

# Sunnyvale Clean Water Program

SUSTAINABILITY COMMISSION



April 16, 2018



Sunnyvale



Sunnyvale

# Planning Process

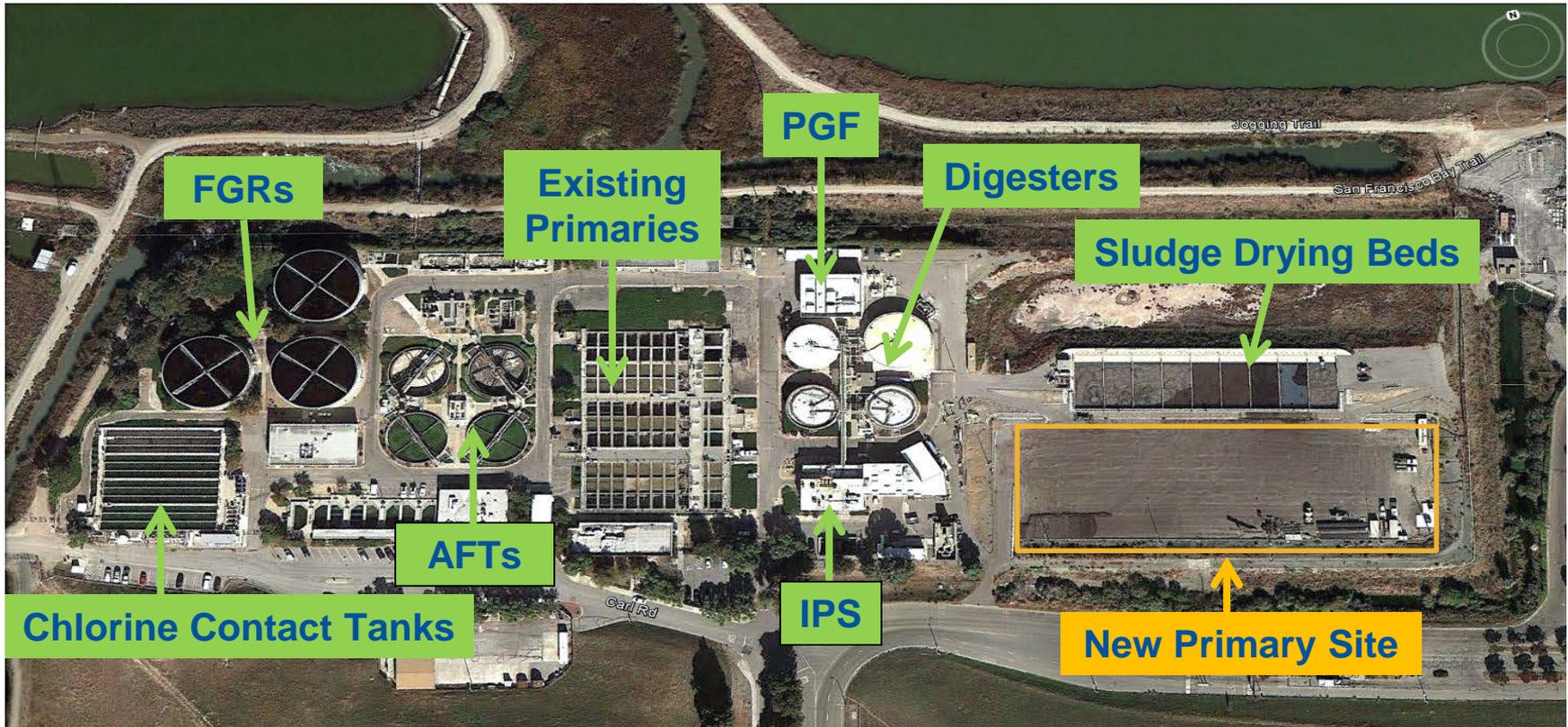


# Addressing Plant Condition

- 2006 Condition Assessment
- 2008-10 Strategic Infrastructure Plan
- 2010-11 Peer Review
- 2012 Strategic Planning Workshop
- 2013-16 Master Plan



# Master Planning

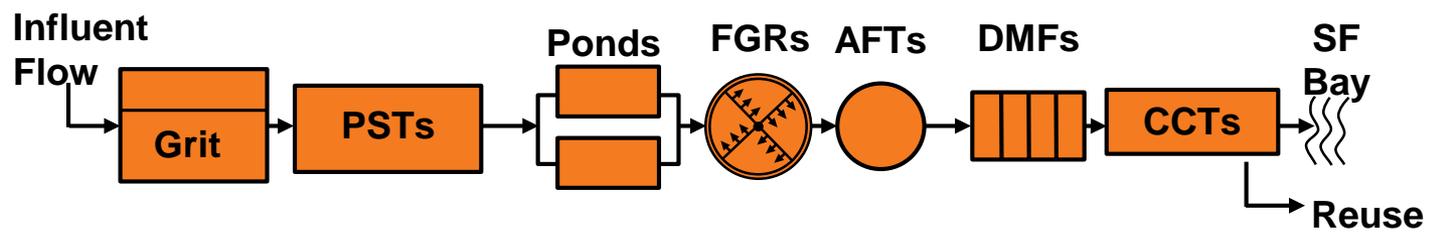


- Existing conditions documentation
- Site planning
- Basis of design development
- CEQA compliance
- Public Outreach

- Design standards
- Regulatory compliance
- Implementation plan
- Budget & Schedule

## Additional coordination

- SCVWD



Main Plant Layout Today





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# Phasing and Implementation



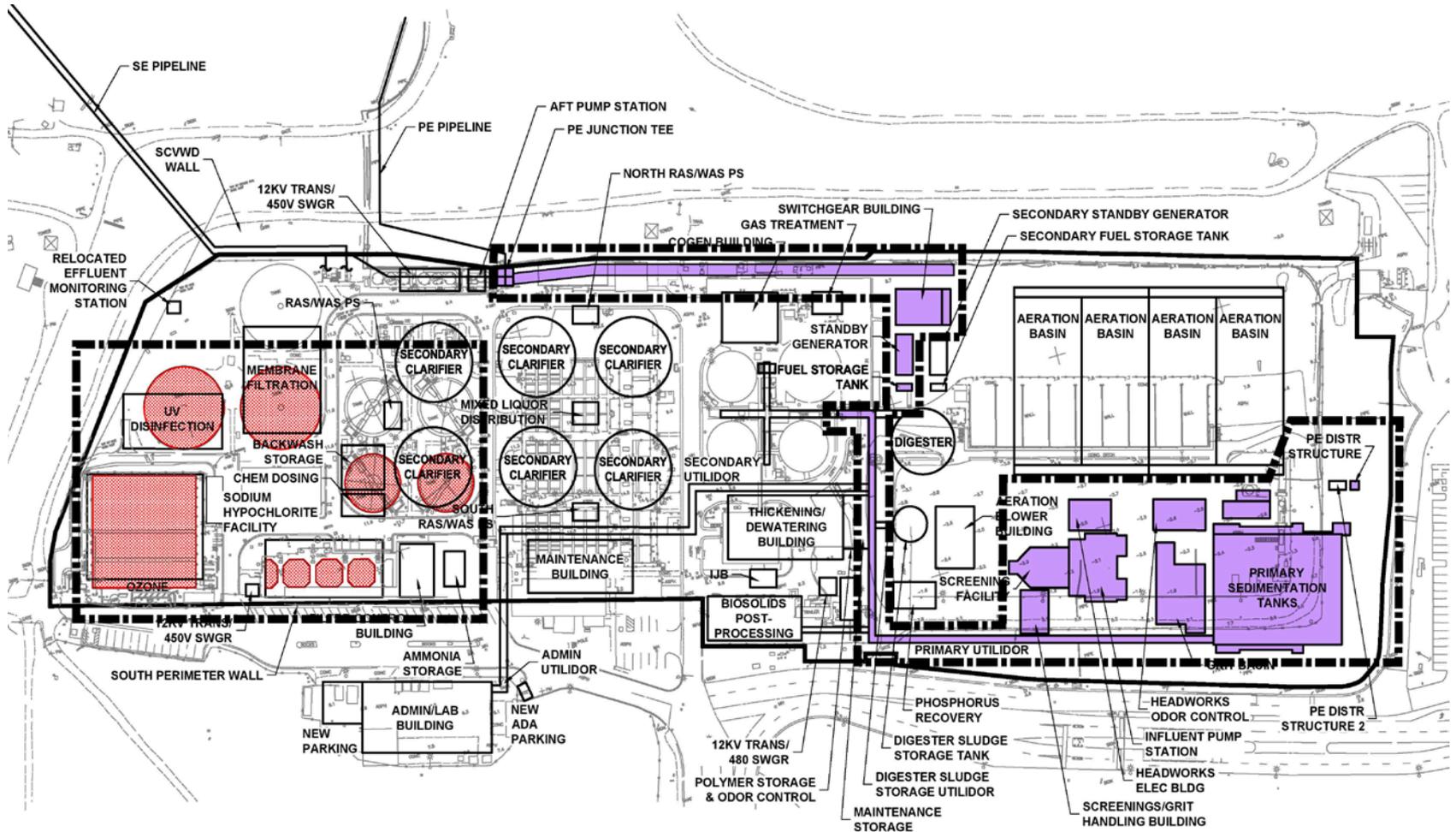


# Implementation – Major Phases

- Phase 1 – Headworks/Existing WPCP Rehab
- Phase 2 – Initial CAS/Admin and Maintenance
- Phase 3 – Support Facilities Upgrades
- Phase 4 – Second CAS Expansion
- Phase 5 – Tertiary Treatment Upgrades

# IMPLEMENTATION - PHASE 1

## HEADWORKS/EXISTING WPCP REHAB



2015

2020

2025

2030

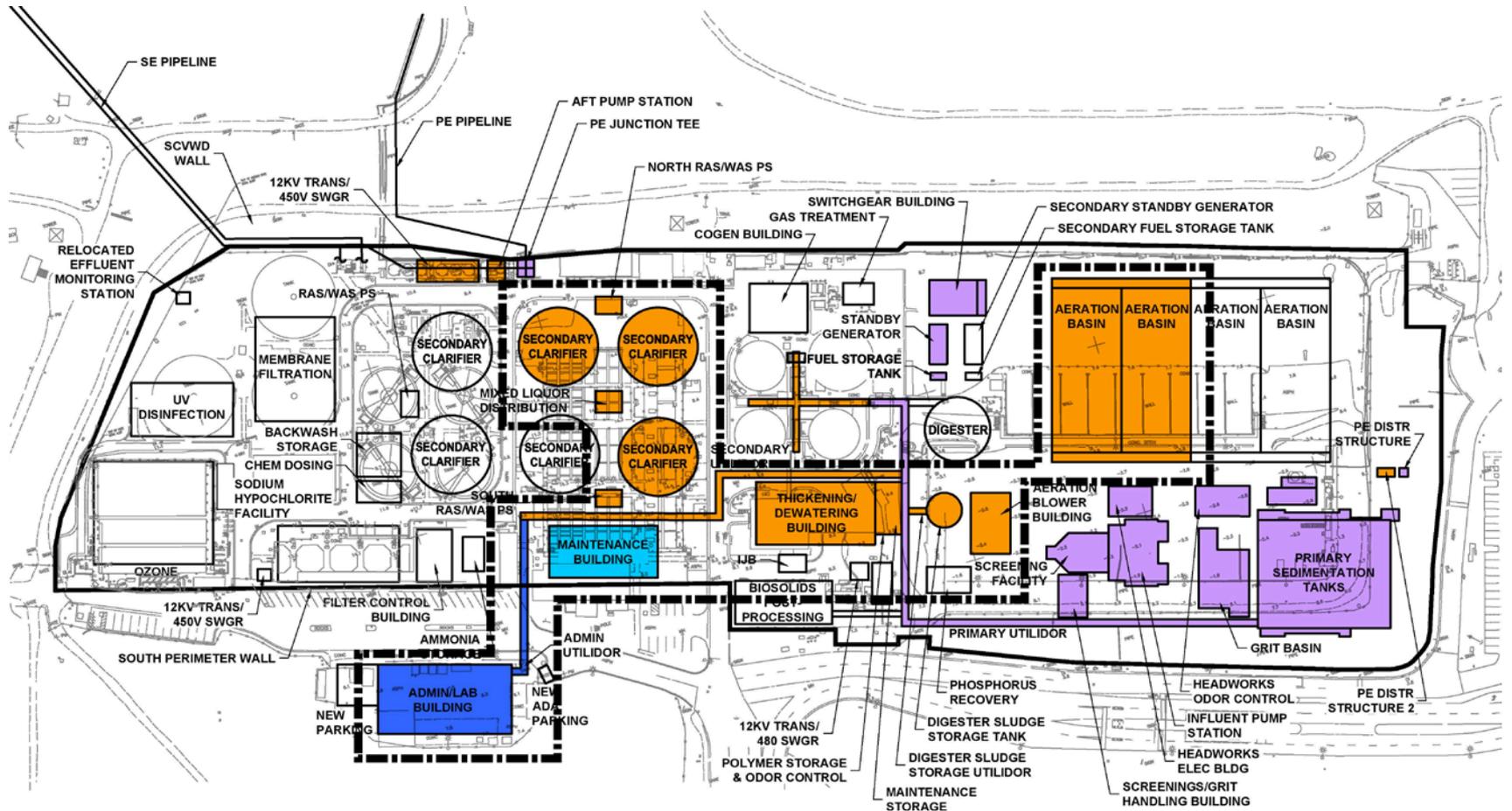
2035

2040



# IMPLEMENTATION - PHASE 2

## INITIAL CAS/ADMIN AND MAINTENANCE



2015

2020

2025

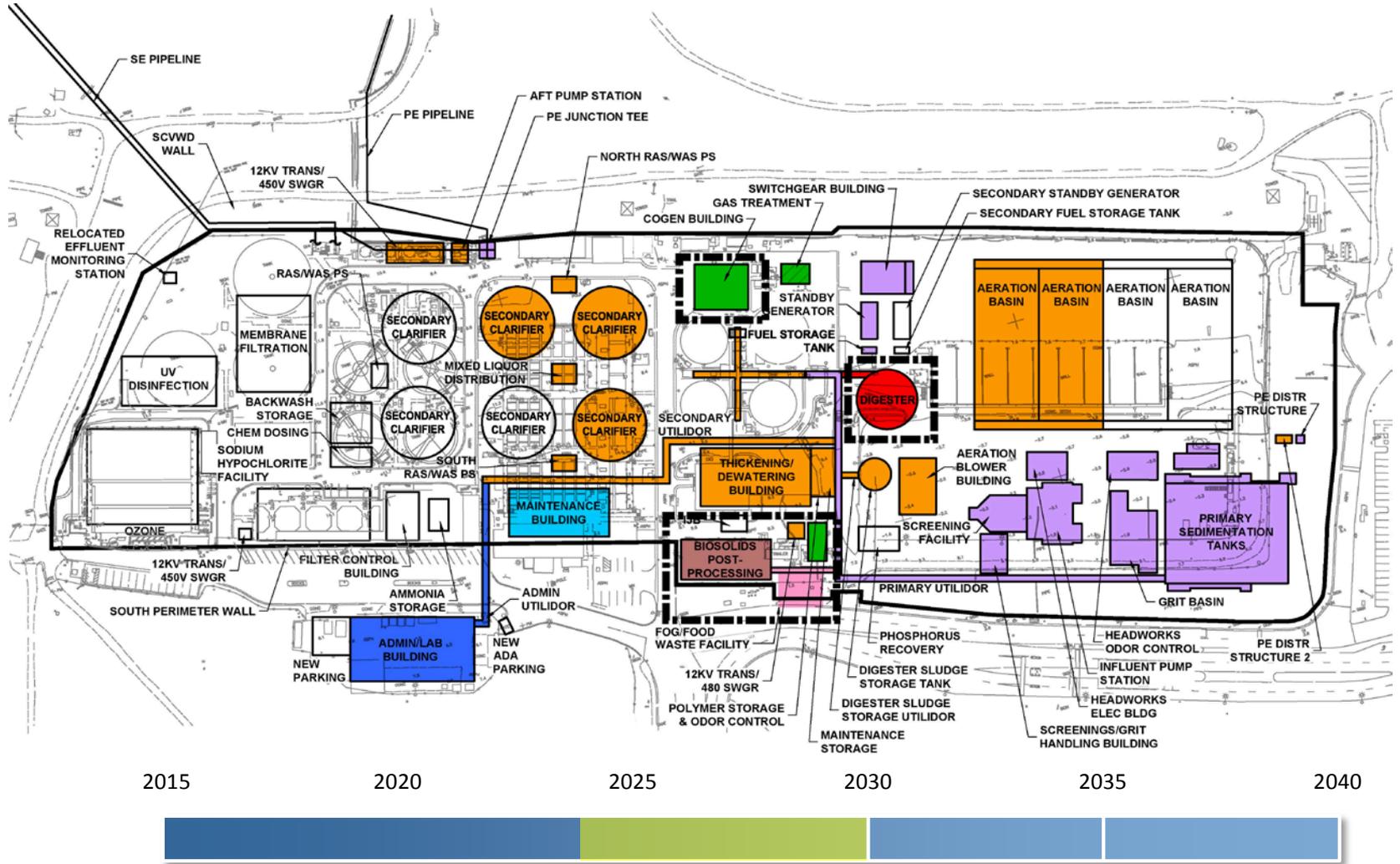
2030

2035

2040

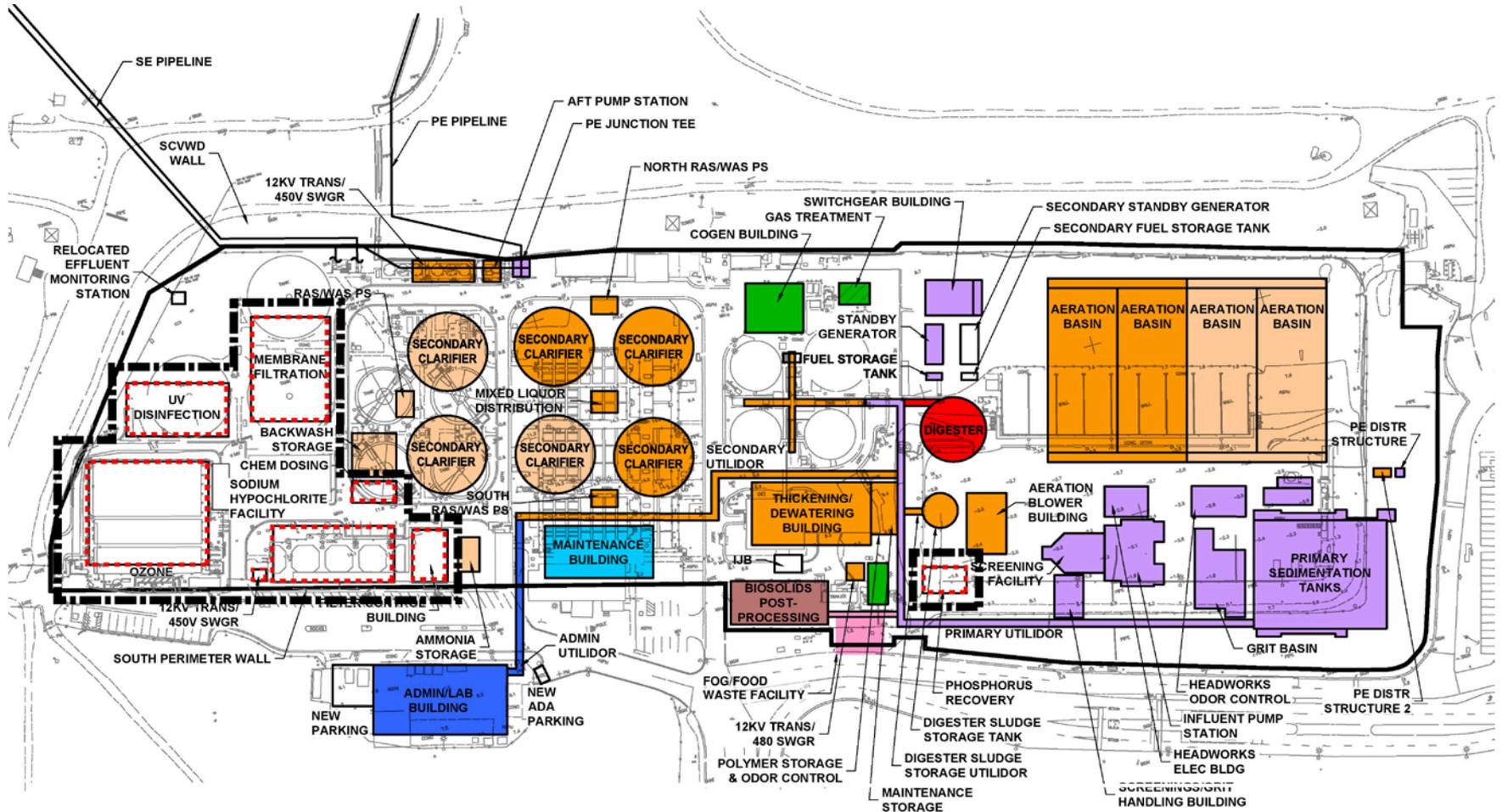


# IMPLEMENTATION - PHASE 3 SUPPORT FACILITIES UPGRADES





# IMPLEMENTATION - PHASE 5 TERTIARY TREATMENT UPGRADES



2015                      2020                      2025                      2030                      2035                      2040



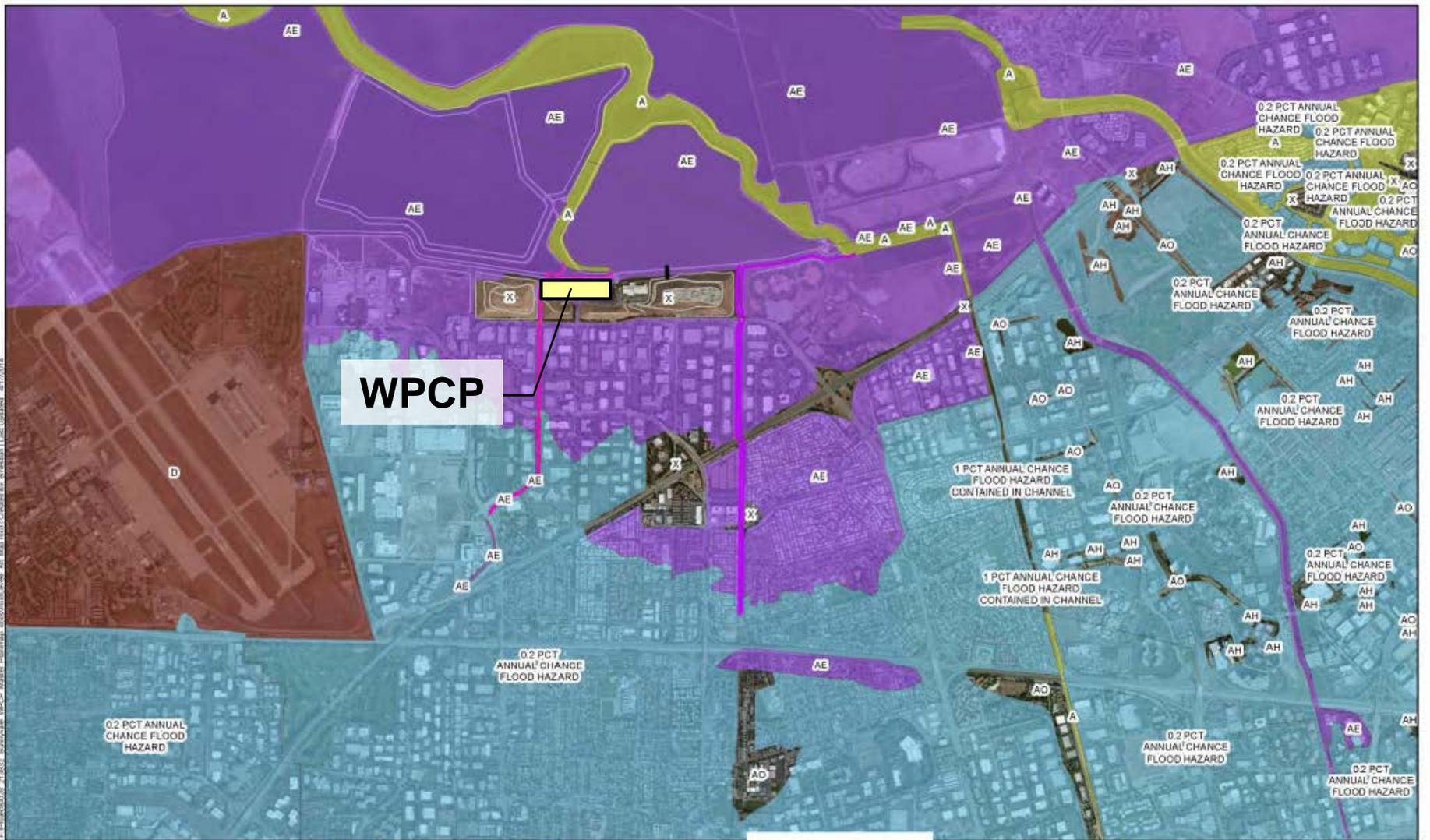


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# Site Flood Update

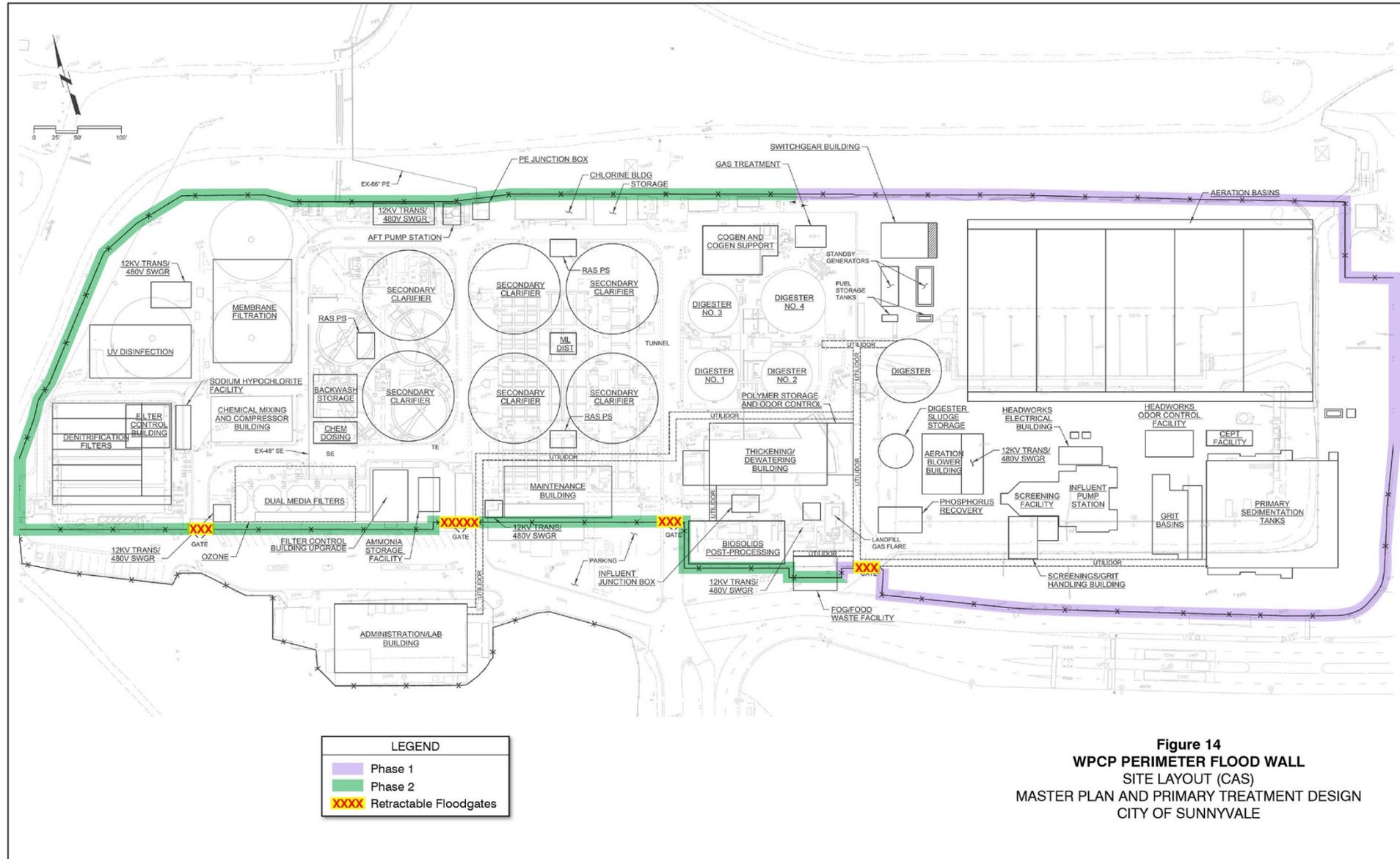


# FEMA Tidal Flooding Map (Elevation 11.0)



E:\Projects\213932\_Sunnyvale\_WPCP\_Master\_Plan\Map\_Information\Map\_Information.dwg - 4/10/2014

# Floodwall Around WPCP for Tidal Flooding

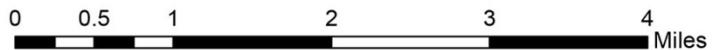


**Figure 14**  
**WPCP PERIMETER FLOOD WALL**  
 SITE LAYOUT (CAS)  
 MASTER PLAN AND PRIMARY TREATMENT DESIGN  
 CITY OF SUNNYVALE

# SCVWD Shoreline Study – Preliminary Alignment for Protection Against Sea Level Rise



San Francisco Bay Shoreline Study EIAs 1-10



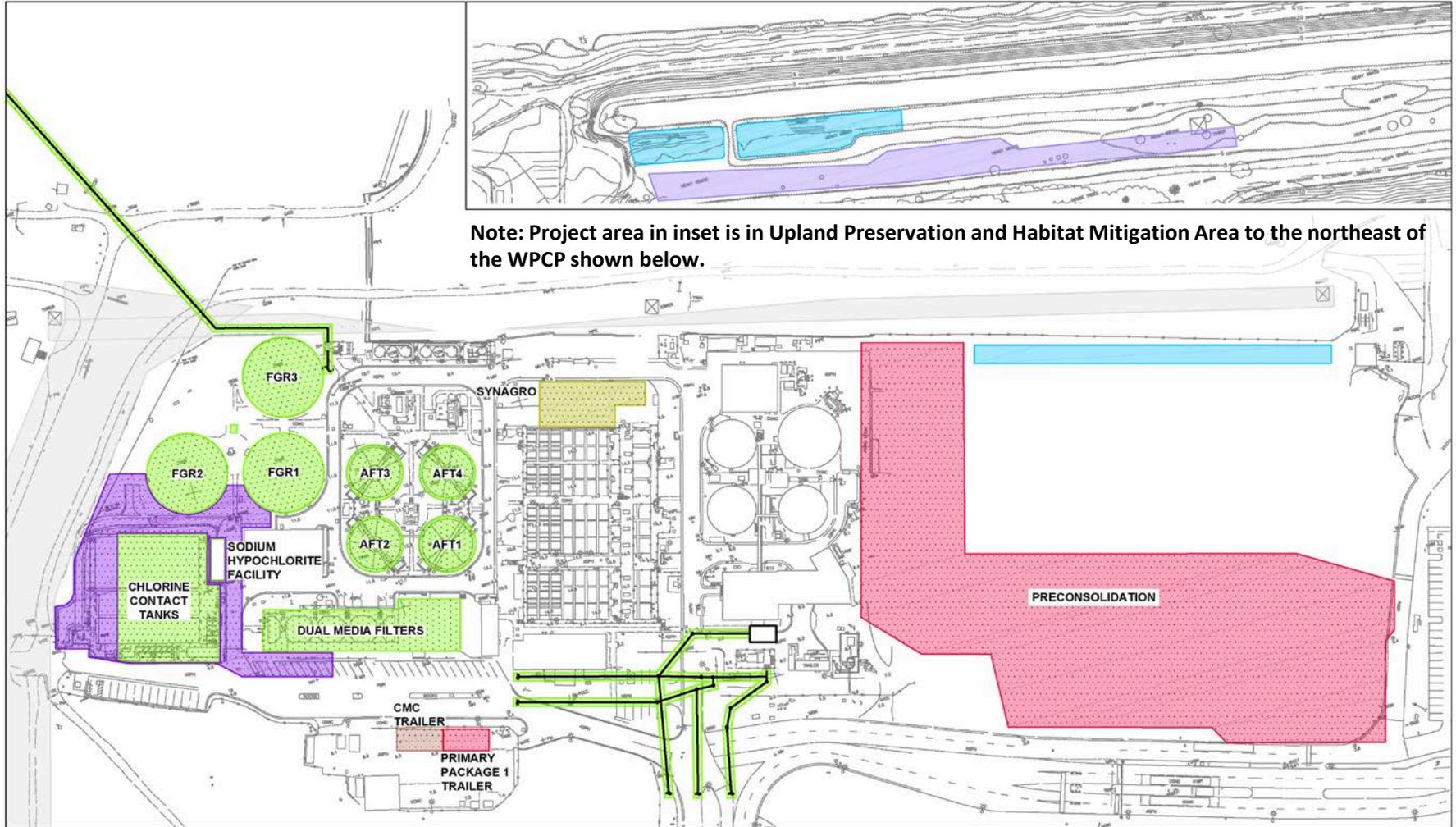
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Geomatics, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



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# Current Projects

# Active Work

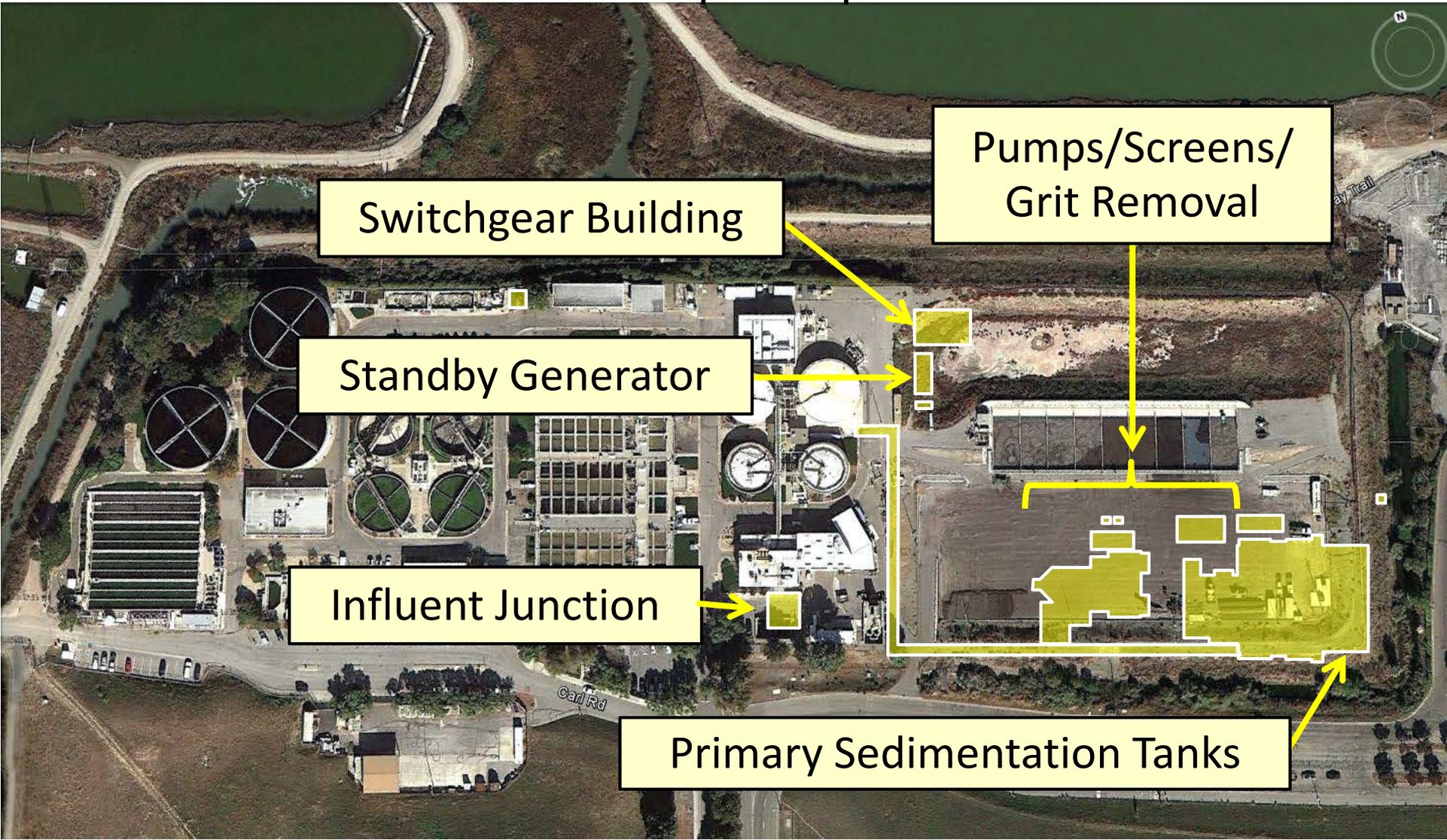


- CONDITION ASSESSMENT
- CONTRACT DEWATERING
- PRIMARY PACKAGE 1
- CMC TRAILER
- RESTRICTIVE EASEMENT

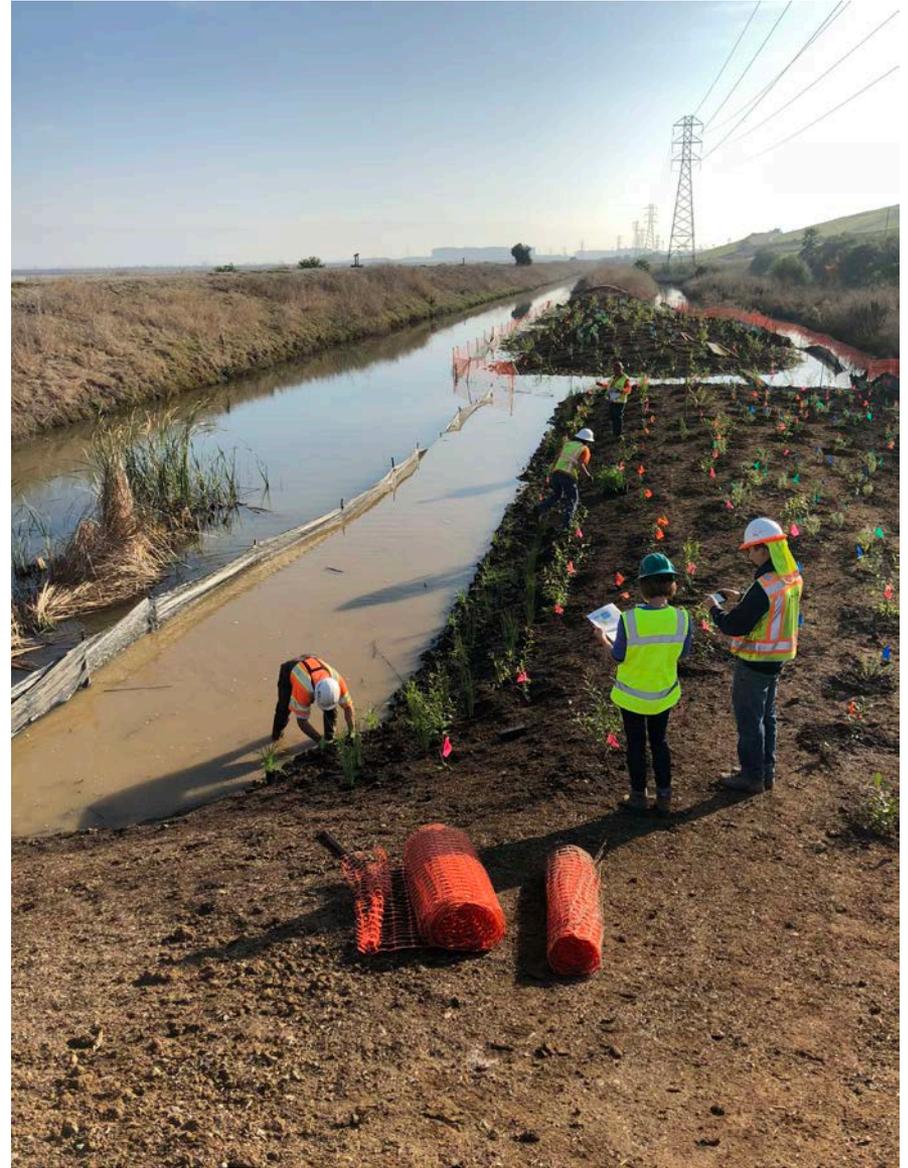
- SODIUM HYPOCHLORITE CONVERSION
- UPLAND PRESERVATION AREA
- PRIMARY PACKAGE 2
- TEMPORARY WORK AREA
- ACTIVE DEMOLITION

# Primary Project – Package 2

- Open Bids – Early 2017
- Construction/Startup Complete – Mid 2020



# Primary Project



# Primary Project



# Caribbean Drive Parking and Trail Access Enhancements Project



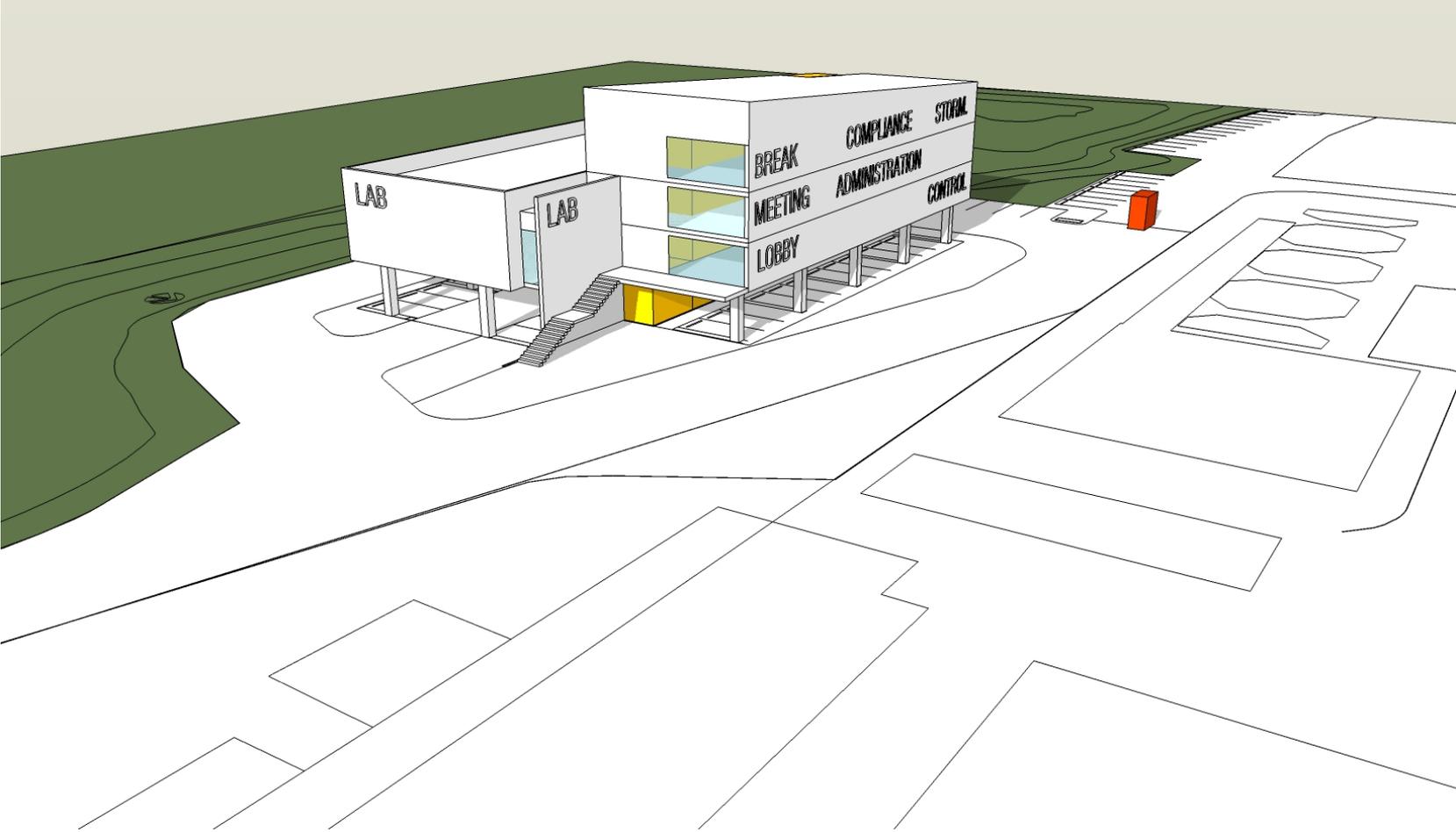
1 Current parking and trail entrance on Carl Road to be closed when new parking and access are open.

3 New trail entrance location on Caribbean Drive.

2 Carl Road to be closed for public access after new parking area is open.

4 New parking spaces and Green Streets planters on Caribbean Drive and removal of one lane of westbound traffic.

# Administration Building



# Secondary Treatment Facilities





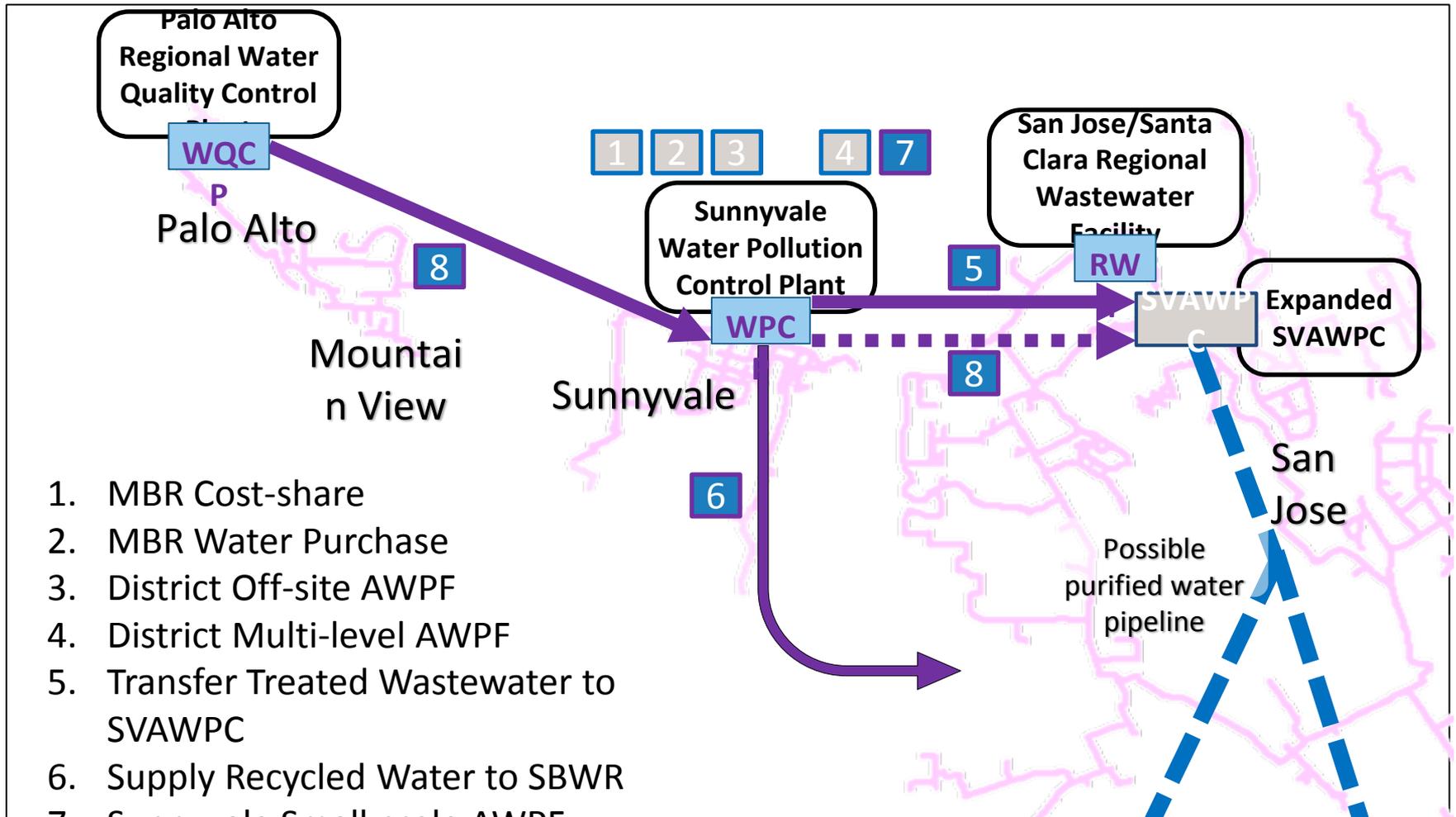
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# Recycled Water

# Recycled Water Opportunities

- Feasibility Study for Recycled Water Completed in 2013
  - 3.6 mgd of non-potable demand over 20 years
  - Requires distribution system investment (\$100± million)
- Partnership with Santa Clara Valley Water District (SCVWD)
  - City provides treated effluent for further use by SCVWD
  - Provides space at the WPCP for advanced treatment facilities (RO/UV)
  - Collaborate on several feasibility studies (RO concentrate management, reduced discharge to Bay, etc.)

# SCVWD Potable Reuse Alternatives



1. MBR Cost-share
2. MBR Water Purchase
3. District Off-site AWWPF
4. District Multi-level AWWPF
5. Transfer Treated Wastewater to SVAWPC
6. Supply Recycled Water to SBWR
7. Sunnyvale Small-scale AWWPF
8. Transfer Treated Wastewater to WPCP and/or SVAWPC

# Potential Recycled Water Expansion

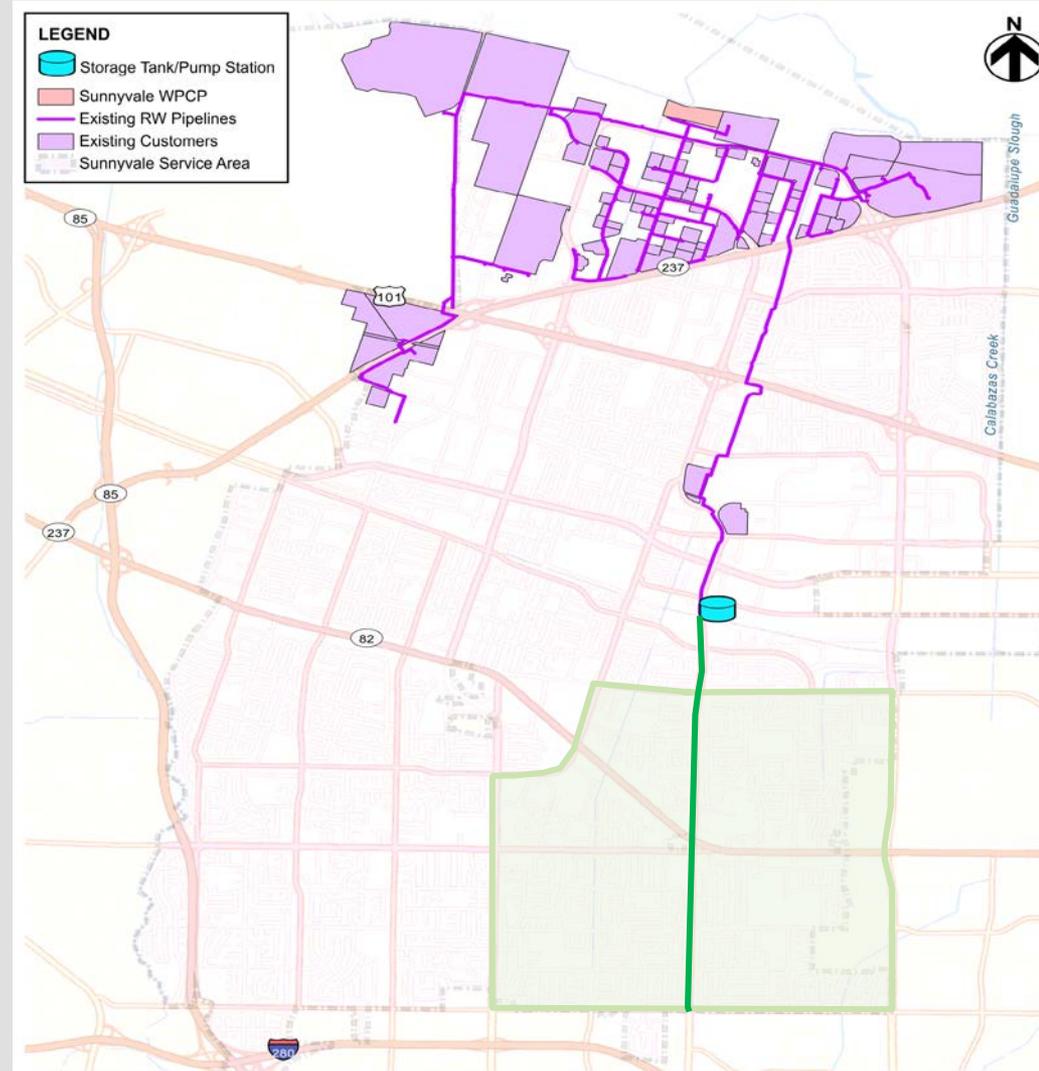


- Draft MOU with SCVWD for feasibility studies
- City has budgeted \$250k
- Potential location for 3 acre advanced WPF on landfill

# Recycled Water

## *Recycled Water Expansion*

- Wolfe Road Pipeline Extension Project (green line)
- Completed in **late-2017**, delivery mid-2018
- Approximately **13,300 linear feet** extending from San Lucar Pumping and Storage Facility to Kifer Rd/Homestead Ave
- Partnership with **Santa Clara Valley Water District**
- Possibility to **expand recycled water service** in vicinity (green shaded area)

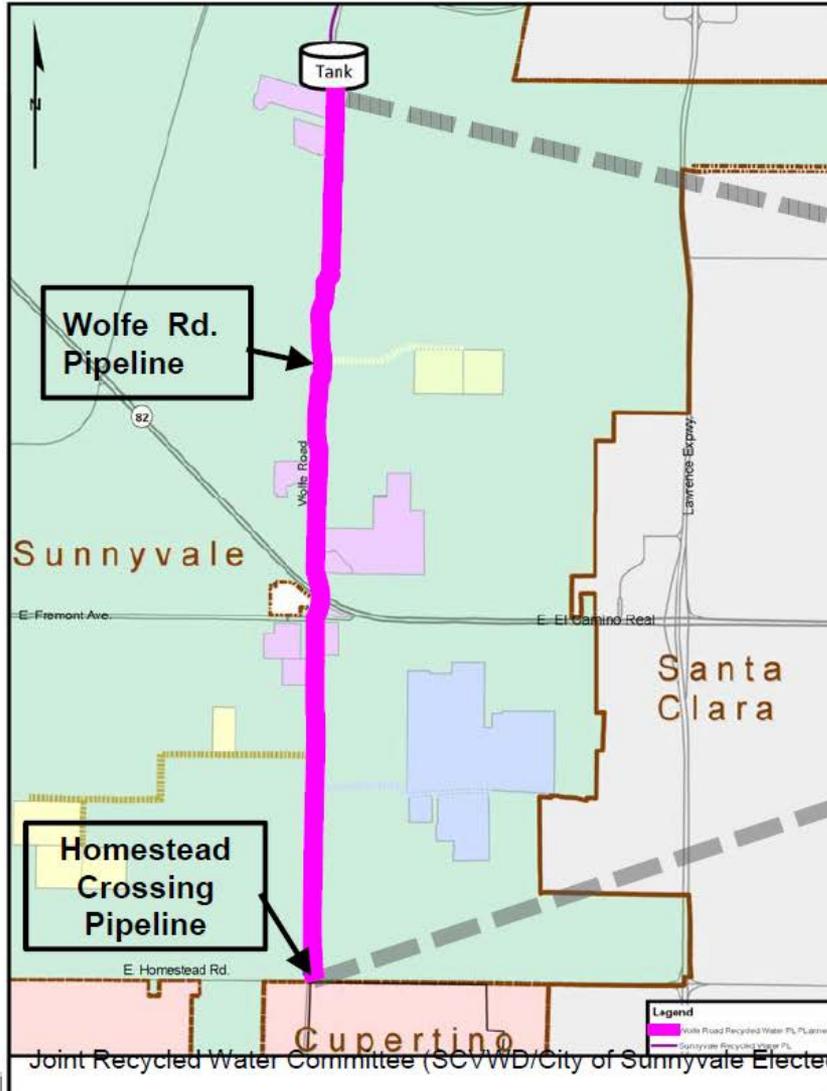


# Recycled Water Projects – Wolfe Road

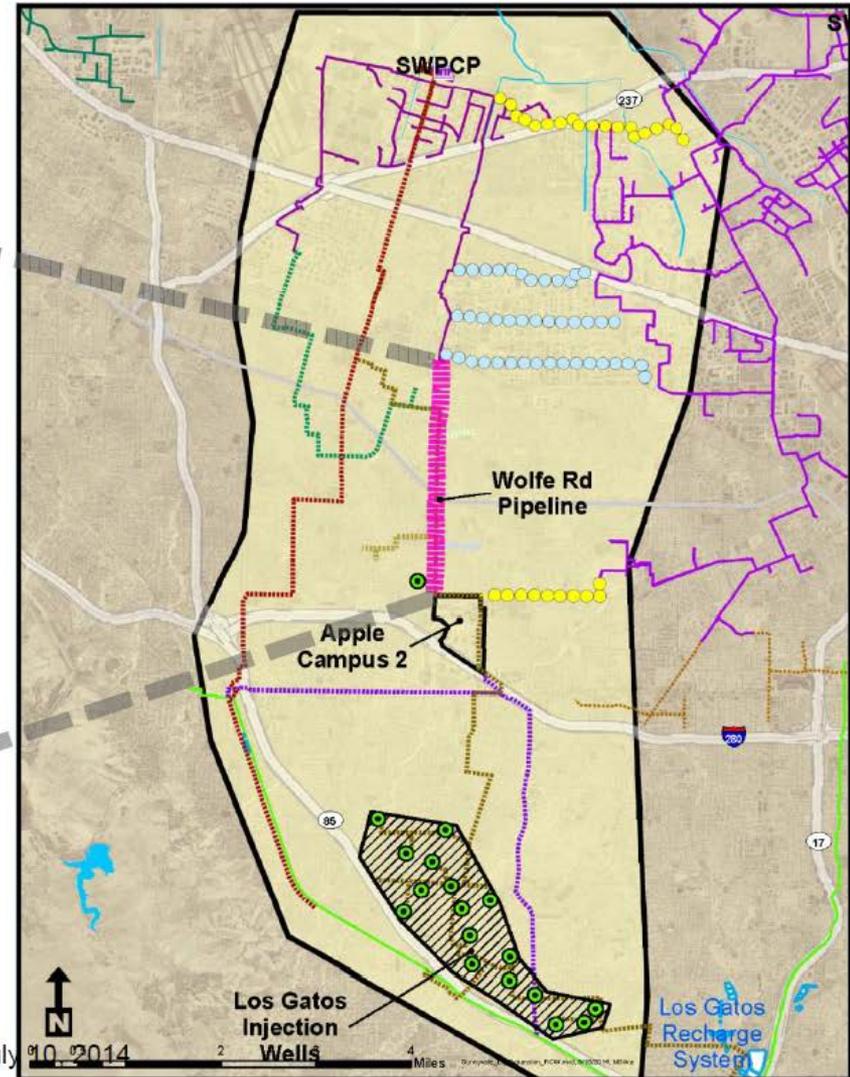


# Wolfe Road Pipeline

## Short-Term Expansion Wolfe Road Recycled Water Pipeline (1mgd)



## Long-Term Expansion of Recycled Water West Side of the County (11mgd)



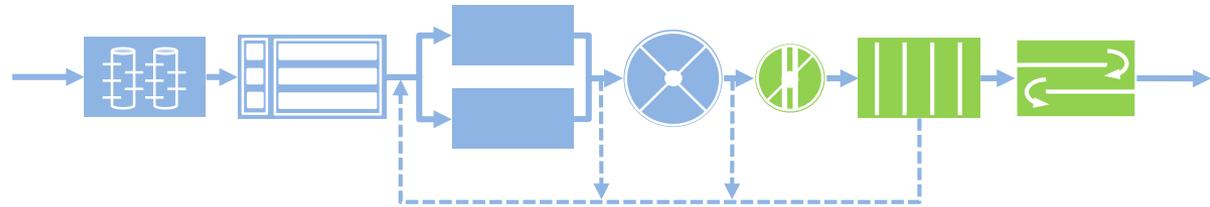
Joint Recycled Water Committee (SCVWD/City of Sunnyvale Elected Officials) – July 10, 2014

# Recycled Water

## *Continuous Recycled Water Production Facility*

- Provides **parallel** production of recycled water and San Francisco Bay discharge
- Currently produced in **batches**
- More **reliable** production
- **Proposition 84** State funded
- Part of larger project expanding **Wolfe Road pipeline** to new Apple® Campus 2 in Cupertino

<http://www.sunnyvalecleanwater.com/>



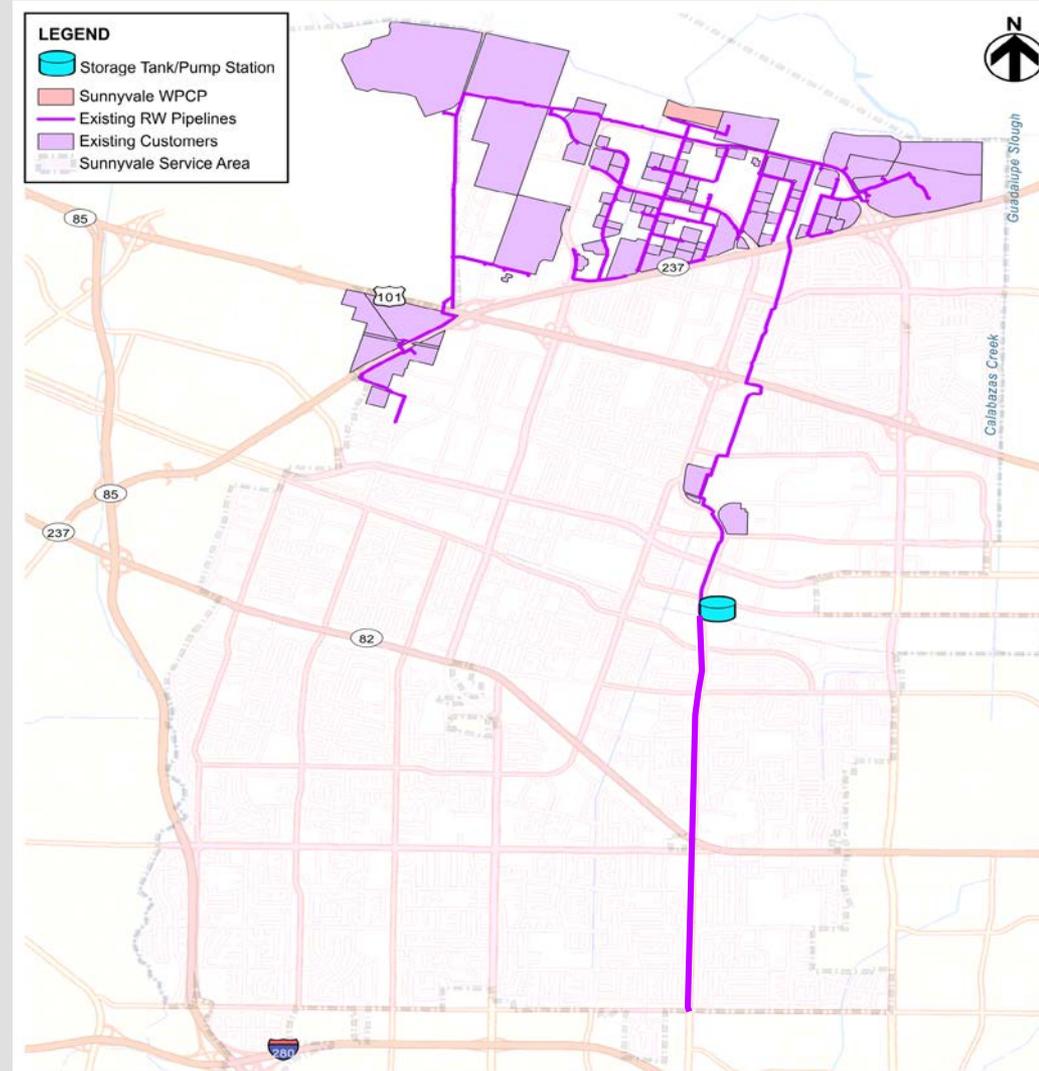
# Recycled Water – Continuous Production



# Recycled Water

## *Sunnyvale Distribution System*

- Approximately **75,000 ft** of distribution “purple” pipes
- Service provided to more than **100 sites**
- San Lucar Storage and Pumping Facility provides **2.5 million gallons** of storage
- Flexibility of adding **potable water** as a backup source of supply

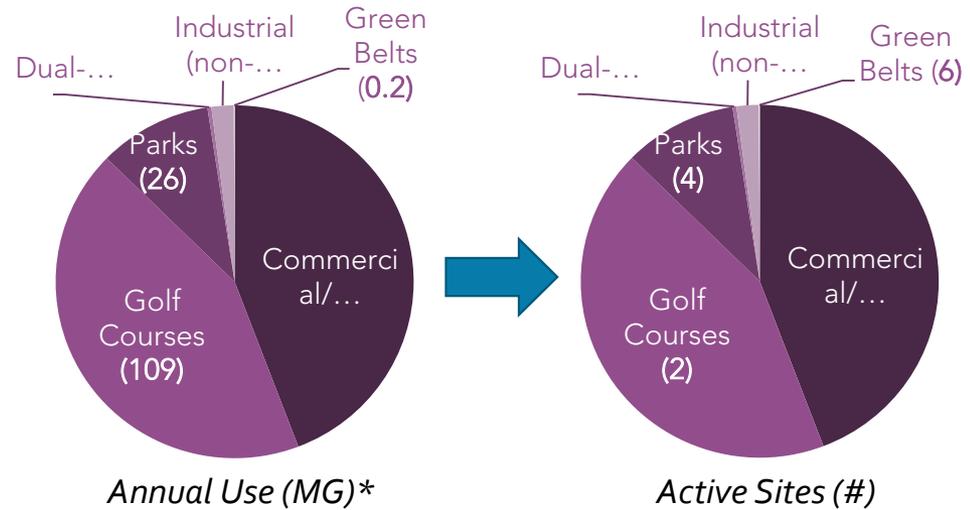
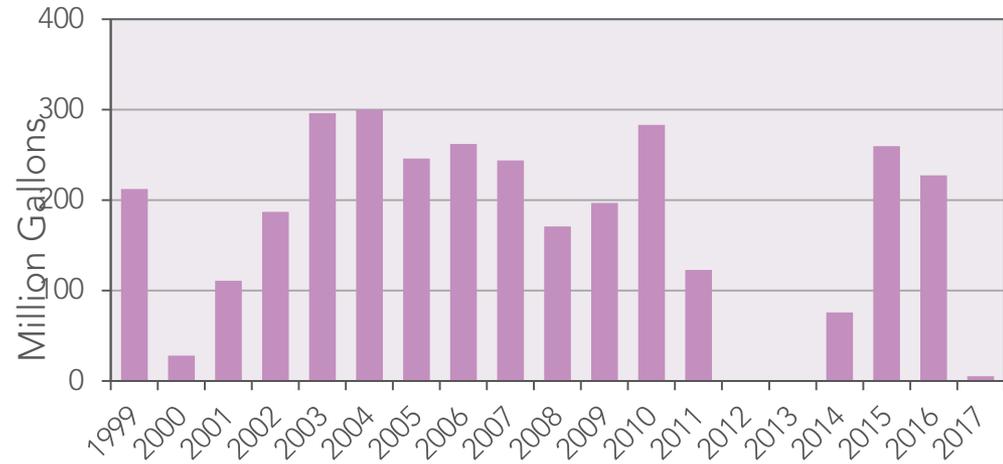




# Recycled Water

## Production and Uses

- Roughly 250 million gallons (770 acre feet) of recycled water produced in an average year
- Majority of use from Commercial/Industrial Irrigation and Golf Courses
- Handful of dual-plumbed sites but more anticipated
- No production in 2012-2013 and most of 2017 due to maintenance, capital projects, and operational challenges at the WPCP



\*2016 Annual Recycled Water Report



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Back Up slides

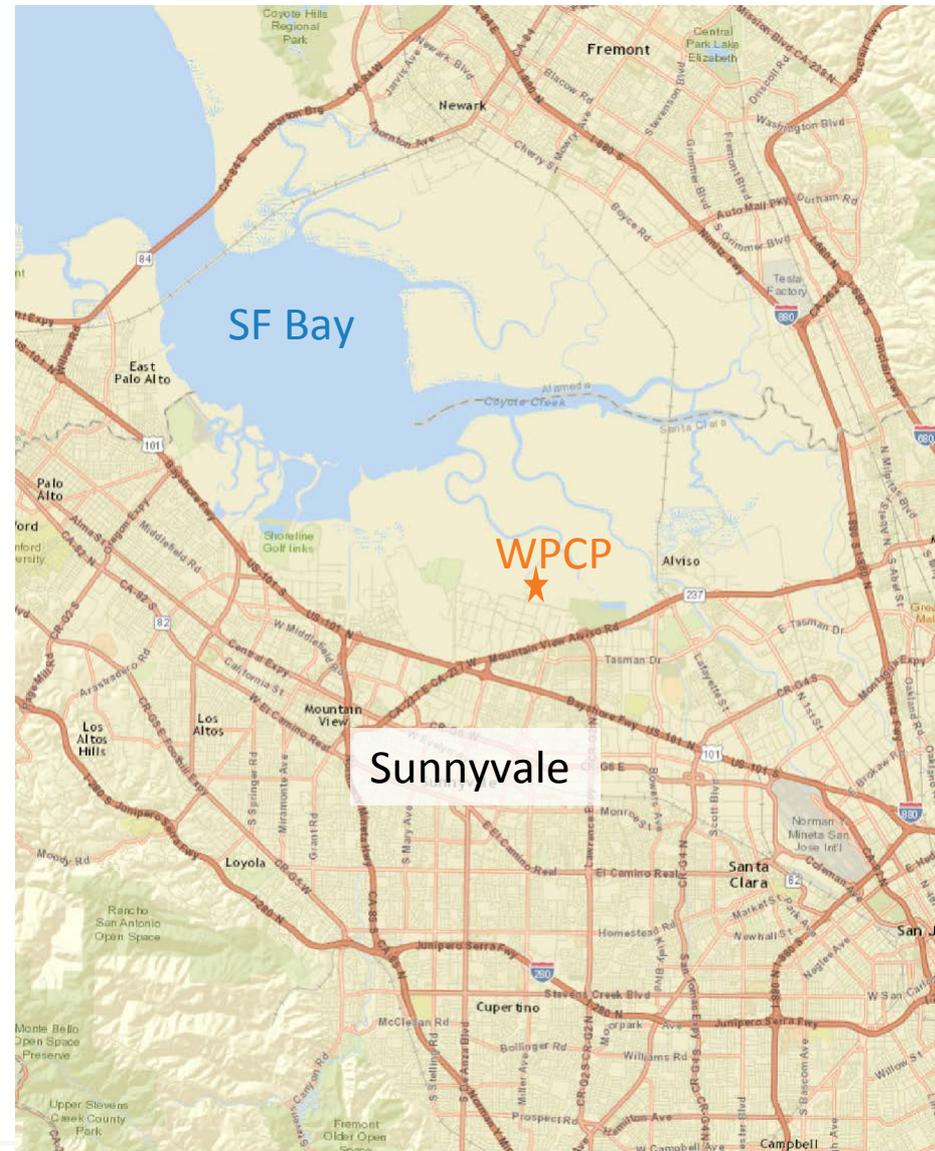


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# Existing Facilities

# Sunnyvale Water Pollution Control Plant (WPCP)

- Constructed in 1956
- Provides tertiary treatment
- Rated for 29.5 MGD
- Average dry weather flow is 13 MGD
- Serves a population of approx. 150,000
- Discharges to San Francisco Bay
- Produces ~250 MG of recycled water each year





Ponds 1 and 2  
(440± acres)

Pond 2

Pond 1

Main Plant  
(16.5± acres)

SMaRT  
Station

# Primary Treatment



Primary Treatment  
(Pumping/  
Grit Removal/  
Sedimentation Tanks)



**Pumping**

**Sedimentation Tanks**



**Grit Removal**

# Secondary Treatment



Secondary Treatment  
(FGRs/Air Flotation/Ponds)

**FGRs**



**Air Flotation**



# Tertiary Treatment



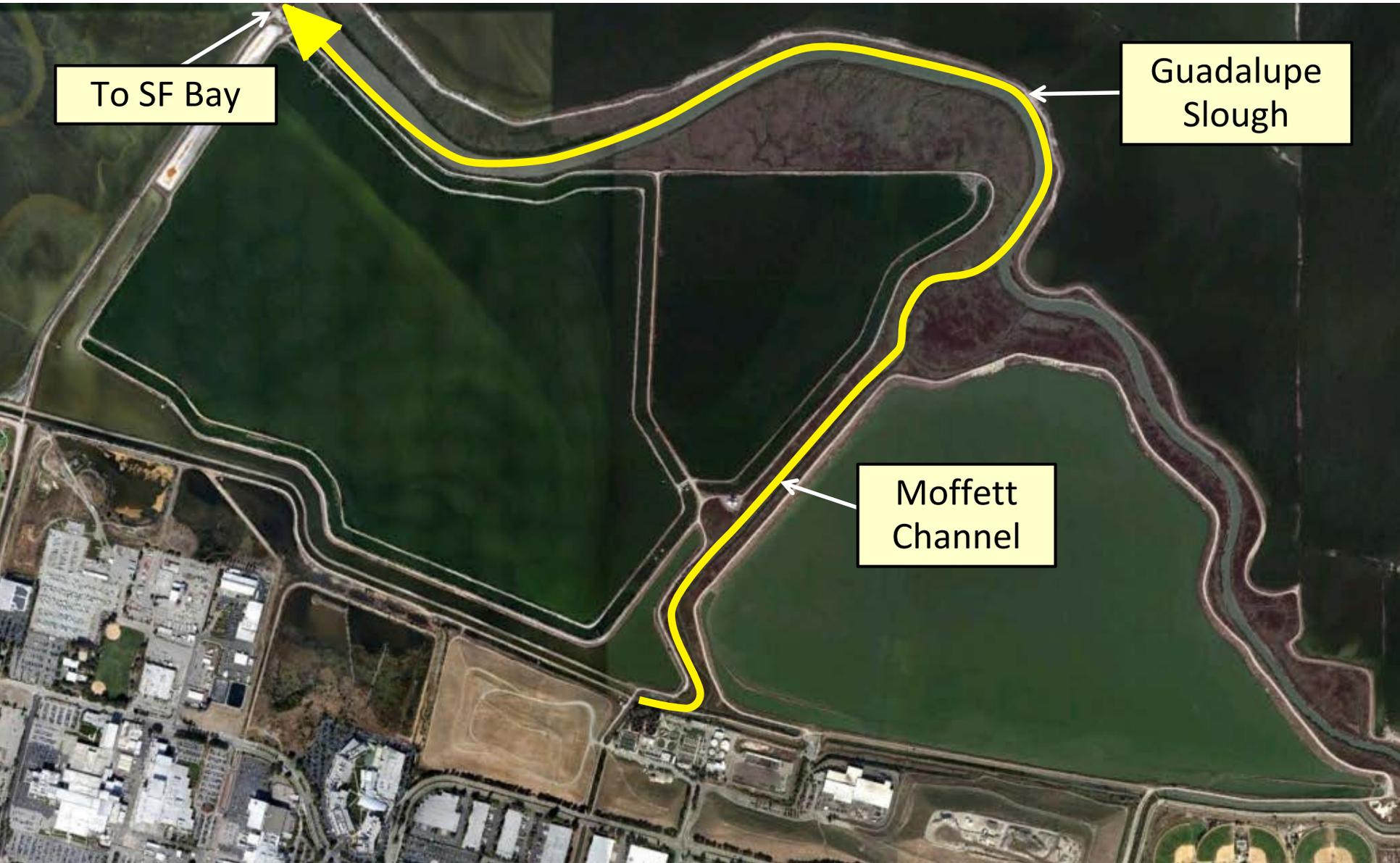
**Sand Filters**



**Chlorination**



# Overall Plant Site – Plant Effluent

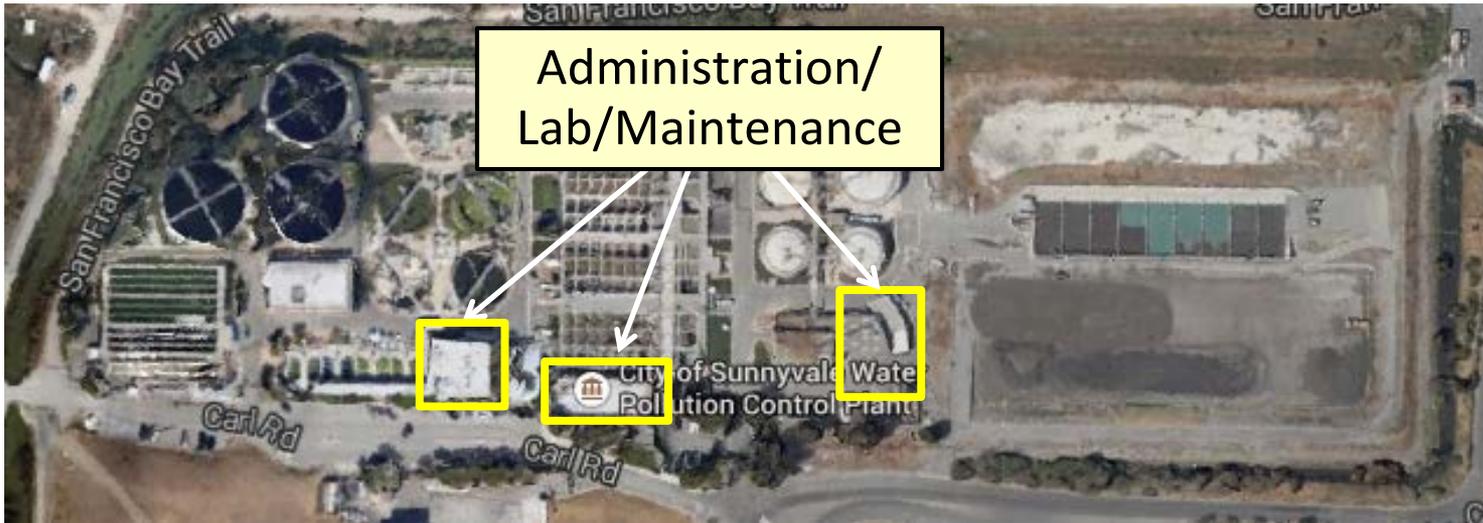


To SF Bay

Guadalupe Slough

Moffett Channel

# Administration/Lab/Maintenance



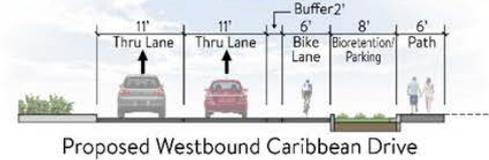
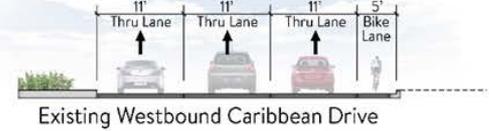
**Administration**



**Laboratory**

# Proximity to Landfill

Closed  
Landfill

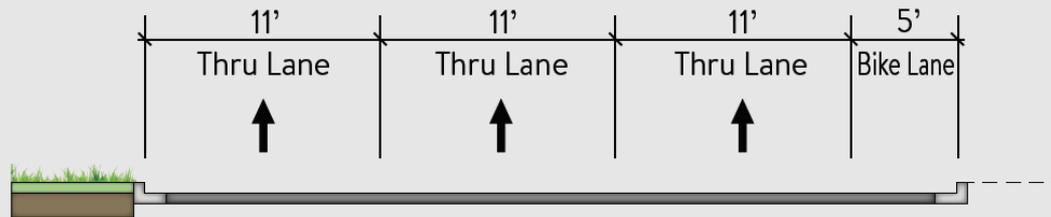


Winter 2018



# DRAFT - Design Under Consideration

**Existing Conditions**  
(38' TC-TC)  
(38' Total)



**Current Design**  
(38' TC-TC)  
(48' Total)

