

Council Presentation

Water Pollution Control Plant

MASTER PLAN AND PRIMARY TREATMENT FACILITY



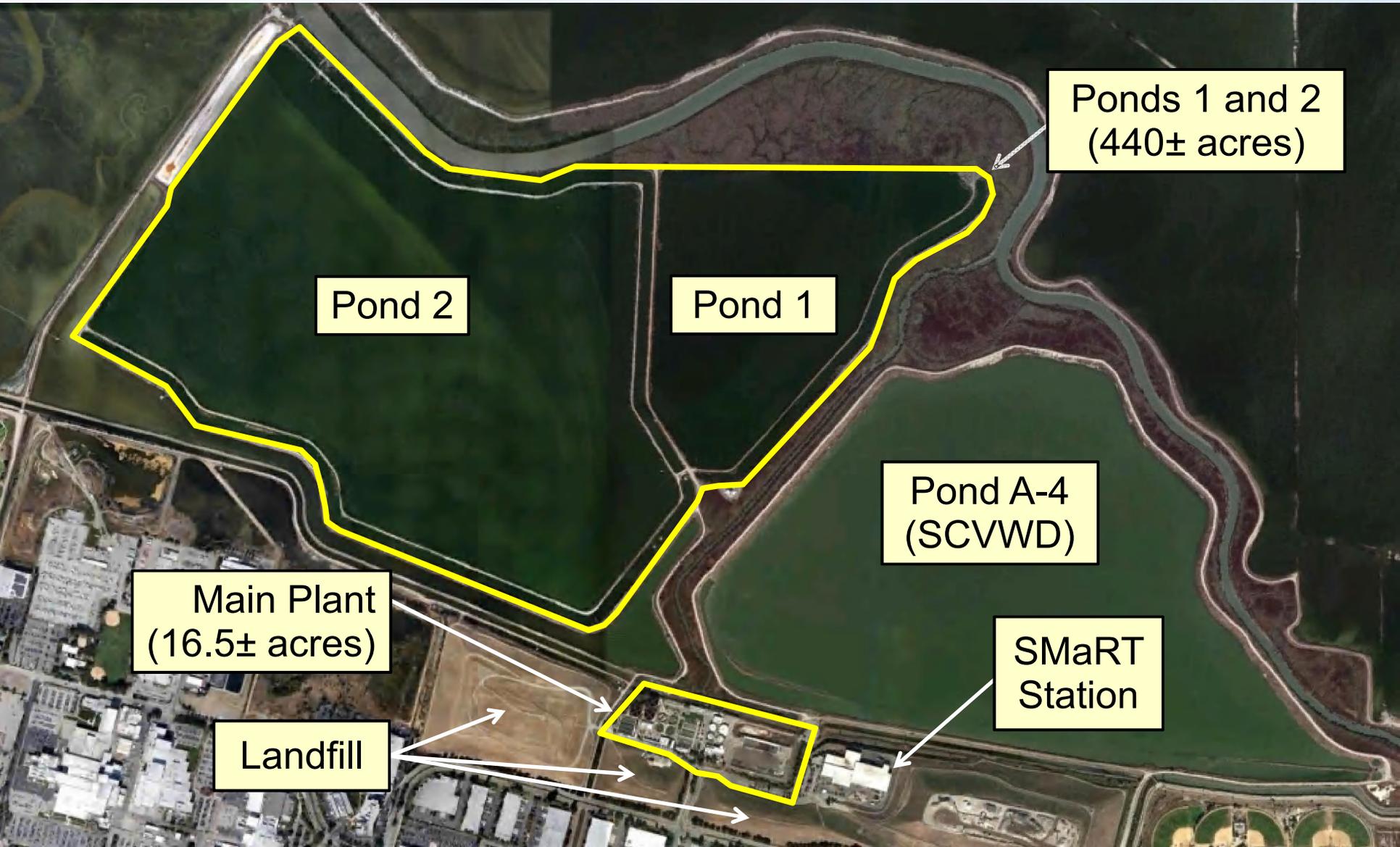
June 24, 2014

carollo
in association with **HDR**

Presentation Summary

- ✓ Planning Process
- ✓ Existing Process Facilities
- ✓ Master Plan Findings
 - Recycled Water Opportunities
 - Overall Site Impacts
 - Energy Optimization
- ✓ Primary Treatment Facilities
- ✓ Overall Cost Summary
- ✓ Environmental (CEQA)
- ✓ Program Implementation
- ✓ Next Steps

Overall Plant Site



Ponds 1 and 2
(440± acres)

Pond 2

Pond 1

Pond A-4
(SCVWD)

Main Plant
(16.5± acres)

Landfill

SMaRT
Station

Main Plant Site (WPCP)



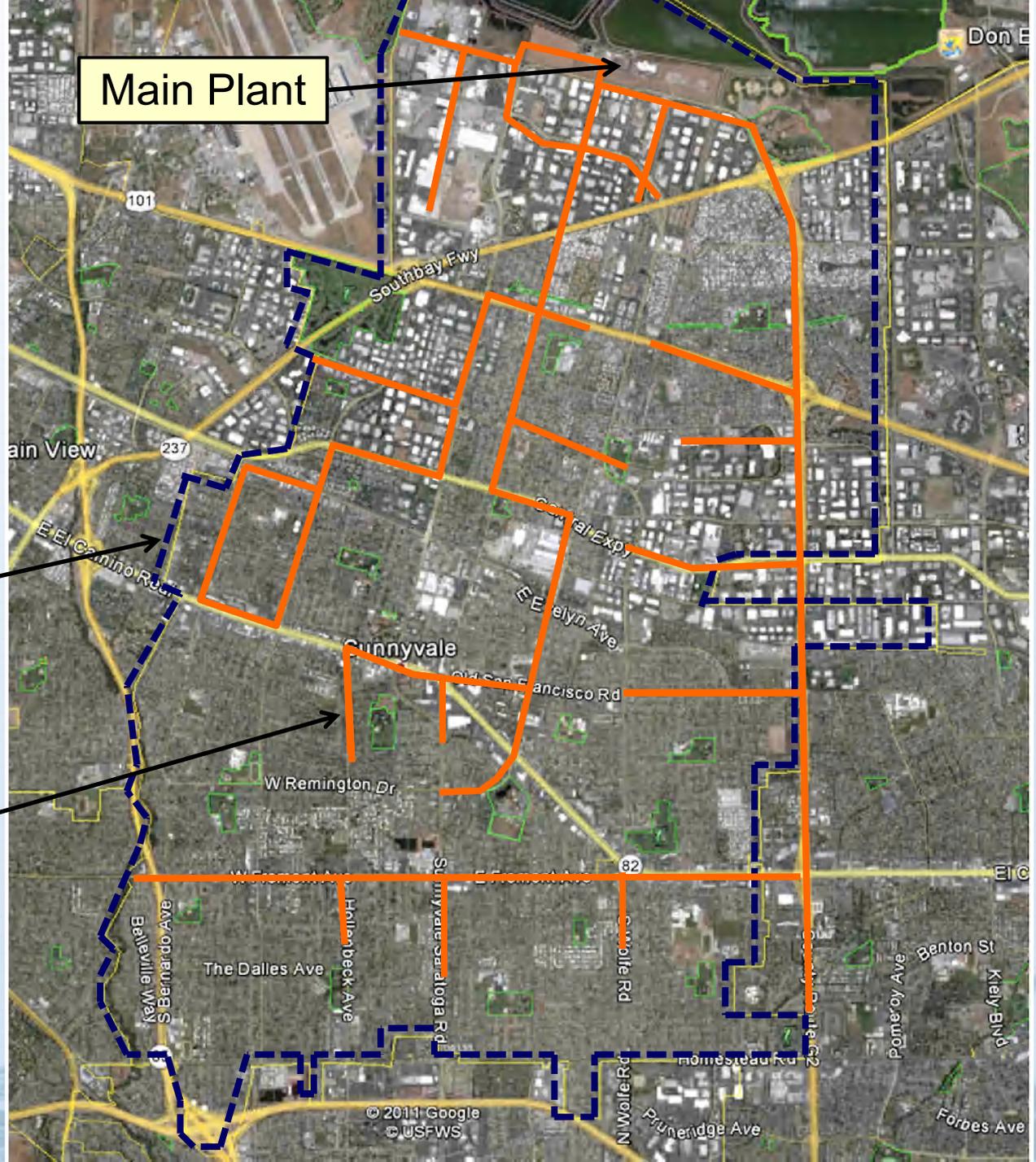
Existing Process Facilities

Collection System Conveys Raw Sewage to Plant

Main Plant

City Limits

Conveyance System



Main Plant Site (WPCP)



Primary Treatment
(Pumping/
Grit Removal/
Sedimentation Tanks)



City of Sunnyside Water
Pollution Control Plant

Primary Treatment



Pumping

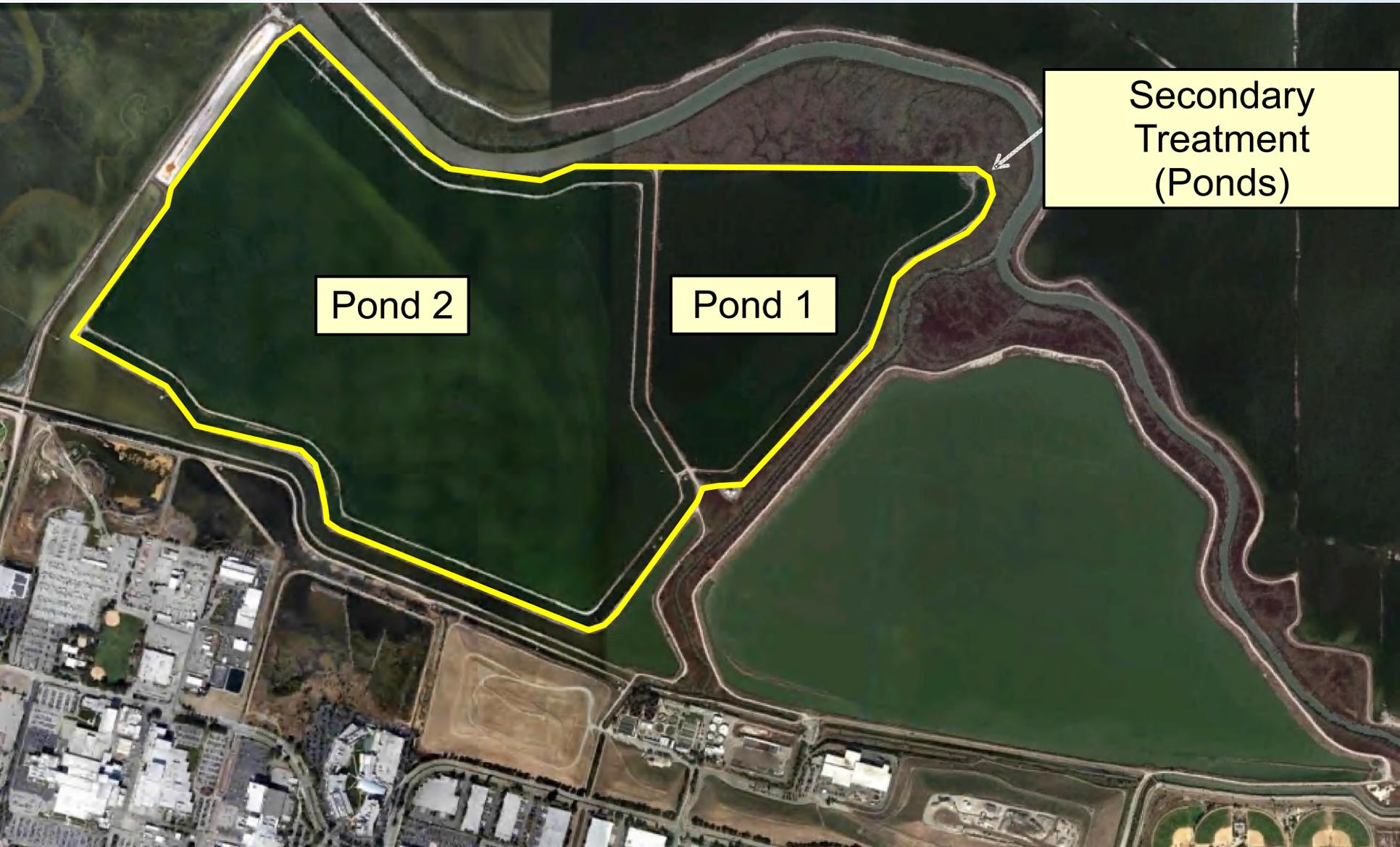


Grit Removal



Sedimentation Tanks

Main Plant Site (WPCP)

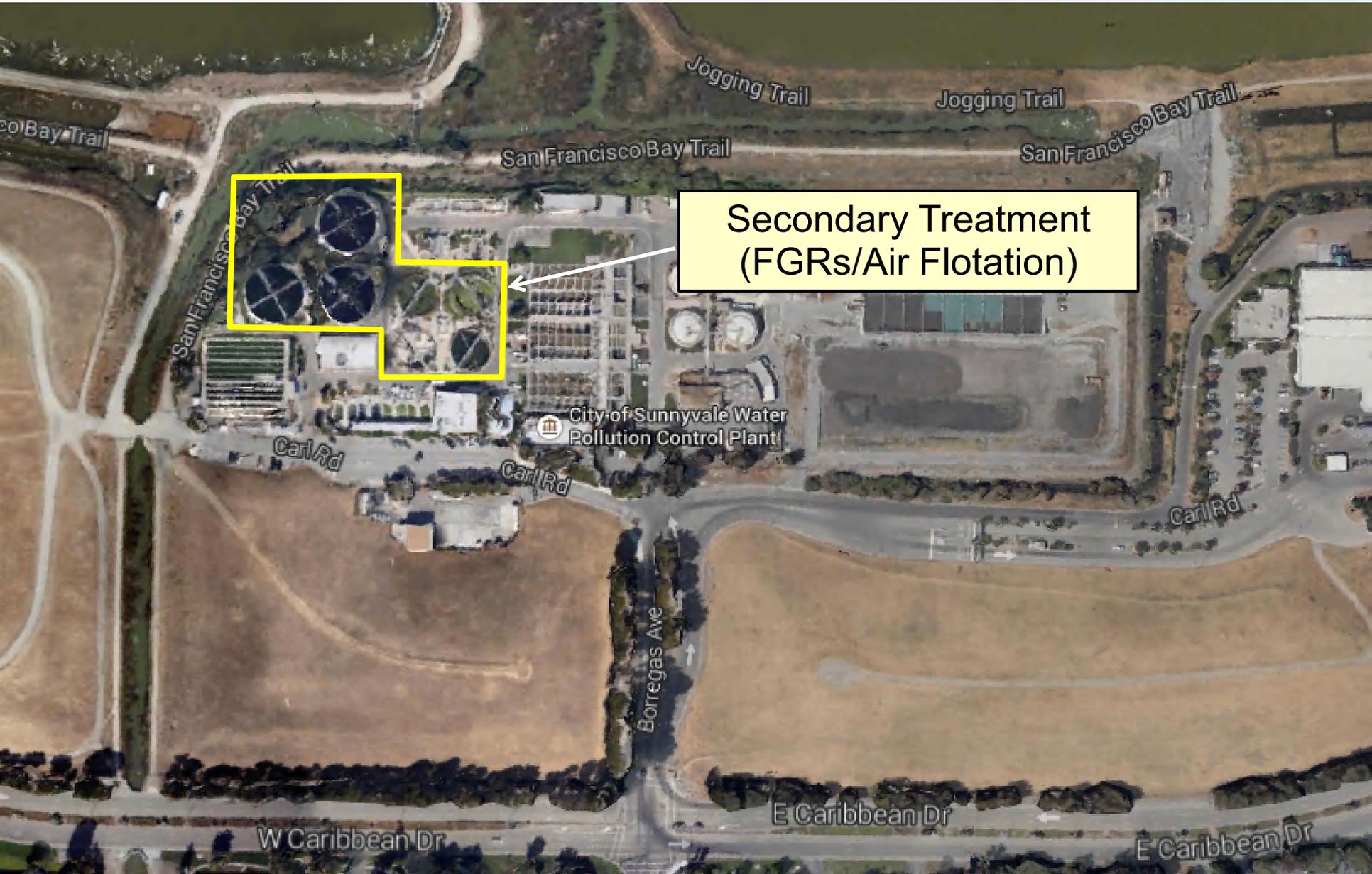


Pond 2

Pond 1

Secondary Treatment (Ponds)

Main Plant Site (WPCP)



Secondary Treatment
(FGRs/Air Flotation)

City of Sunnyvale Water
Pollution Control Plant

Secondary Treatment

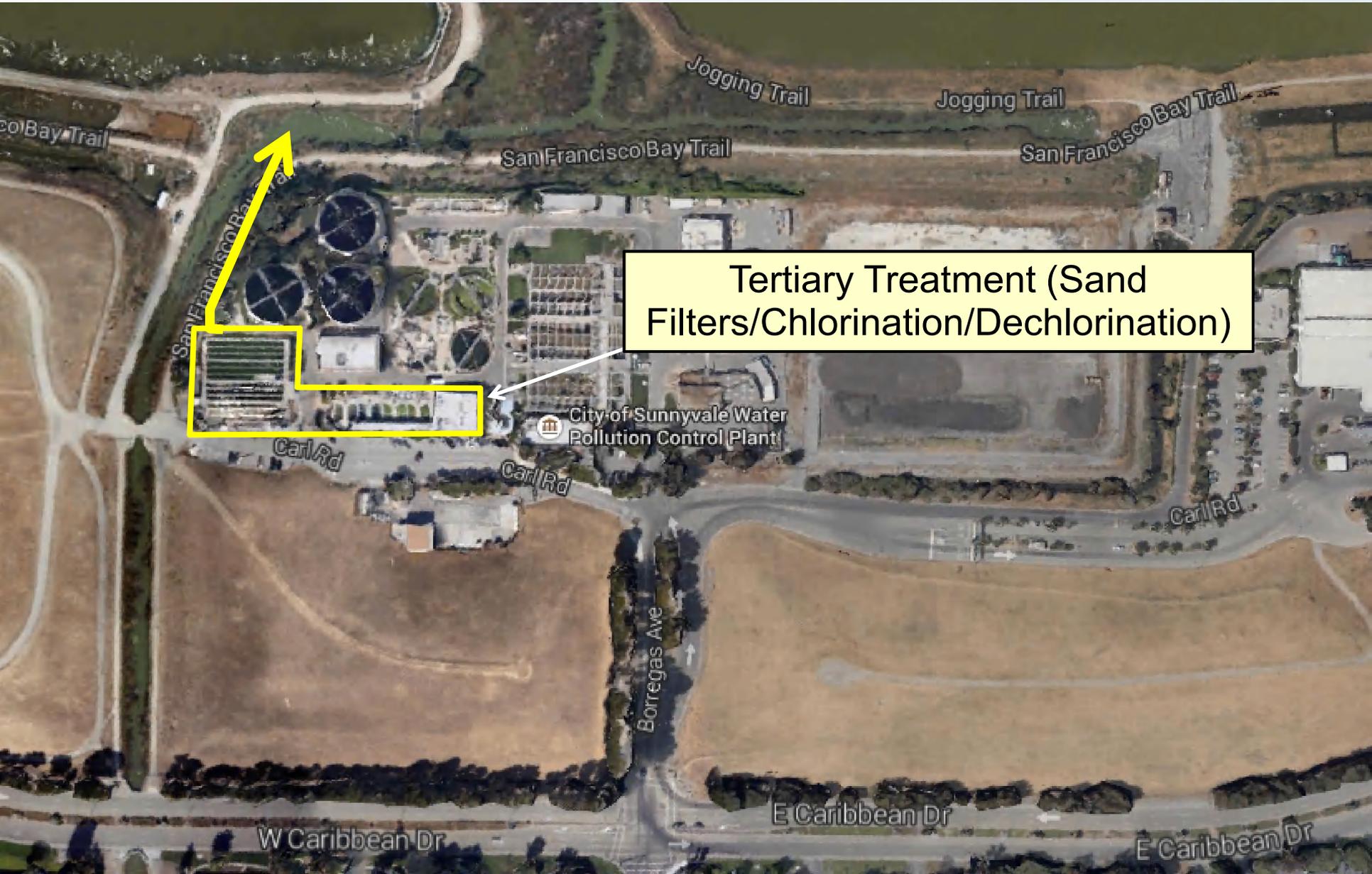


FGRs



Air Flotation

Main Plant Site (WPCP)



Tertiary Treatment (Sand Filters/Chlorination/Dechlorination)

City of Sunnyvale Water Pollution Control Plant

Tertiary Treatment

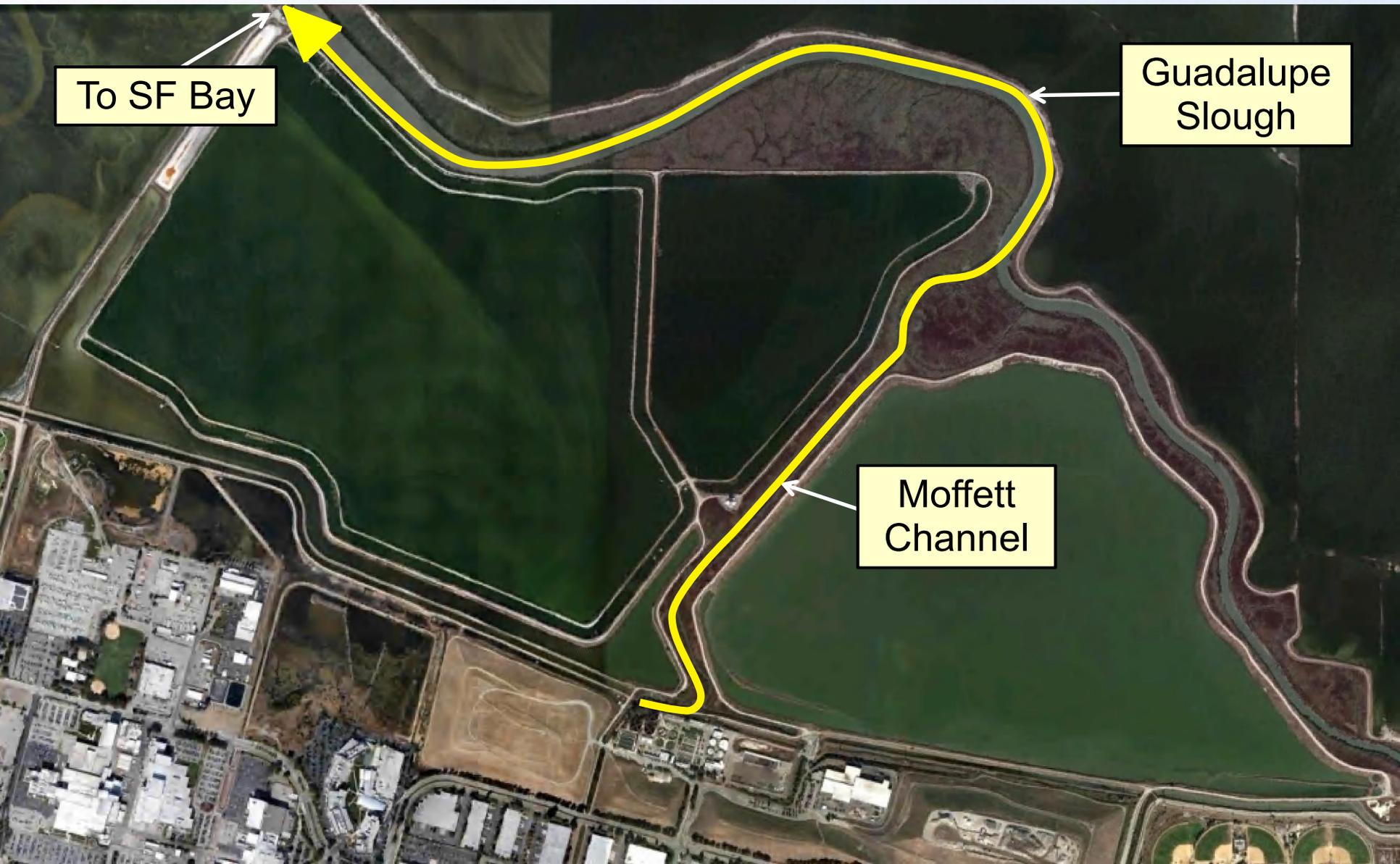


Sand Filters



Chlorination

Overall Plant Site

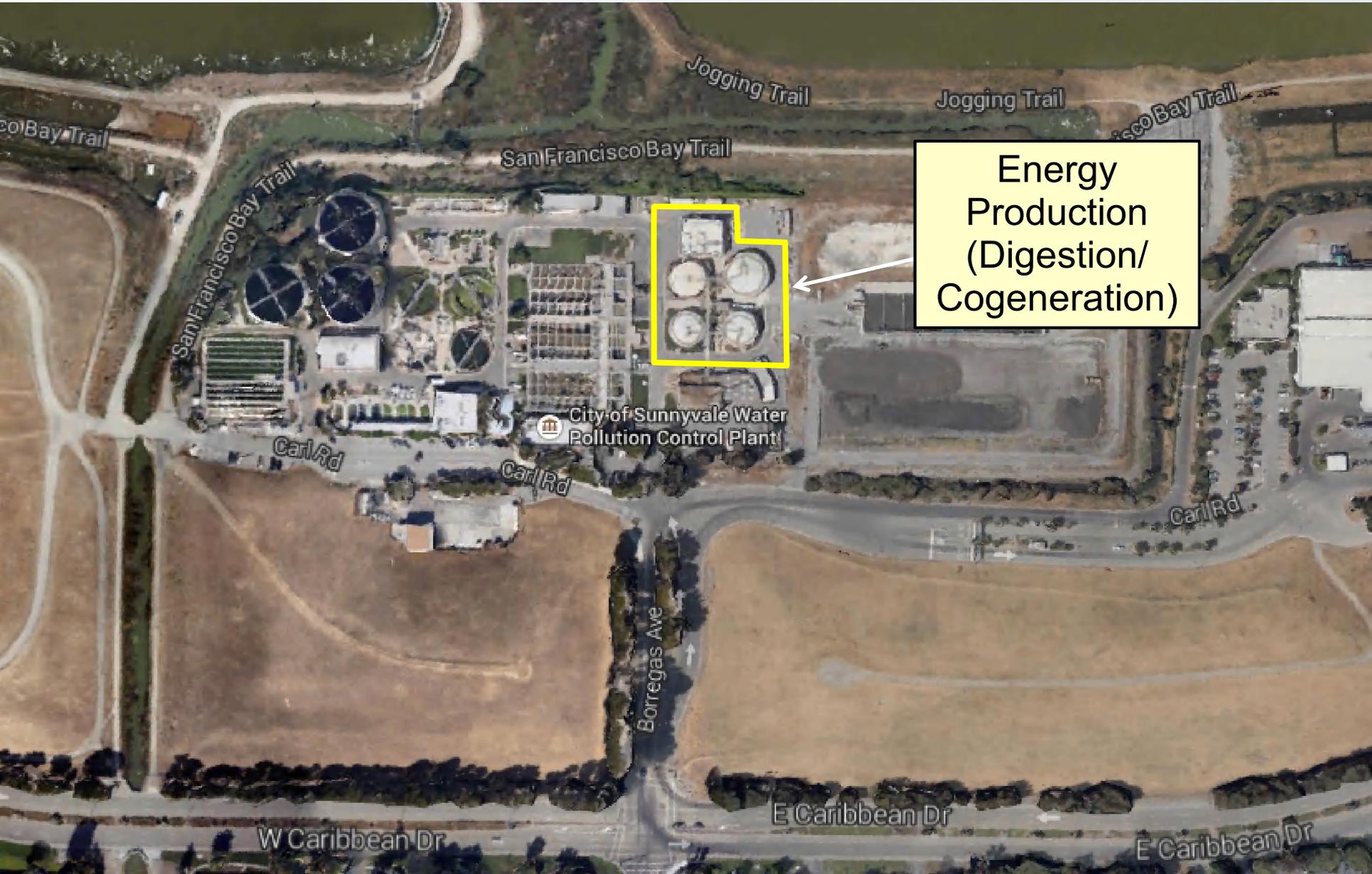


To SF Bay

Guadalupe Slough

Moffett Channel

Main Plant Site (WPCP)



Energy
Production
(Digestion/
Cogeneration)

City of Sunnyvale Water
Pollution Control Plant

Energy Production



Digesters

Engine Generator



Main Plant Site (WPCP)



Solids Drying

Solids Drying



Dewatering Tiles



Air Drying

Main Plant Site (WPCP)



Administration/
Lab/Maintenance

Administration/Lab/Maintenance



Administration



Administration/Lab/Maintenance

Maintenance



Administration/Lab/Maintenance



Laboratory

Planning Process

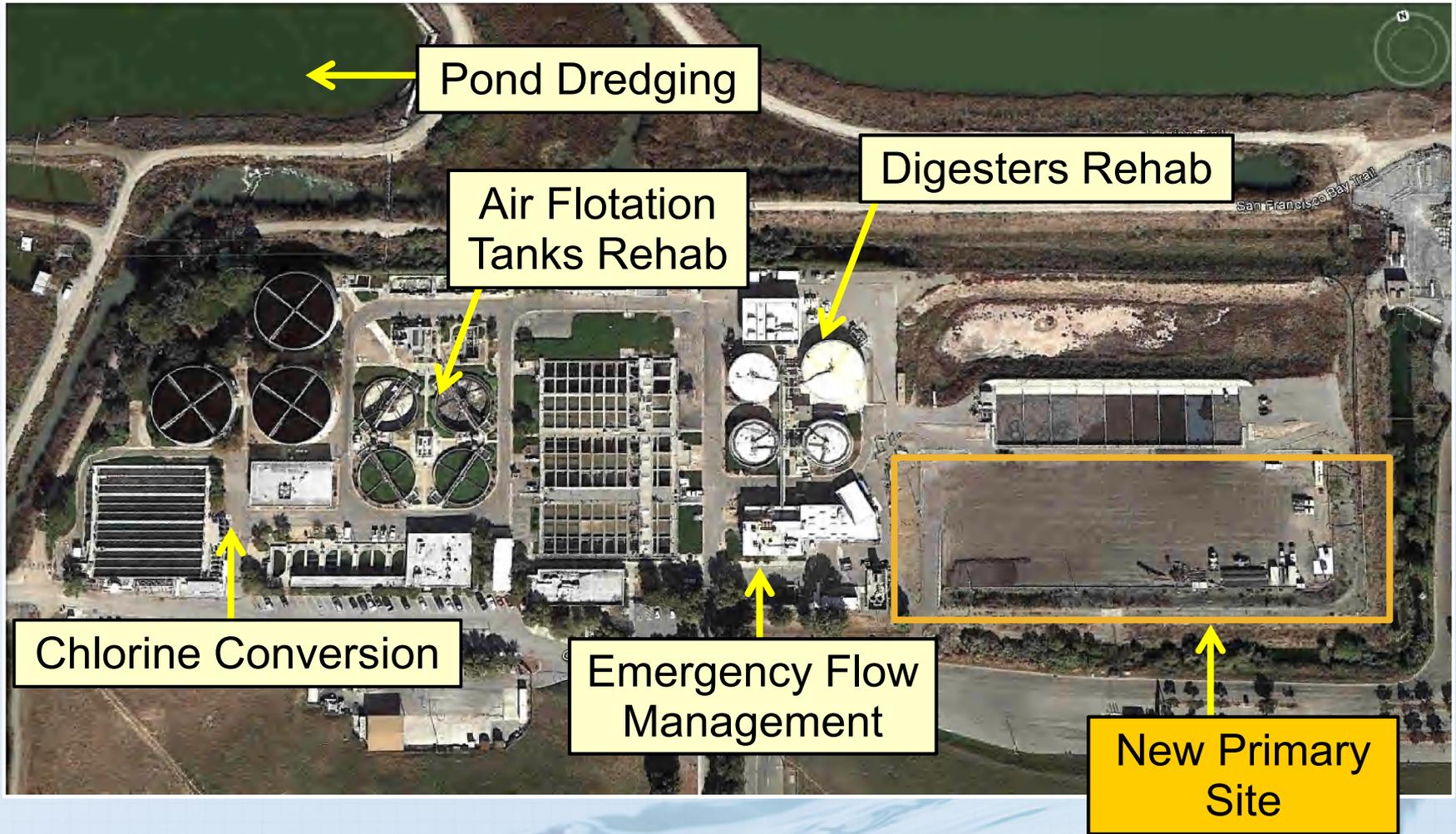
Strategic Implementation Plan (SIP) – Initiated in 2008

- Addressed WPCP improvements
- Peer review of the SIP was completed in 2011
- Major outcomes
 - Replace instead of rehabilitate the existing plant
 - Secondary treatment options identified for further evaluation
 - Treatment ponds
 - Conventional activated sludge (CAS)
 - Membrane bioreactor activated sludge (MBR)

Recommendations from the Strategic Implementation Plan (SIP)

- Gap Projects (in progress)
- Master Planning (in progress)
- New Primary Treatment Facilities (in design)
- Program Management (ongoing)

Gap Projects



2012 Master Plan – Included Completion of Various Background Investigations

- Documented existing utilities
- Performed geotechnical (soils) investigation
- Updated land survey
- Reviewed site for potential hazardous conditions
- Identified opportunities and constraints
- Updated projection of future flows

Master Plan Further Refined the SIP Recommendations

- Liquid treatment alternatives
- Solids treatment alternatives
- Energy optimization
- Site layout considerations
- Support facilities (new admin/maint. buildings)
- Plant automation

Master Plan Findings

Primary Focus of the MP was Replacement of the Secondary Process

- Identified options to replace ponds/filter/flotation units



Conventional Activated Sludge (CAS)

Membrane Bioreactor (MBR)



Future Facilities Needs (>2035) Conventional Activated Sludge (CAS)



Liquid Treatment

Solids Treatment

Support Facilities/Utilities

Rehabbed Facilities

Facilities/Utilities

Future Facilities Needs (>2035) Membrane Bioreactor (MBR)



Liquid Treatment

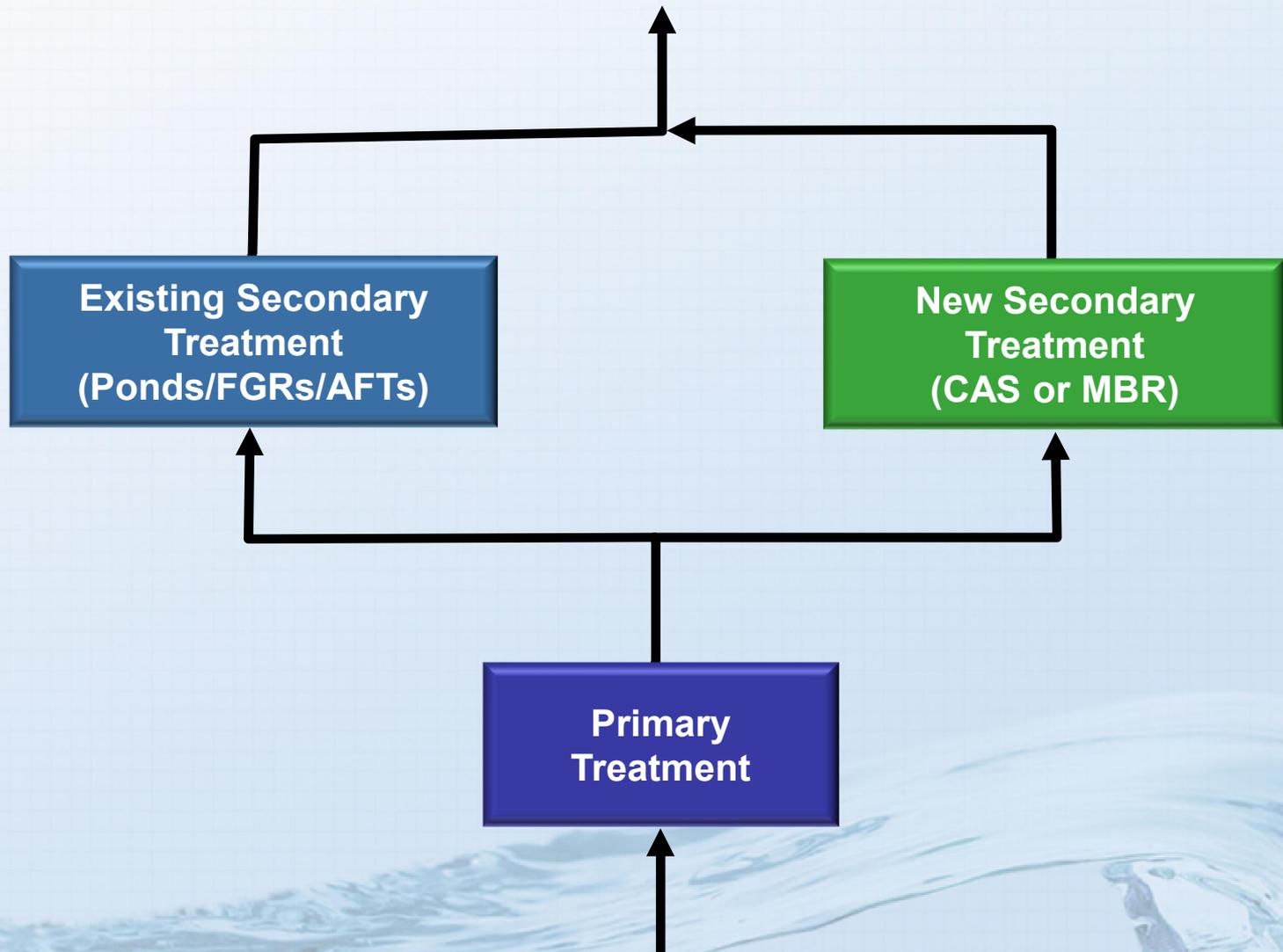
Solids Treatment

Support Facilities/Utilities

Rehabbed Facilities

Facilities/Utilities

Split Treatment Provides for Blending of Two Process Streams



Drivers for Split Flow Treatment – Provides Flexibility

- Regulatory uncertainty
- Growth uncertainty
- Technological advances
- Cash flow management

Recycled Water Opportunities

Recycled Water Opportunities

- Feasibility Study for Recycled Water Completed in 2013
 - 3.6 mgd of nonpotable demand over 20 years
 - Requires distribution system investment (\$100± million)
- Partnership on potable water project with Santa Clara Valley Water District
 - City provides treated effluent and space at the WPCP

MBR Site Configuration Provides Space



Liquid Treatment



Solids Treatment



Support

Facilities/Utilities



Rehabbed Facilities

Overall Site Impacts

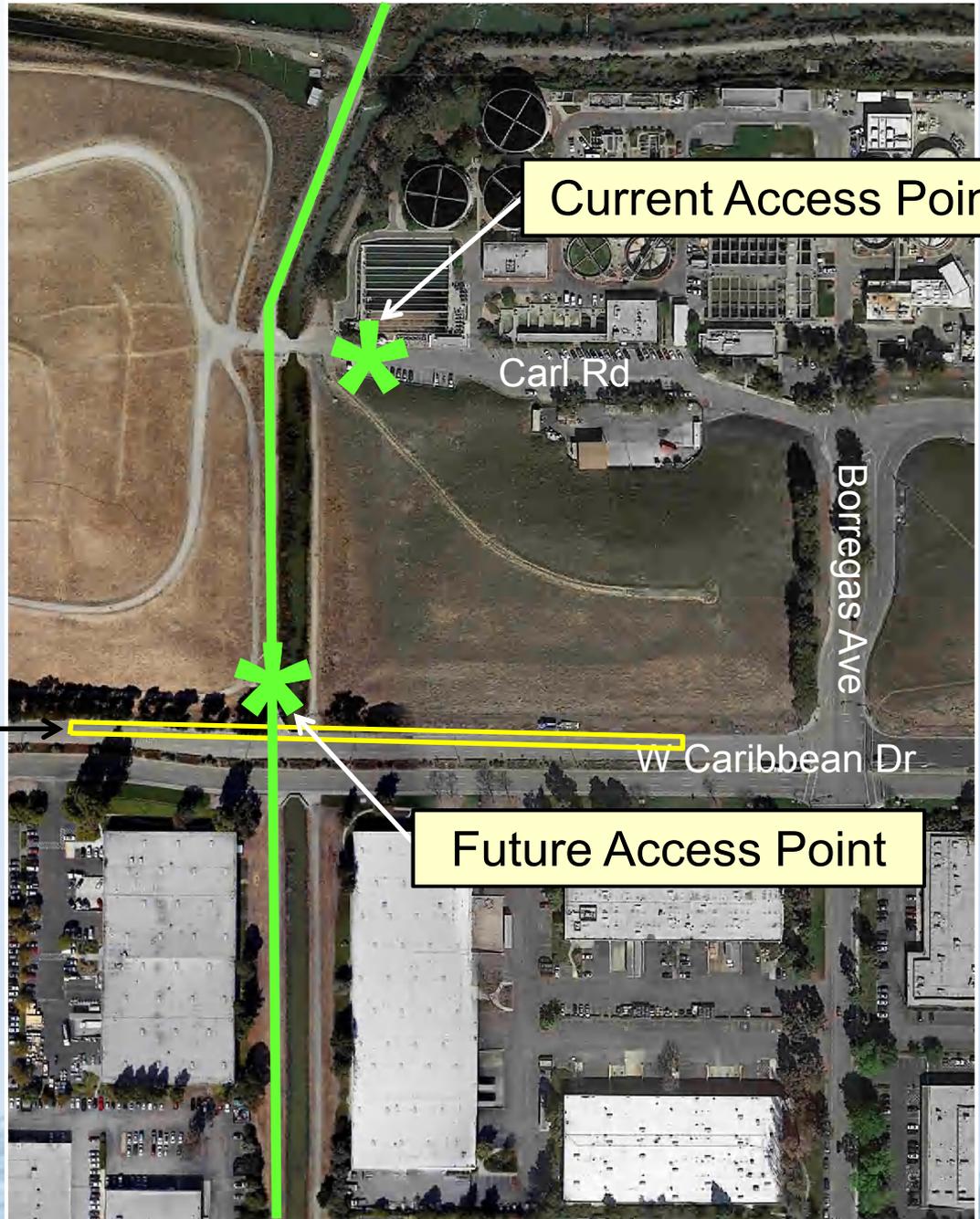
Process Needs Required Expansion of Available Site Space



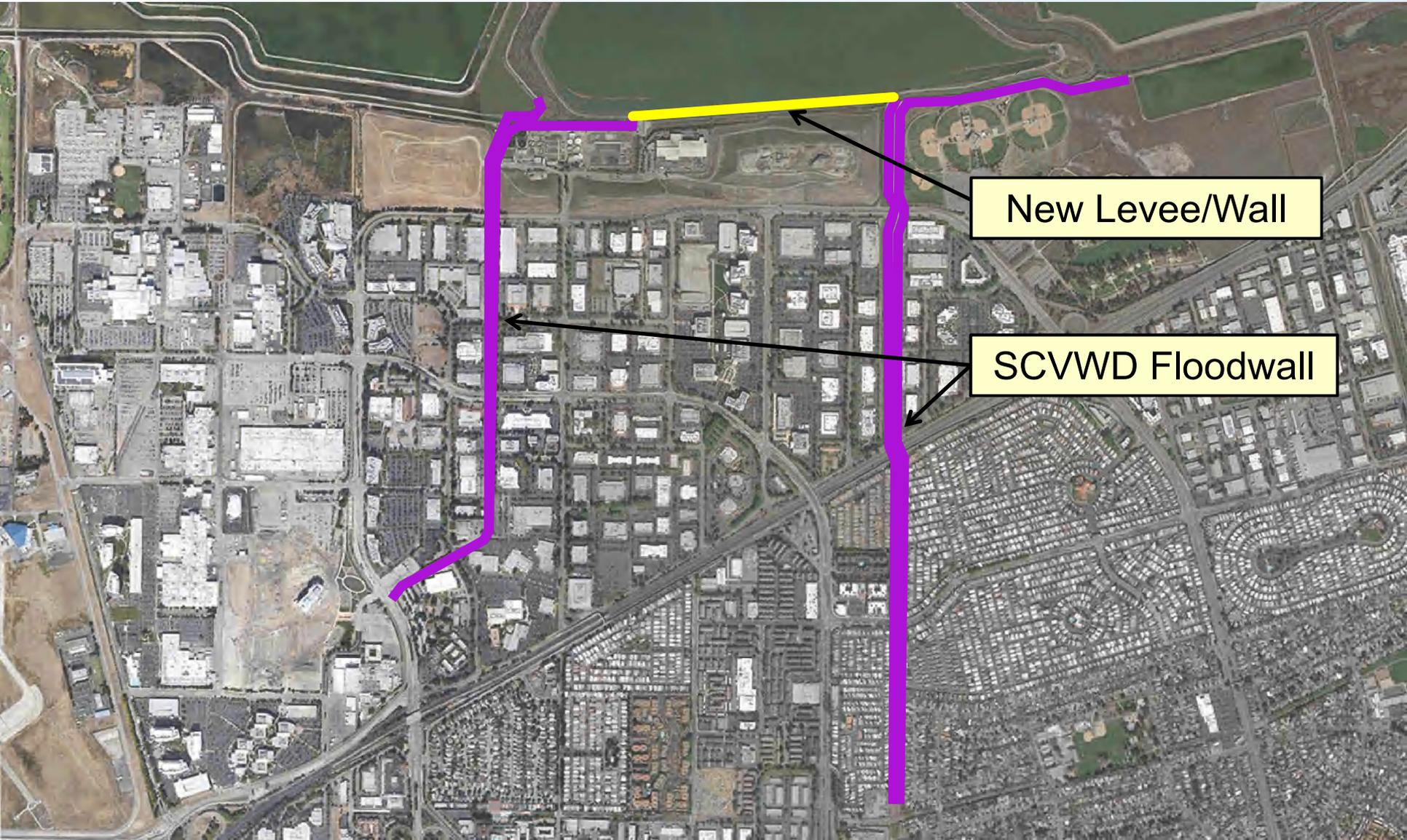
-  Liquid Treatment
-  Solids Treatment
-  Support Facilities/Utilities
-  Rehabbed Facilities

Access to Bay Trail Will Be Improved

Closure of One Lane for Parking and New Access from Caribbean Drive



Protection Against Tidal Flooding and Sea Level Rise will be Provided



New Levee/Wall

SCVWD Floodwall

Energy Optimization

Digester Process Stabilizes Solids from Primary/Secondary Treatment – Converts to Methane Gas



Upgrades to Engine Generation will Provide More Efficient Power Production from Methane Gas Produced

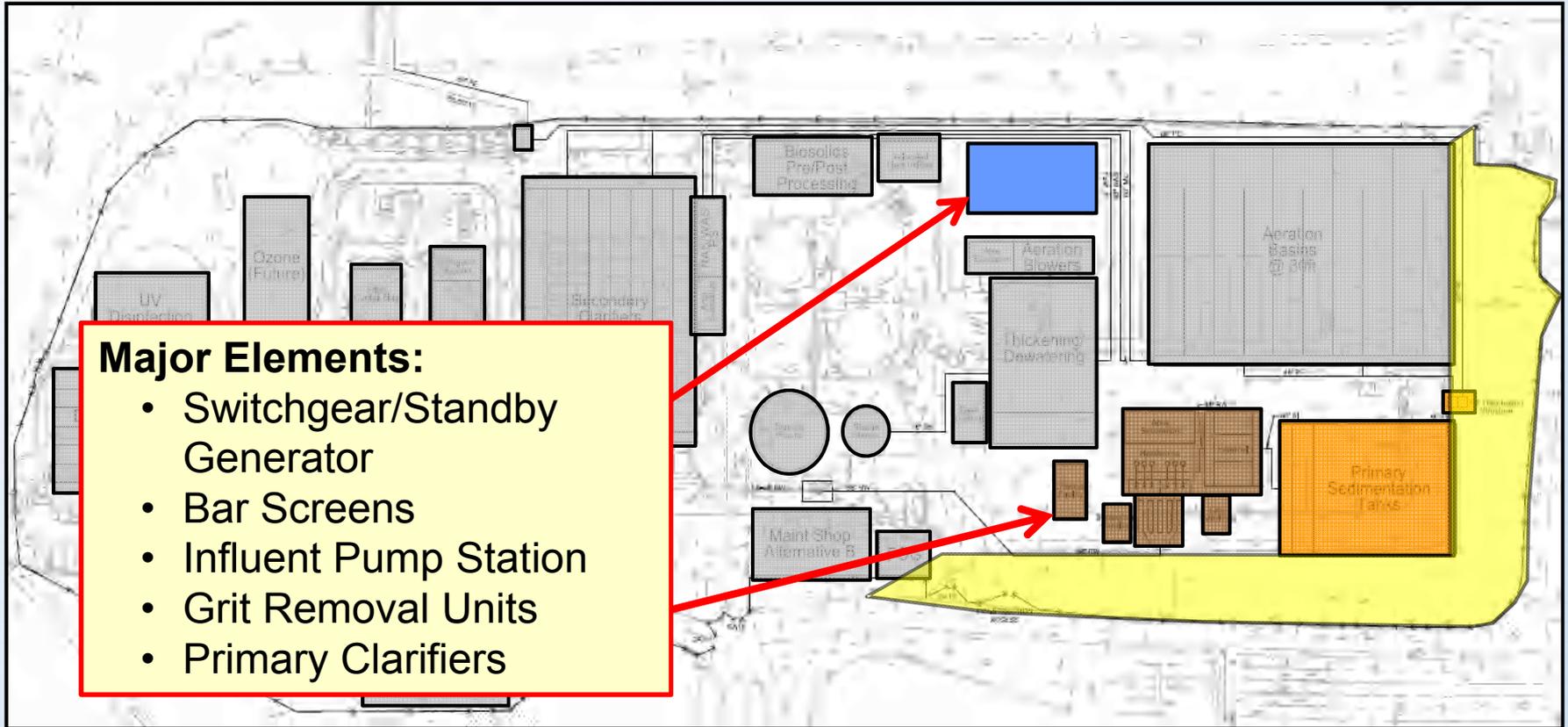


**Collection of Fats, Oil,
and Grease (FOG),
along with continued
use of landfill gas, will
Increase Power
Generation Capabilities**



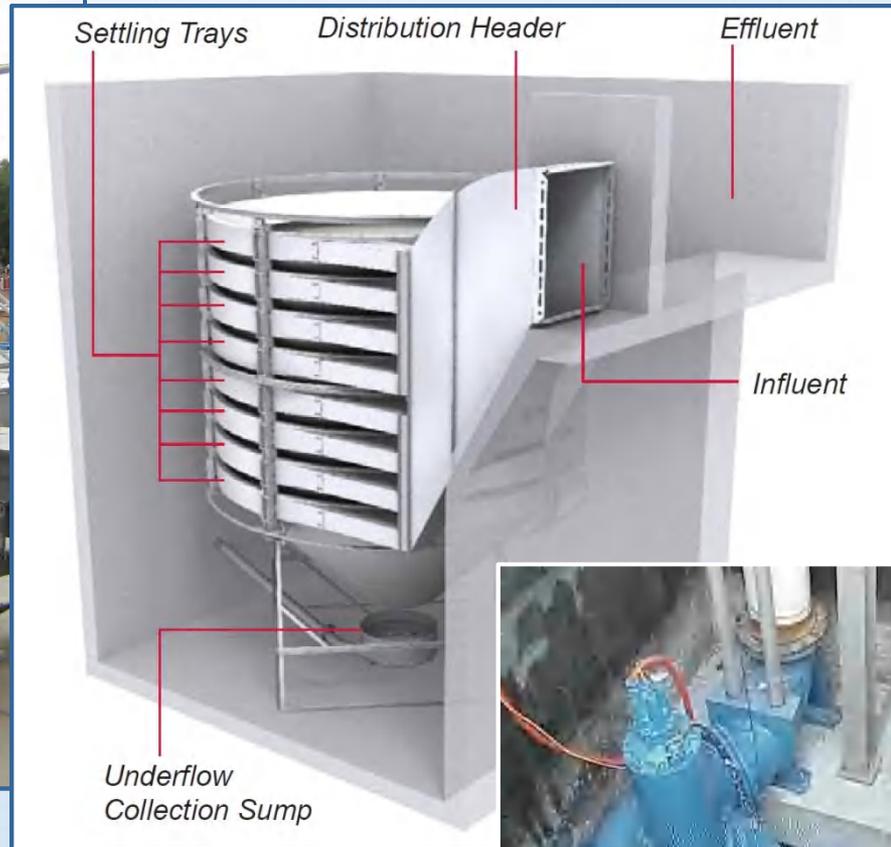
Primary Treatment Facilities

Future Headworks/Primary Facilities



Major Headworks Components

Grit Removal

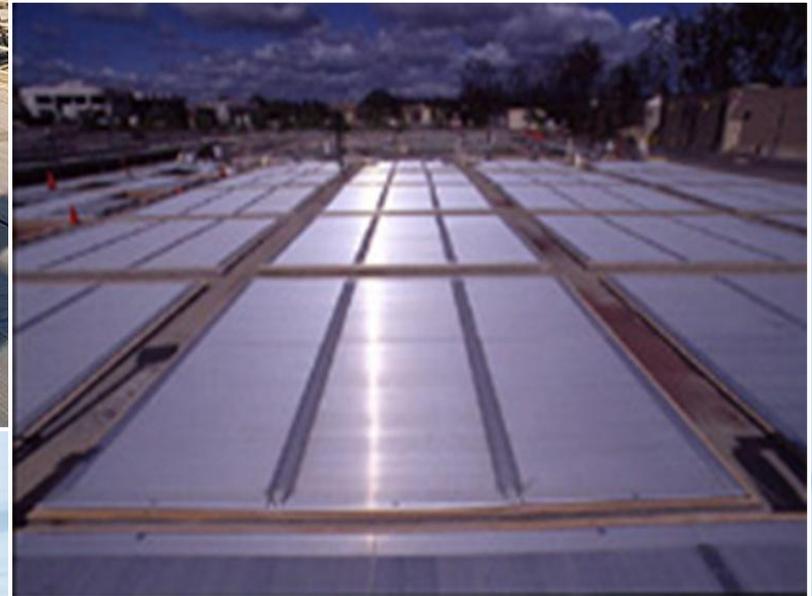


Screening



Pumping

Primary Sedimentation Basins are Designed to Maximize Solids Removal



Standby Generators will be Added to Improve Overall Plant Process Reliability



Improved Automation will Provide Operational Efficiencies



Overall Cost Summary

CEQA / Project Implementation

Cost Estimate - Headworks/Primary Project (June 2014 Dollars)

- Current estimate at \$100± million
 - Expanded site needs - \$5 million
 - Sizing tankage for higher projected flows - \$2 million
 - Automation & electrical backbone - \$6 million
 - Odor control - \$1 million

Current Program Cost Estimate (June 2014 Dollars)

Scenario	2026	2035
Split Flow CAS	\$250M±	\$390M±
Full CAS	\$325M±	\$375M±

Two Different Environmental Documents

Primary Project

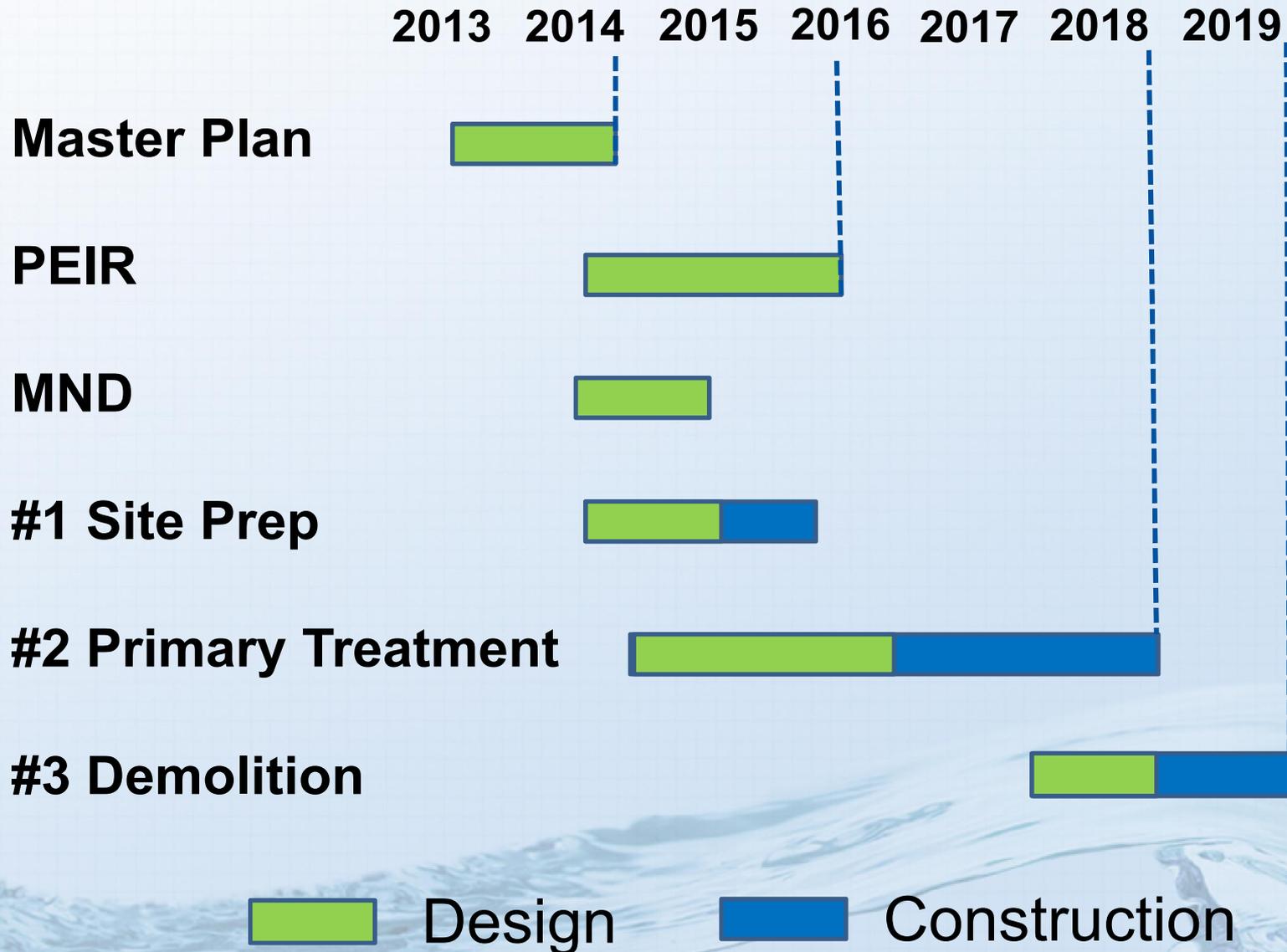
- Mitigated Negative Declaration
- Project specific
- Used where there are no significant impacts to be mitigated
- Less costly and shorter approval schedule

Master Plan

- Programmatic
- Used to address long term project impacts
- Reduces project specific CEQA effort



Approximate Milestones



Next Steps

Next Steps – Council Actions

- Winter 2015 - CEQA documentation for headworks/primary project
- Spring 2015 – Primary package #1 award
- Summer 2015 - Construction management contract for headworks/primary project
- Winter 2016 – CEQA documentation for master plan

Next Steps – Staff

- Recycled water alternatives
- Split flow analysis
- Public outreach
- Financing alternatives