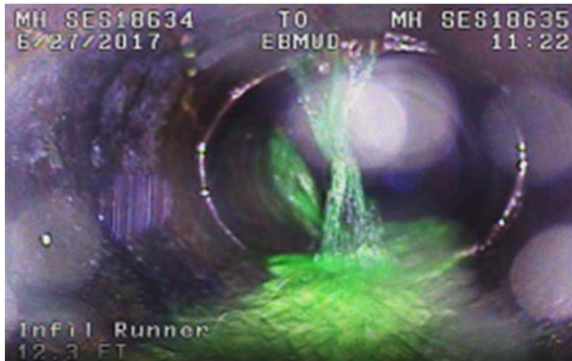
- Regional PSL Program includes all of SD-1, except for the City of Berkeley (which manages its own)
- Approx. 36,670 certificates issued since 2011
  - 28% of all parcels within program boundaries
  - Approx. 570 miles of PSLs certified leak-free
  - Certifications remain 20% behind projections



- Program Components
  - Requires minimum of \$2 million per year to identify sources of I&I
  - EBMUD identifies specific sources of I&I
  - Satellite communities pursue source elimination



# EBMUD Work RTSP Program Significance



- Technical approach to identify significant flow sources and understand system response to storms
- Supplements satellite mainline sewer rehabilitation and Regional PSL Program to achieve further flow reductions
- Critical to meet Consent Decree check-in targets and discharge elimination date

# EBMUD Work RTSP Investigations Performed



## Unique Investigation Methodologies Used



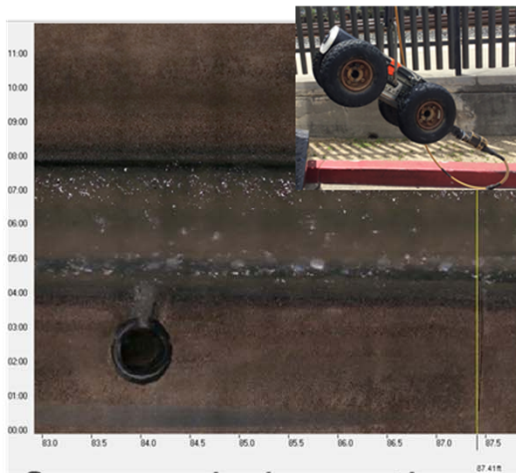
Manhole inspections



Flow isolation studies



Dye testing



Sewer main inspections



Smoke testing

# EBMUD Work

## RTSP Findings to Date



- Over 300 specific sources of I&I identified to date totaling over 15 MGD of peak flow during a storm event
  - Significant number of small sources have been identified throughout the regional collection system
  - Rate of identification has been increasing year-over-year

# Compliance Progress



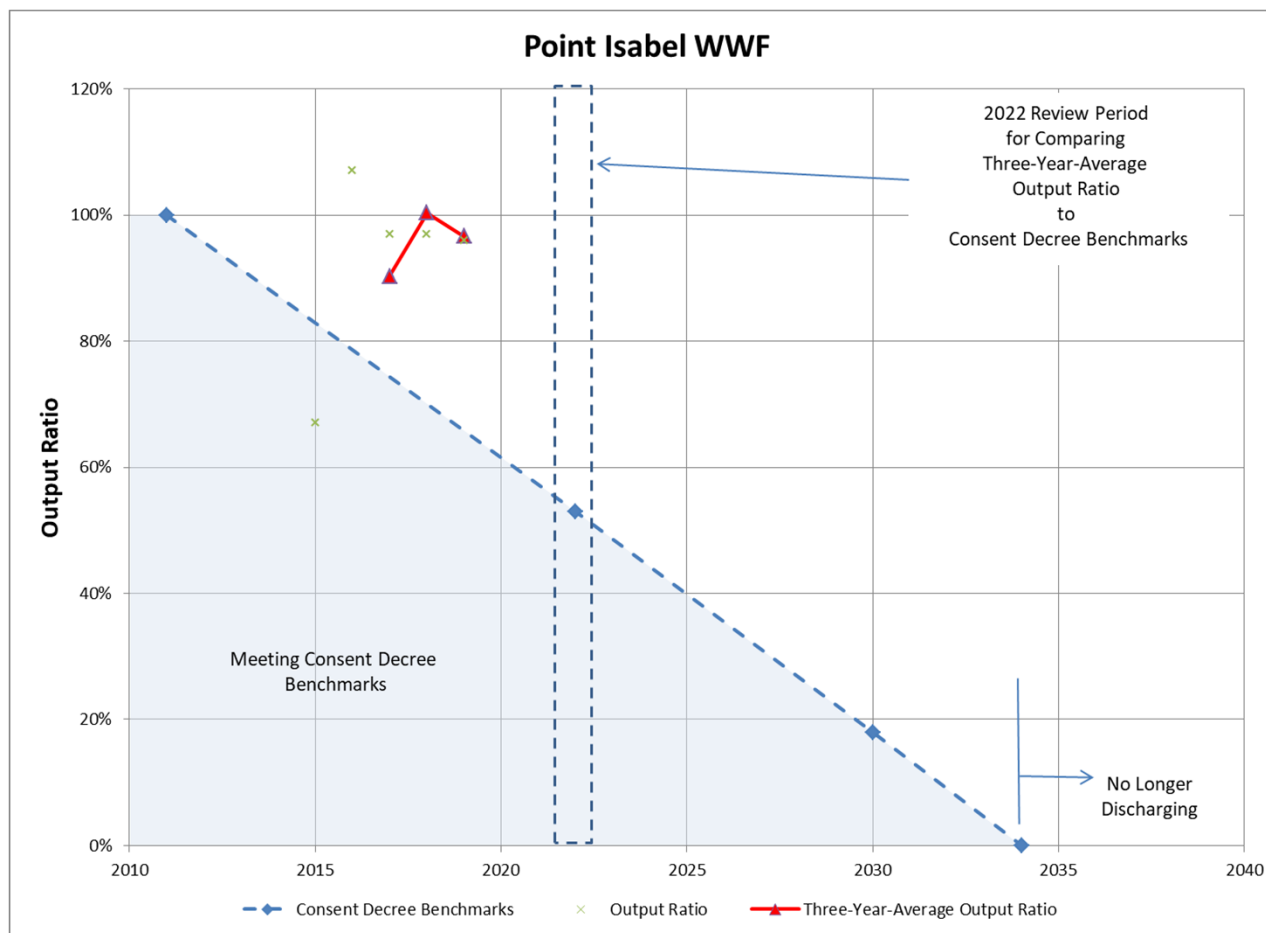
- Compliance at check-in is based on modeled discharge reductions at the WWFs relative to baseline
- Annual modeling is done to assess progress
- Fifth annual calibration completed in December 2019

Facility	Baseline Volume (MG)	FY19 Volume (MG)	Reduction (%)
Point Isabel WWF	23.3	22.4	4%
San Antonio Creek WWF	13.2	9.8	26%
Oakport WWF	53.7	40.5	25%
Total	90.2	72.7	19%

# Compliance Progress Point Isabel WWF



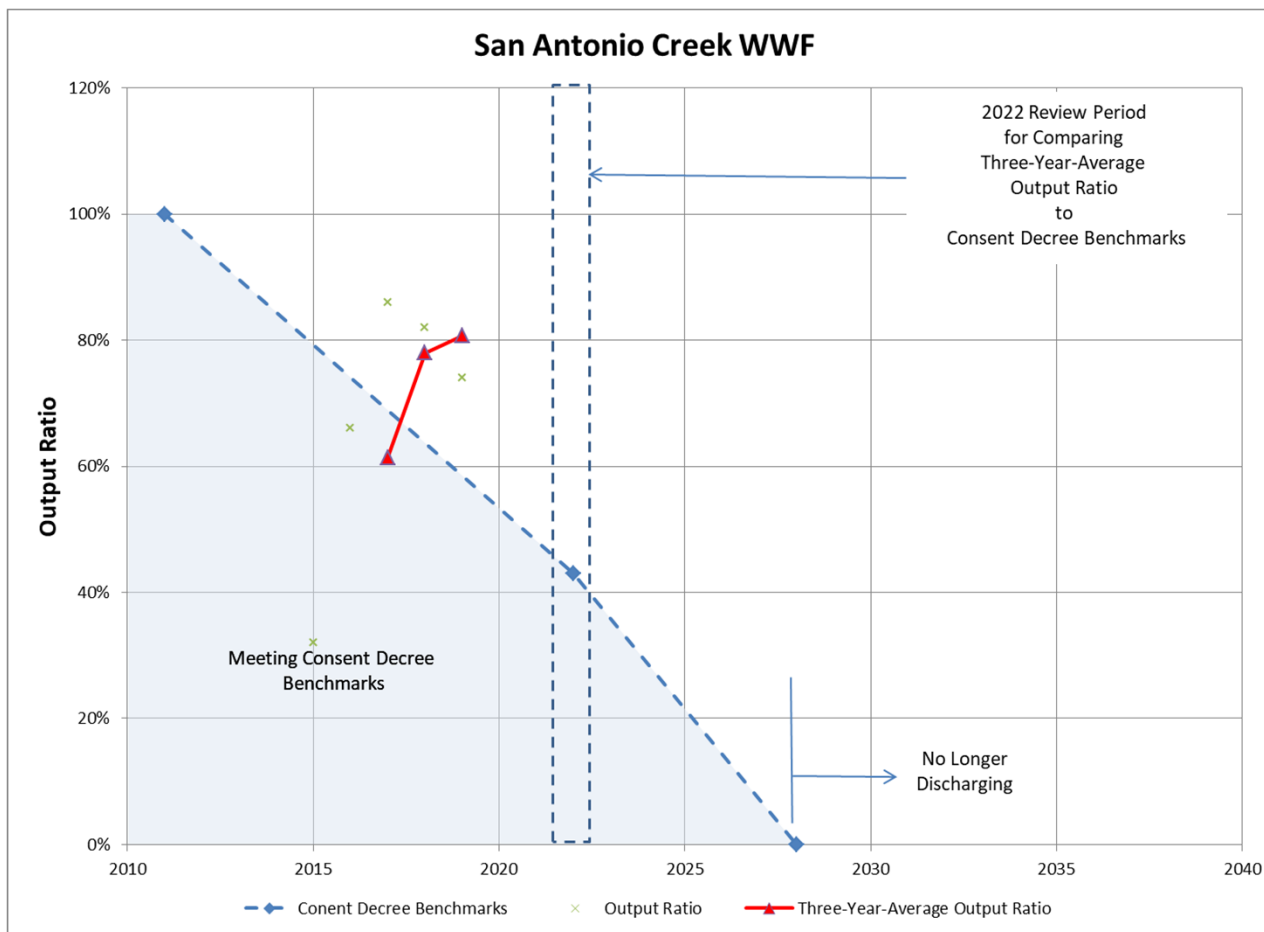
Output Ratio = modeled current discharge/modeled baseline discharge



**Point Isabel WWF**  
**remains at risk of**  
**not being in**  
**compliance for the**  
**2022 check-in**

FY19  
Three-Year-Average  
Output Ratio = 97%  
(3% reduction)

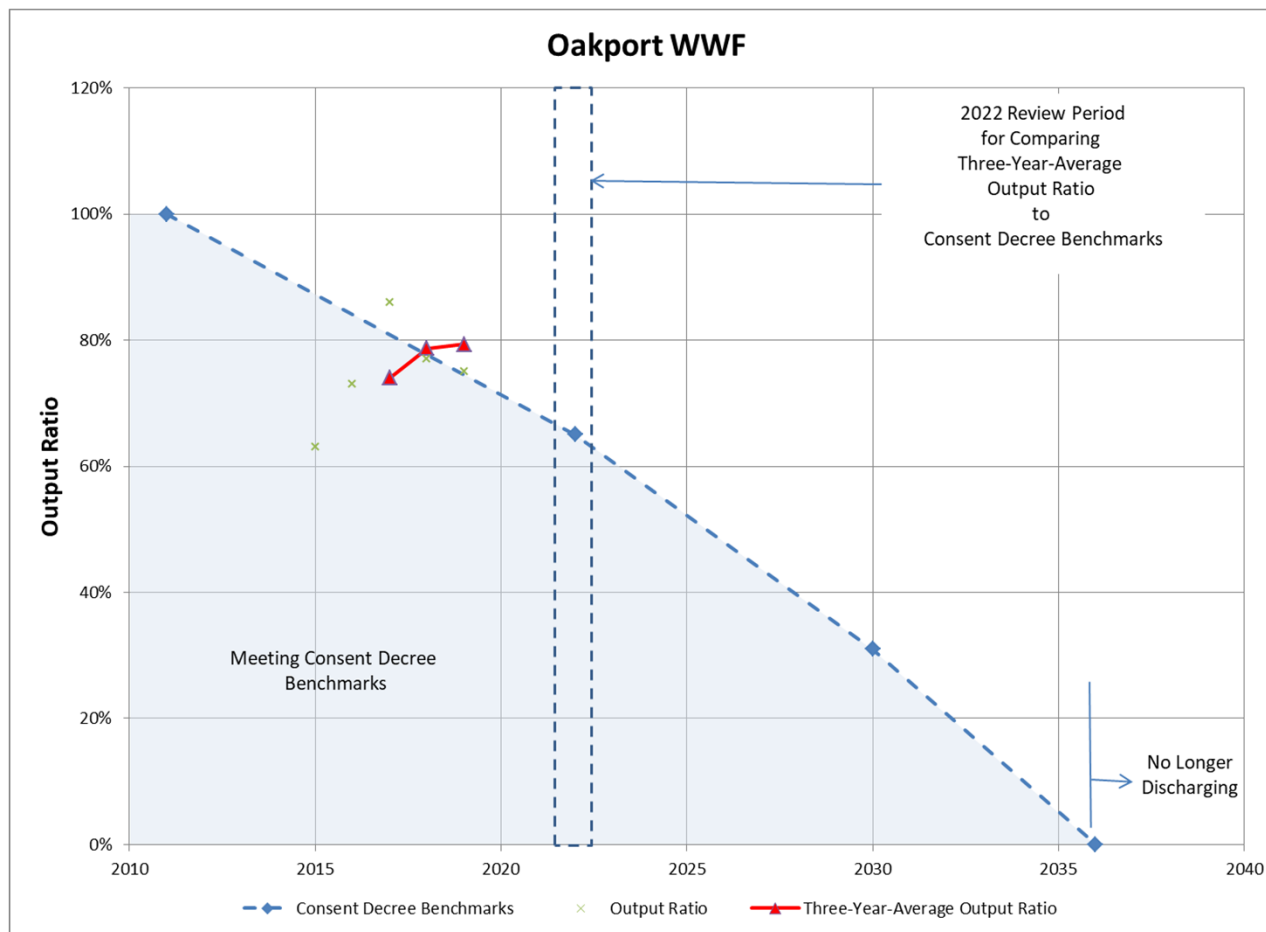
# Compliance Progress San Antonio Creek WWF



San Antonio Creek WWF remains at risk of not being in compliance for the 2022 check-in

FY19  
Three-Year-Average  
Output Ratio = 81%  
(19% reduction)

# Compliance Progress Oakport WWF



Oakport WWF remains at risk of not being in compliance for the 2022 check-in

FY19

Three-Year-Average Output Ratio = 80% (20% reduction)



# Compliance Progress



- System-wide reductions have varied due to climatological impacts
  - FY15 was the fourth year of a drought
  - FY17 had 65% more rain than average
  - Last three year's precipitation is close to that expected from four years

# Compliance Progress Summary



- System-wide, work has been effective at removing I&I
  - Localized reductions vary
  - Multi-seasonal climatological impacts have significant influence on annual results
- All three WWFs are currently at risk of not being in compliance at the 2022 check-in
  - Oakport WWF trended well for FY18 and FY19 compared to targeted levels and appears likely for meeting compliance
  - San Antonio Creek WWF, due to limited volume, looks promising
  - Point Isabel WWF is unlikely to achieve compliance

# EBMUD Work Capital Projects



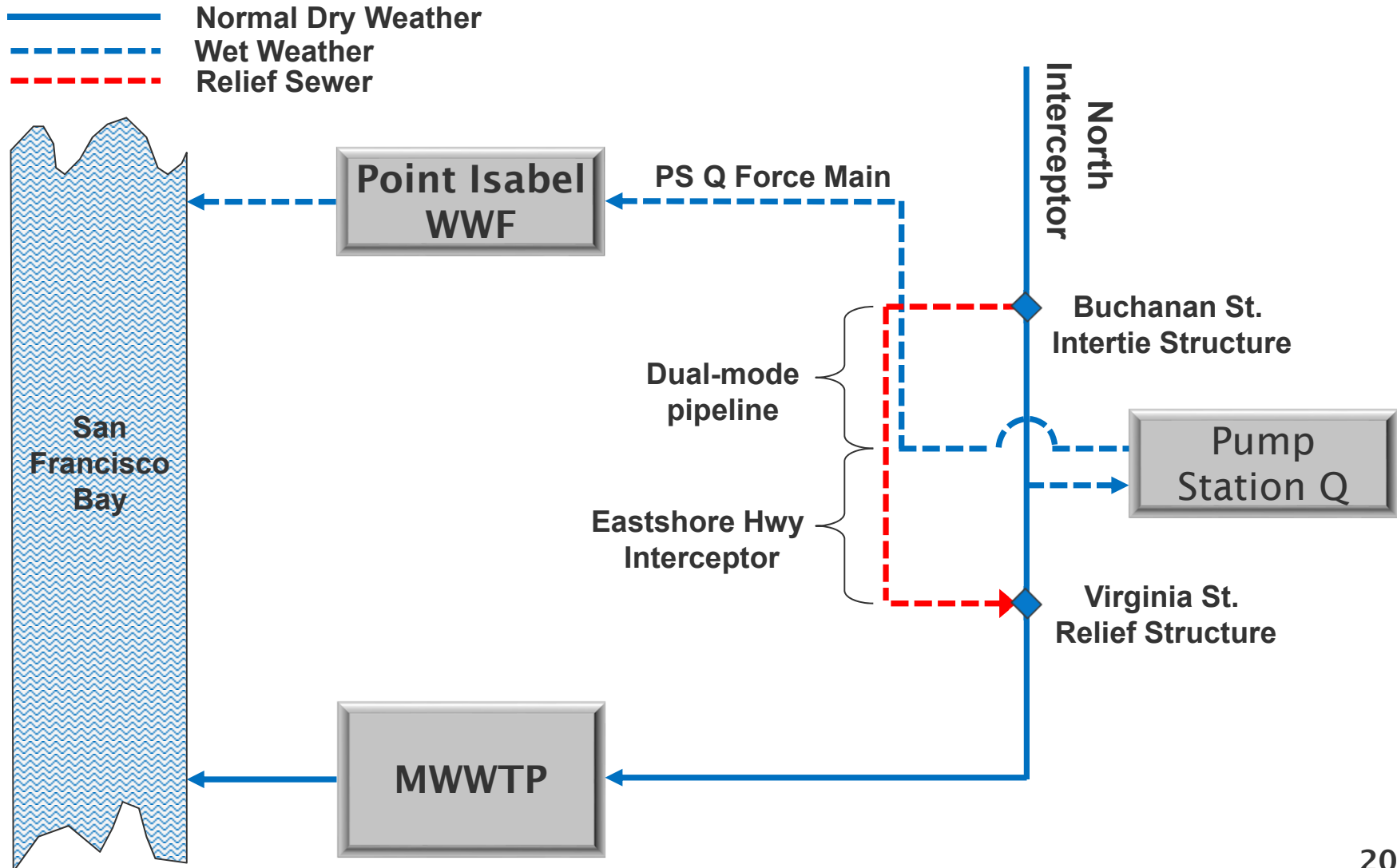
## North Interceptor Relief Sewer

aka - Pump Station Q Force  
Main/Gravity Interceptor Reverse  
Flow

- Two CIP Underground Valve Vaults
  - Buchanan Street
  - Page Street
- Two Precast HDPE/FRP-lined Weir Structures at Virginia Street
- 23 LF FRP Rectangular Pipe
- 1,950 LF of 36-in PVC Pipe
- Five Precast HDPE-lined Manholes



# EBMUD Work Capital Projects



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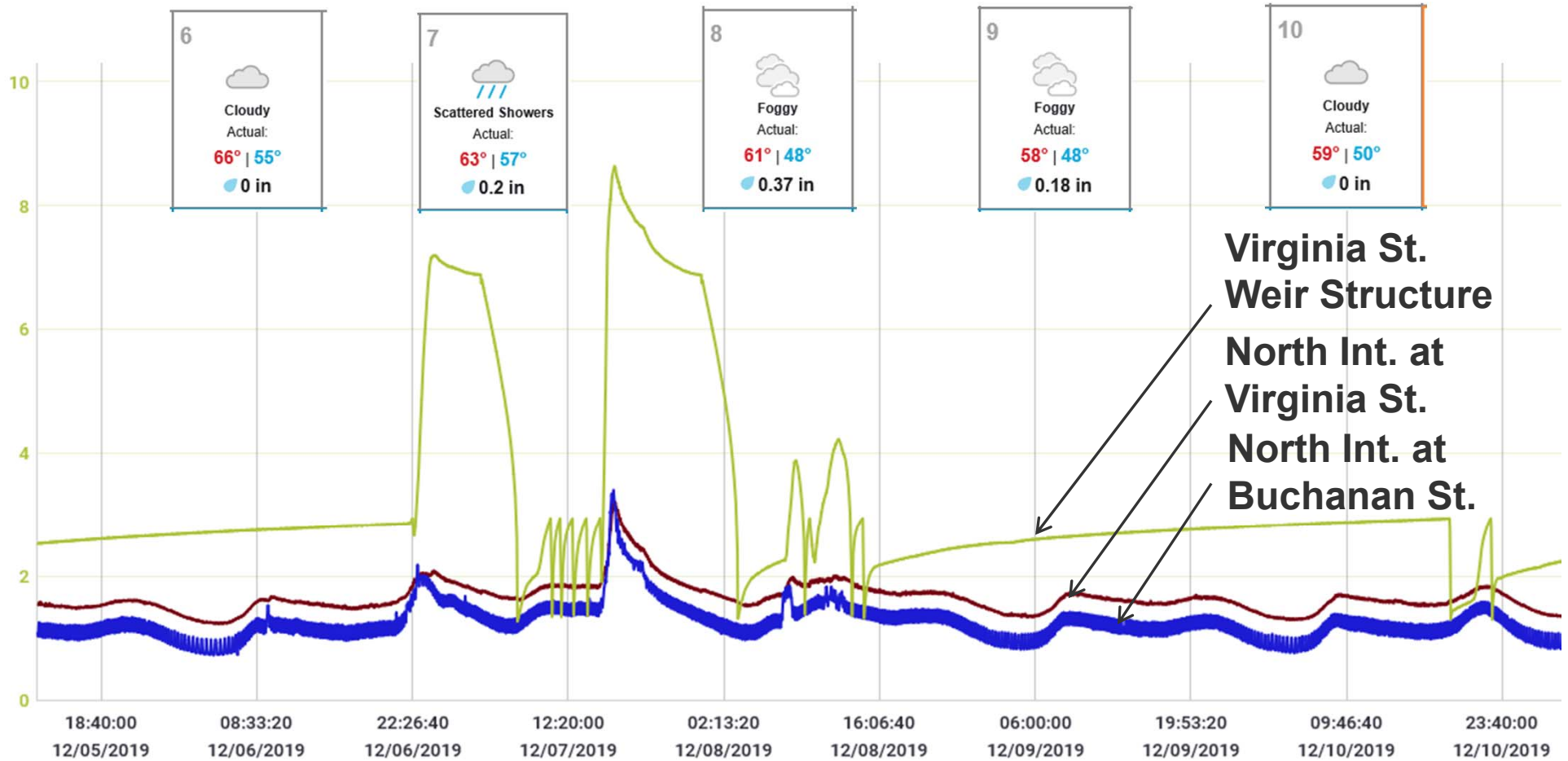
Buchanan Diversion Structure



Virginia Weir Structure



# EBMUD Work Capital Projects



# EBMUD Work Capital Projects



## Urban Runoff Diversion Project

- Divert dry weather flow from Alameda County Stormwater pump station in Oakland (approx. 500,000 gpd)
- Mitigation project for ongoing operation of WWFs
- Over 300 MG diverted to the MWWTP



# Next Steps



- Continue to implement and refine RTSP
- Continue implementation of Regional PSL Program
- Continue collaboration with Satellite agencies to locate and remove I&I
- Continue to monitor performance regarding flow reductions and prepare for the 2022 check-in



# **West County Wastewater District Recycled Water Supply Agreement**

Planning Committee

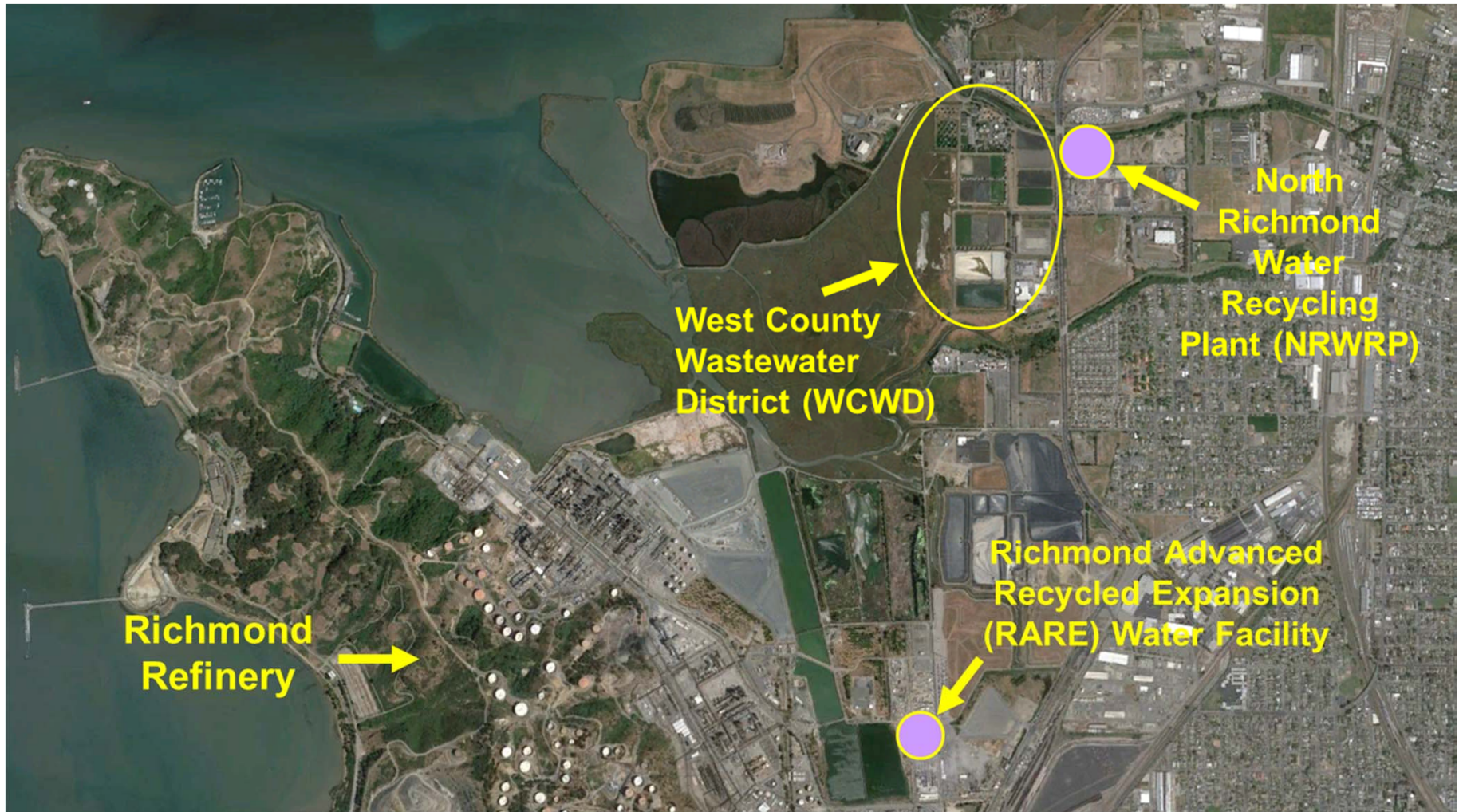
January 14, 2020

# Agenda



- Background
- Proposed Terms for New Water Supply Agreement
- Financial Analysis
- Next Steps

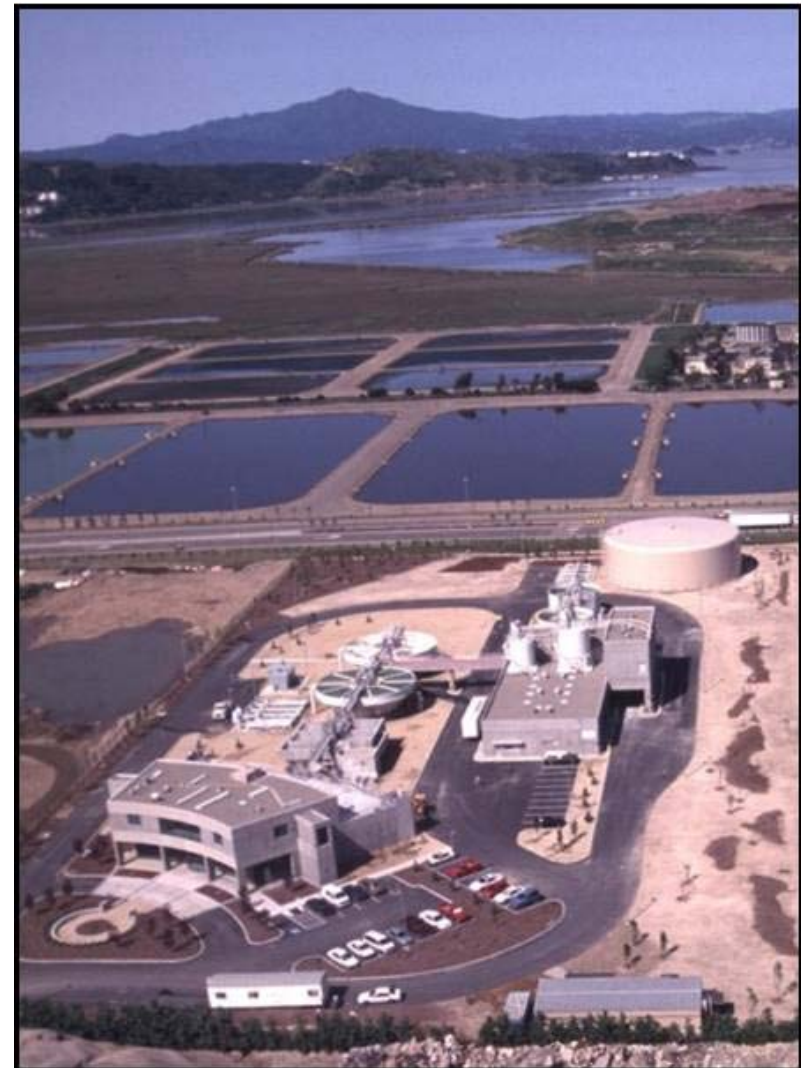
# Water Recycling Facilities Serving Chevron Refinery



# North Richmond Water Reclamation Plant



- Product water has been used in Chevron cooling towers since 1995
- Chevron cooling towers have sensitivity to ammonia
  - NRWRP not designed to remove ammonia
  - WCWD treatment plant not originally designed to consistently control ammonia



# EBMUD Operational Challenges



- Increased chlorine dosing to oxidize ammonia
  - Ammonia levels varied greatly and were not predictable
  - Limited effectiveness, unreliable, costly
- Blended recycled water product with potable water to meet Chevron requirements (avoid plant shutdown)
  - Waste of potable water
- Chevron had ongoing concern with highly variable water quality

# WCWD's Recycled Water Reliability Upgrade Project Operational 2018



- Facility was upgraded to meet likely future nutrient requirements (i.e., ammonia limits)
  - Provides reliable water supply for NRWPRP and Chevron needs
- Operational costs for WCWD will be higher to achieve lower ammonia limits

# Key Concepts in New Agreement



- EBMUD pays operating costs (chemical and energy) to achieve lower ammonia concentration
  - These costs will decrease when WCWD has discharge permit that includes ammonia limits
- Payment based on actual quality of effluent delivered
  - Key new term in agreement

# Payment Terms



<b>Monthly avg. effluent ammonia (mg/L)</b>	<b>Percent of monthly operating cost reimbursement to be paid by EBMUD to WCWD (%)</b>	<b>Approx. monthly operating cost reimbursement to be paid by EBMUD to WCWD (\$/mo)</b>
$\leq 2$	100%	\$17,000
$> 2 \ \& \ \leq 3$	60%	\$10,200
$> 3$	0%	\$0

Additional incentive of \$2,000 per month will be paid by EBMUD to WCWD if monthly average ammonia  $\leq 1$  mg/L

- Represents sharing chemical cost savings at NRWRP due to ammonia  $\leq 1$  mg/L



# Financial Assessment



- Previous Agreement
  - EBMUD paid approx. \$12k to \$16k/month to WCWD for operational enhancements
- Proposed Agreement
  - EBMUD pays approx. \$17k/month if ammonia < 2 mg/L
  - Amount is prorated if ammonia > 2 mg/L
  - Monthly cost adjusted annually based on unit cost changes for chemicals and energy

# Summary



- WCWD upgrades provide greater capability for consistent, reliable water quality
- EBMUD pays increased operating costs for WCWD to achieve reduced ammonia concentrations
- Monetary incentives for WCWD to meet water quality criteria
  - Payment tied to actual quality of water delivered

# Next Steps



- Agencies bring Agreement to their Boards for approval

# **Main Wastewater Treatment Plant Gas Flare Improvements Update**

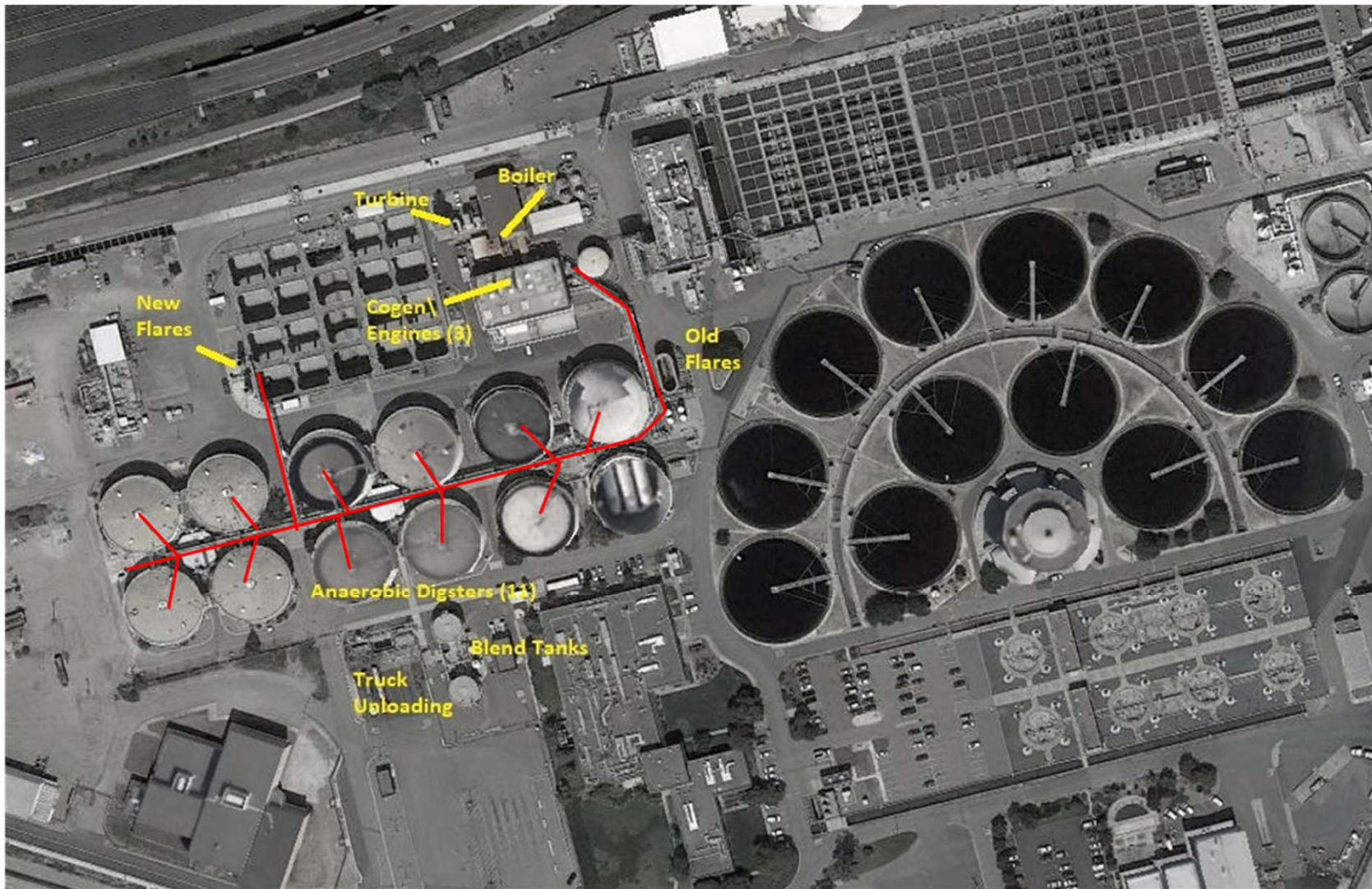
Planning Committee  
January 14, 2020

# Agenda



- Review Main Wastewater Treatment Plant (MWWTP) Digester Gas System
- Gas Flare Improvements Project Update
- Key Air Permit Conditions
- Nitrogen Oxides (NO<sub>x</sub>) Offsets
- Next Steps

# MWWTP Digester Gas System



# MWWTP Digester Gas System

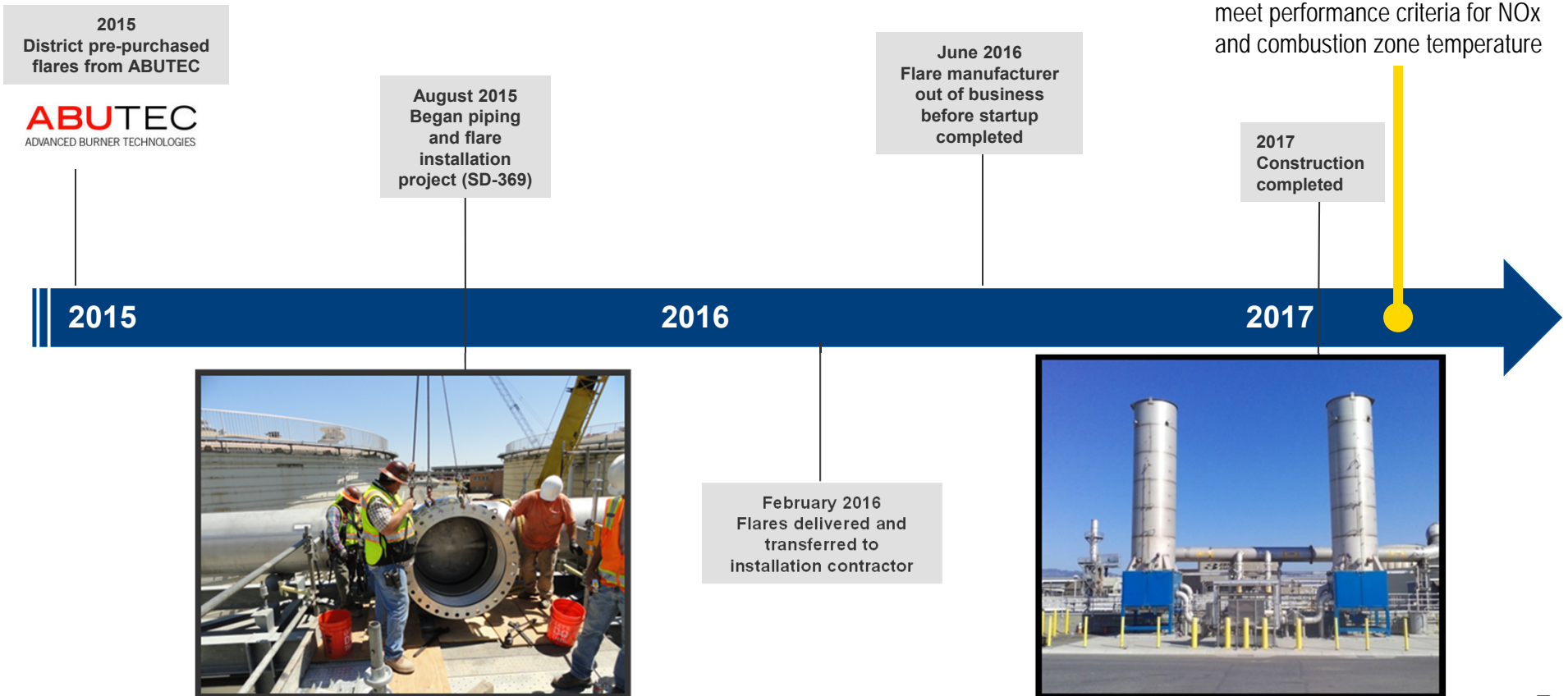


- System Operation
  - Digester gas utilized in turbine, engines, and boiler for renewable energy
  - Power Generation Station (PGS) generates enough power to support plant loads and sells excess power to Port of Oakland

# Gas Flare Improvement Project Updates



## Gas Flare Procurement and Installation Project Timeline





# Gas Flare Improvement Project Updates



## District Flare Improvement Efforts

**Early 2017:** Initial testing showed flares did not meet performance criteria for NOx and combustion zone temperature

**July 2017:** Flare performance improvement evaluation by consultants

**November 2017:** Formal flares compliance test did not pass

**October 2017:** Completed mechanical improvements



**April 2018:**

DC Water (Washington DC, Blue Plains WWTP) had same issue with ammonia and Abutec flare and were granted permit changes by their local air board after a three year process

**2017 to 2019:**

1. Ammonia identified in digester gas
2. Ammonia is a large contributor to fuel-borne NOx emissions
3. District studied and tested digester gas for ammonia per BAAQMD request
4. District presented findings to BAAQMD; high ammonia concentrations in digester gas compared to other POTWs

**September 2019:**

Completed control and programming improvements to better integrate the enclosed flares

**October to November 2019:** Negotiated permit changes with BAAQMD and completed formal flare compliance test

# Key Air Permit Conditions



- Digester Air Permit Conditions
    - No release of digester gas to atmosphere (unless limited exception applies)
    - Gas that is not used in turbine, engine and boiler must be flared
    - Digester gas production annual average limit is 3,400 scfm\*
      - Average gas production is 2,300 scfm
      - Peak gas production is 4,000 scfm
- \*scfm = standard cubic feet per minute*

# Flare Permitting History



- Original flares installed in 1950s are grandfathered in (pre-Clean Air Act)
- New flares must meet current air regulations
  - Best Available Control Technology (BACT)
  - Emission limits
- Elevated ammonia in District digester gas is rare
  - Trucked waste and treatment process

# Key Air Permit Conditions



- Flare Air Permit Conditions
  - Emission limits (based on BACT)
    - NO<sub>x</sub> – 0.06 lb/MMBtu
    - CO – 0.20 lb/MMBtu
  - Combustion zone temperature 1,500F, three hour average
- Not meeting NO<sub>x</sub> limit
- District engaged BAAQMD on permit issues

# Key Air Permit Conditions



- Tentative New Flare Air Permit Conditions
  - Emission Limits
    - NO<sub>x</sub> – 0.12 lb/MMBtu
    - CO – 0.20 lb/MMBtu
  - Combustion zone temperature 1,200F, 15 minute start-up exclusion
- November 7, 2019 test results met applicable emission limits

# NOx Offsets



- Higher NOx limit requires additional offsets to be given to BAAQMD
  - The higher NOx limit will require giving BAAQMD 5.5 tons of NOx emission reduction credits
  - District already provided 5.5 tons of offsets to BAAQMD during initial permitting

# NOx Offsets



- Only Bay Area emission reduction credits may be used to offset NOx emissions
  - Only about 25 credit certificate holders
  - Sold through brokers on open market

# Next Steps



- Finalize tentative permit conditions with BAAQMD
  - Source test results from November 7, 2019 test submitted to BAAQMD in January 2020
- Purchase NOx offsets (February 2020)
  - Estimated market value is \$15,000 to \$18,000 per ton
  - BD-1 to Board on January 28, 2020 meeting for purchase
  - Request to spend up to \$100,000 for offsets
- Finalize Permit to Operate



# Facility Landscape Maintenance

Planning Committee

January 14, 2020

# Agenda



- Background
- Proposed work
- Union outreach
- Next steps

# Background



- Vegetation management at over 400 facilities in the East Bay
- Includes water treatment plants, pumping plants, reservoirs, service centers, and administration buildings
- Methods include manual and mechanical weeding, mowing, contract labor (Civicorp), and contract goats
- Highly variable workload

# Schedule and Resources

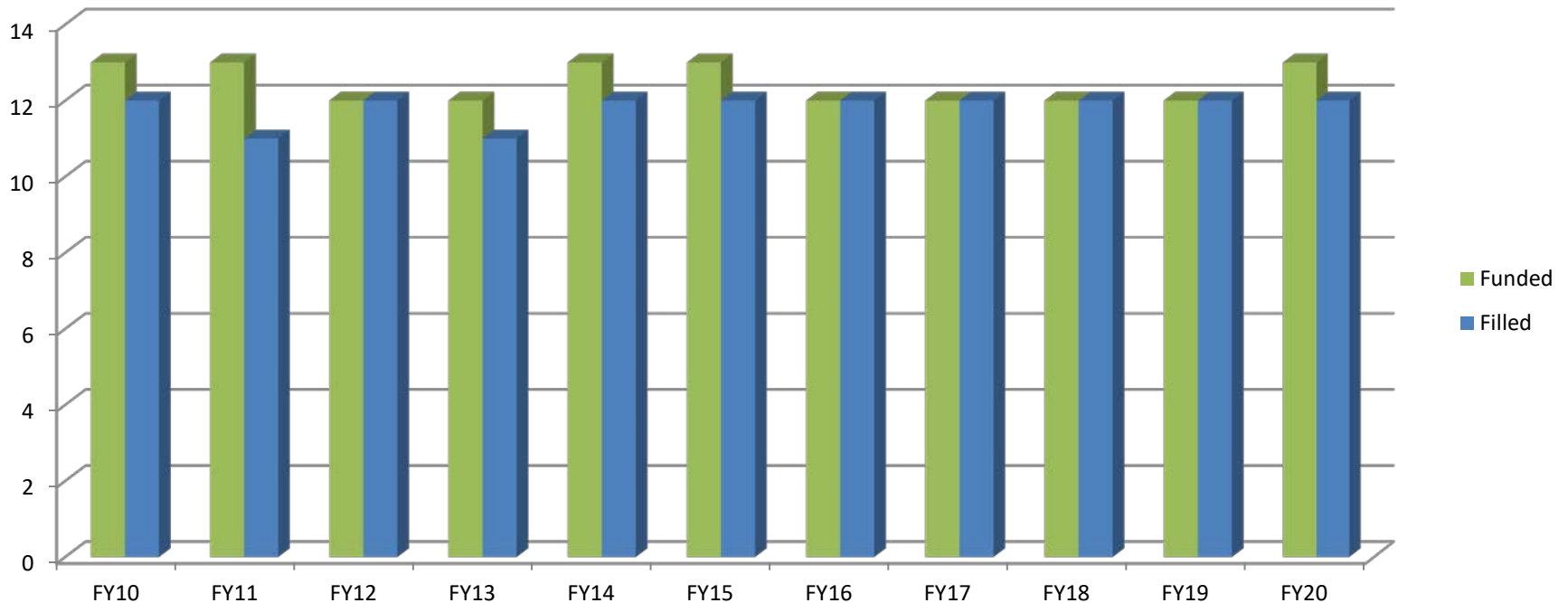


- Fire fuel abatement requirements
  - Typically between April and October
  - Work mandated by local fire codes
- Requires all resources to address, creating backlog of deferred work
- Workload and public expectations increasing

# Staffing Levels



## FY10 – FY20 Grounds Maintenance Staffing Levels

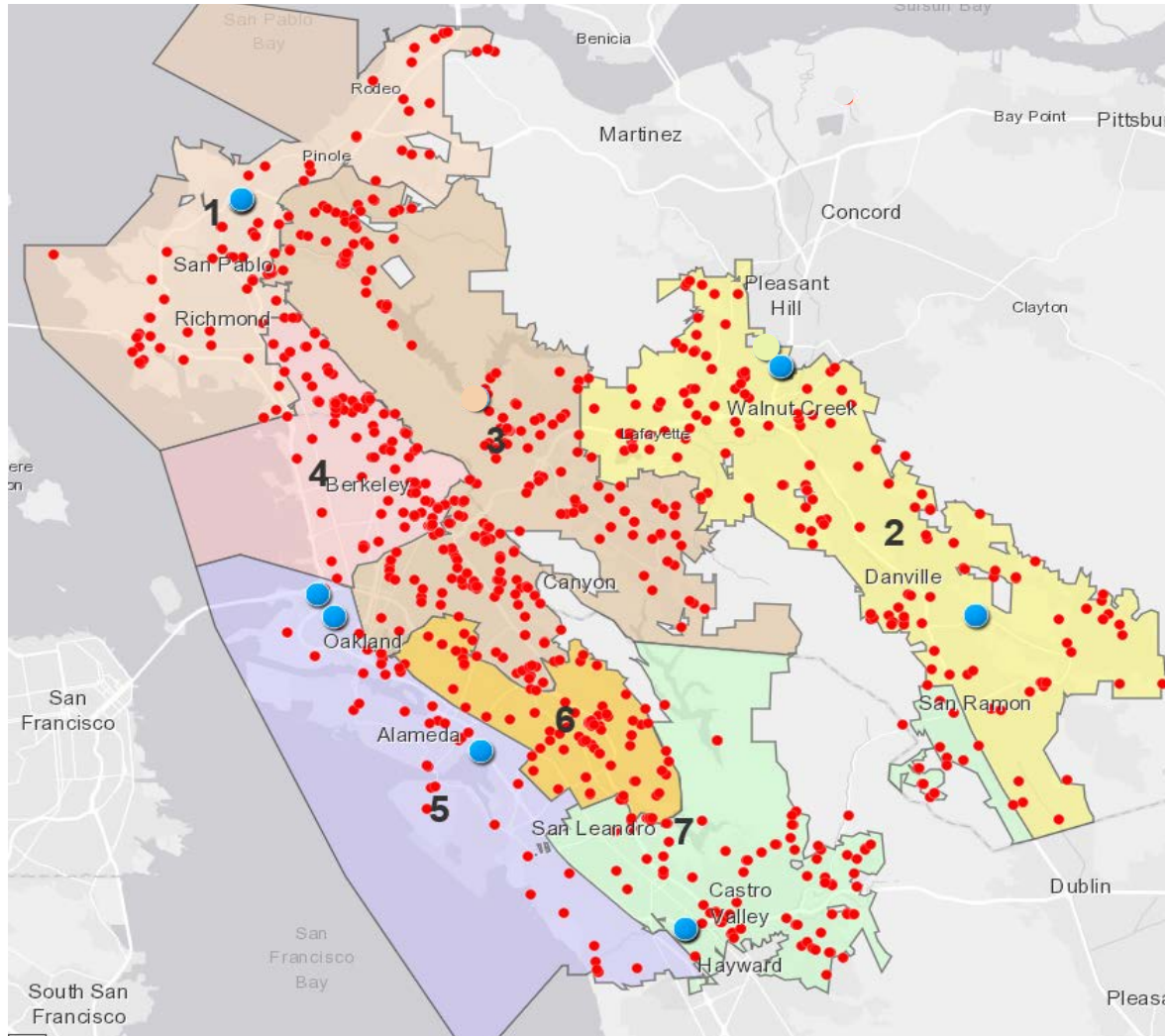


# Proposed Agreement



- Address peak workload during fire season
  - Pruning, weeding, and planting activities
  - District administration buildings, service centers, and Oakport
- Provides equivalent of 2-3 FTE over 7 months
  - 2 person crew needed to accomplish the work
- Approximately \$575,330 over 5 years

# Affected Facilities



**Red:** Facilities requiring fire fuel abatement work.

**Blue:** Facilities covered under the proposed agreement.

# Cost Comparison



<b>Resource</b>	<b>Cost</b>	<b>Comment</b>
Contract	\$115,000	Prevailing wage
District forces	\$186,000	Salary, benefits, overhead & equipment

Proposed agreement (3 years, with 2 potential annual extensions)

- Approximately 1,720 hours per year

1.1 FTE used for comparison purposes, actual staffing would involve 2-person crew to efficiently perform the work.



# Union Outreach



- September 5, 2019 - Courtesy notification to Local 444
- September 6, 2019 - Local 444 Contracting Out notice
- October 3, 2019 - Local 444 Contracting Out committee meeting
- November 18, 2019 - Local 444 Contracting Out committee meeting

# Next Steps



- Facility Landscape Maintenance Agreement for Board consideration at January 14, 2020 Board meeting
- Fill remaining Grounds Maintenance Specialist II position

# Questions

