CLEANWATERPROGRAM

PROTECTING THE BAY FOR A SUSTAINABLE FUTURE

Park & Recreation Commission Meeting
Underground Storage Facility Alternatives Process & Progress Update

September 2016

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PROTECTING THE BAY FOR A SUSTAINABLE FUTURE

Purpose – Address Questions

- What is the best SSO prevention alternative?
- Where can Underground Storage Facilities be located?
- Can Underground Storage Facilities be built with proven odor, noise and nuisances controls?
- How often are the Underground Storage Facilities operated?
- What type of wastewater will be handled by these facilities?
- Where are we in the Selection Process?
- Can the construction approach minimize noise, vibrations, odors, public site usage, and traffic impacts?
- Will a Constructed Underground Storage Facilities offer any above ground options for Public and Private use?

Meeting Format

- Open Discussion With Commission After Each of Four Topic Areas:
  - Topic 1 - What is the Clean Water Program
  - Topic 2 - How Does San Mateo's Sewer System Work – Today and with Underground Storage Facility with Odor Control
  - Topic 3 – Location Selection Process for Underground Storage
  - Topic 4 - What are Related Construction Impacts to Parks and Other Locations
- Receive Commissioners Questions and Feedback After Each Topic
- Receive Community Feedback At End Of Presentation
- Input <u>Both</u> into Location Selection Process
- Provide Our Team after Commission Meeting to Public for further questions and feedback

Here to Receive Inputs and Feedback from Commissioners and Public

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Recent Public Notification Methods Used

- Mailed Community Meeting Invitations to Properties (City-Wide, property owners & physical addresses) [mailed first-class, delivered to Post Office on 8/4/16]
- Sent Invitations to City Council and Boards/Commission (Public Works Commission, Parks and Recreation Commission, Sustainability Commission, and Planning Commission) [8/9/2016]
- Updated Clean Water Program (CWP) Website "Upcoming Events" Section [8/9/16]
- Updated City Website [8/9/16]
- Emailed CWP Email List (Notify Me) [8/9/16]
- Emailed HOAs and Neighborhood Associations [8/9/16]
- Posted on NextDoor.com Social Media Site [8/9/16]
- Distributed Press Release to Various Media Contacts [8/11/16]

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August Public Meetings Input Summary

Overview:

- 100+ attendees at the August public meetings
- 40+ public inquiries by phone, email and CW website

Primary Concerns

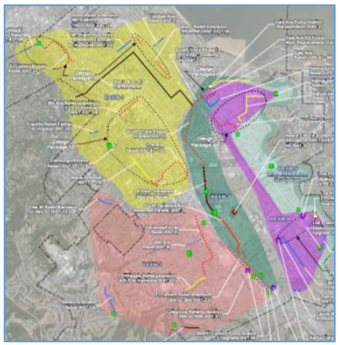
- Impacts to park sites/loss of use
- Proximity to residences and schools
- Odor and Health concerns
- Mail notices: content and timeliness of delivery
- Opportunities for public input/decision-making process (why these 5 alternatives?)

Topic 1

What is the Clean Water Program

Clean Water Program – Drivers & Goals

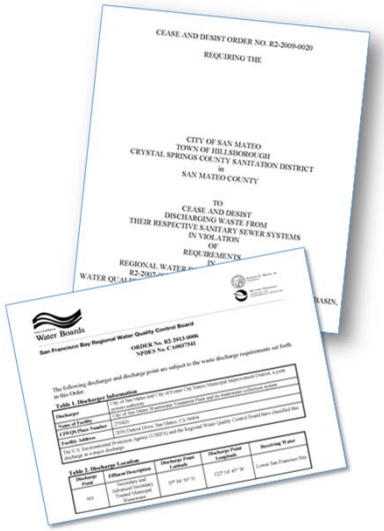
Replace Aging Infrastructure



Collection System

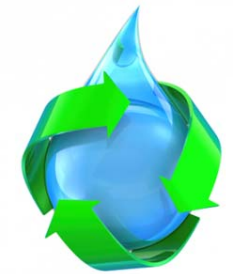
WWTP

Provide Higher Levels of Treatment & Capacity Assurance



RWQCB Cease & Desist Order
NPDES Permit

Address Sustainability, Climate Change, & Biosolids/Energy



Water Re-Use Partnerships

Institute for Sustainable Infrastructure

ENVISION™

Infrastructure Sustainability Metrics

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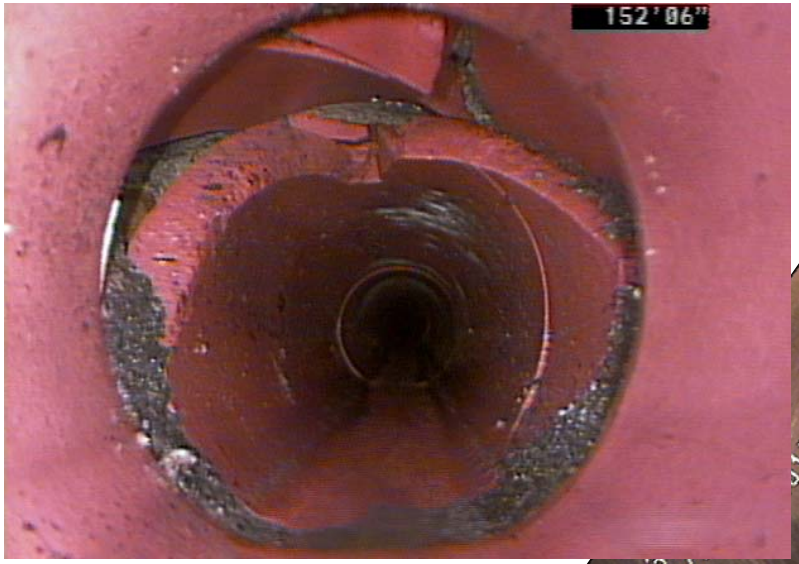
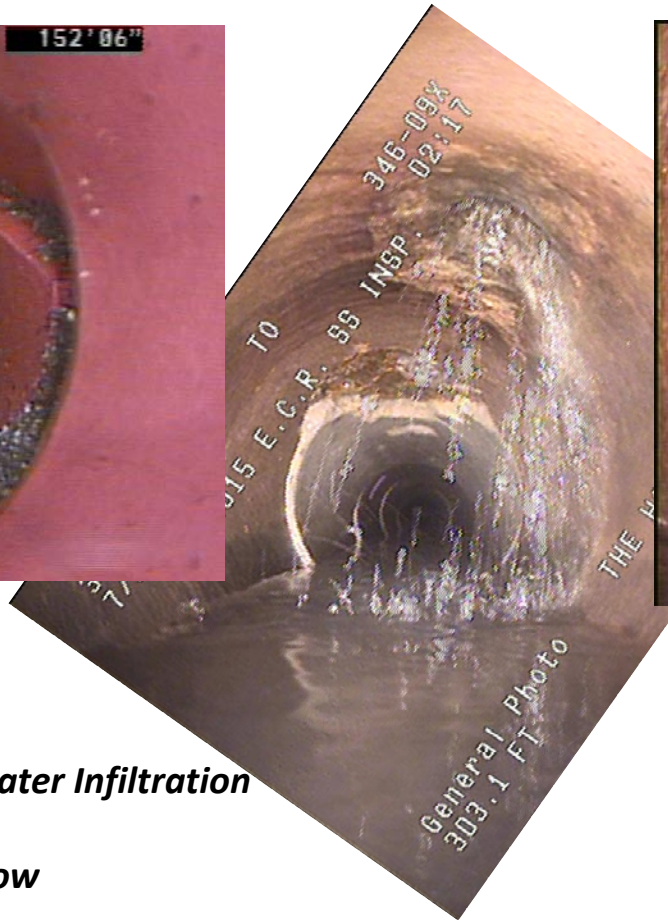
Aging Collection System Facilities



Cracked & Offset Pipe



Rain & Groundwater Infiltration
&
Inflow

Root Intrusion in Pipe

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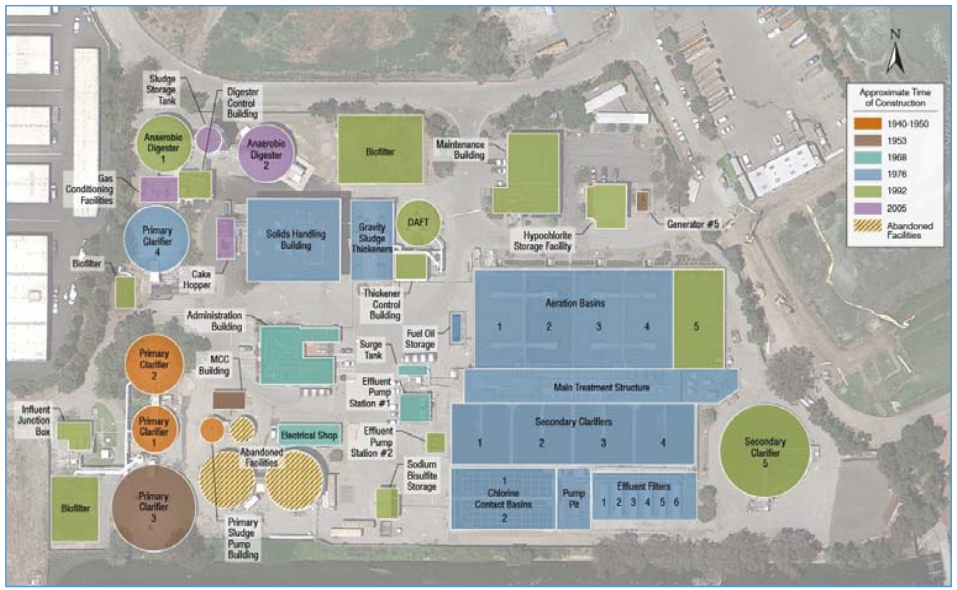
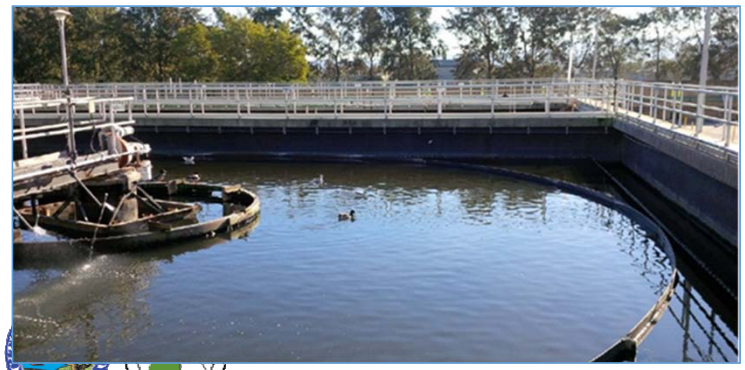
Aging WWTP Facilities





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Insufficient Capacity - Sanitary Sewer Overflows (SSO)

Photos from San Mateo's Wet Weather Events That Flow in the Bay

Delaware Street Corridor

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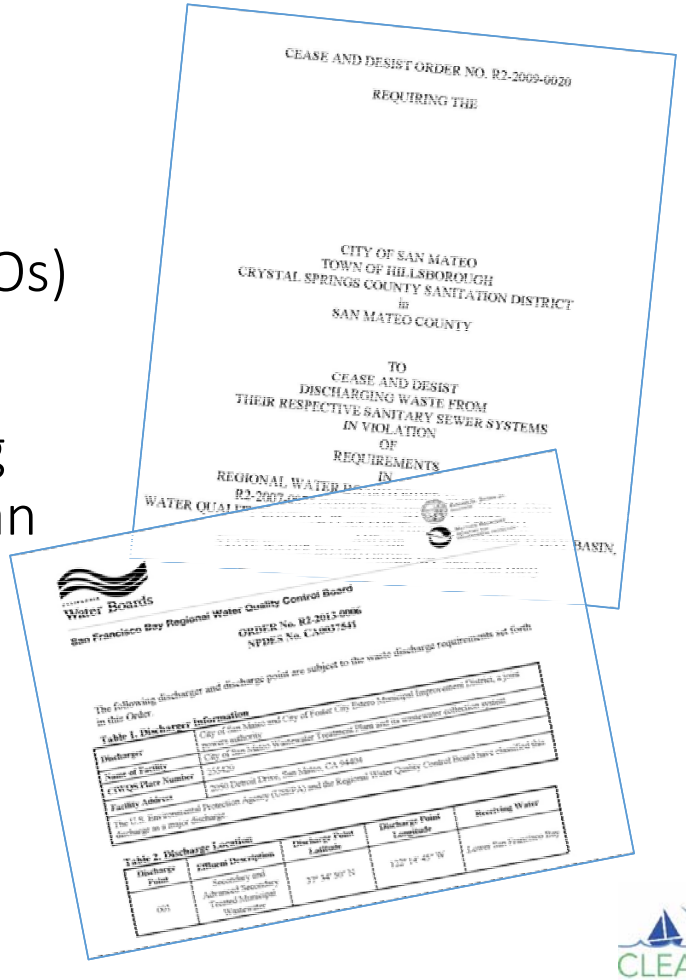
Regulatory Orders & Requirements

- 2009 Cease and Desist Order requiring the elimination of sanitary sewer overflows (SSOs)
- 2013 NPDES Permit requiring elimination of blending and an integrated approach
- Future increased nutrient removal requirements


CEASE AND DESIST ORDER NO. R2-2009-0020

REQUIRING THE

CITY OF SAN MATEO
TOWN OF HILLSBOROUGH
CRYSTAL SPRINGS COUNTY SANITATION DISTRICT
in
SAN MATEO COUNTY

TO
CEASE AND DESIST
DISCHARGING WASTE FROM
THEIR RESPECTIVE SANITARY SEWER SYSTEMS
IN VIOLATION
OF
REQUIREMENTS
IN

Water Boards

San Francisco Bay Regional Water Quality Control Board

ORDER No. R2-2013-0006
NPDES No. CA0037842

The following discharger and discharge point are subject to the waste discharge requirements set forth in this Order

Table 1. Discharger Information

Discharger	City of San Mateo and City of Foster City Estero Municipal Improvement District, a joint powers authority
Name of Facility	City of San Mateo Wastewater Treatment Plant and its wastewater collection system
CIWQS Place Number	255420
Facility Address	2000 Detroit Drive, San Mateo, CA 94404
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a major discharge	

Table 2. Discharge Location(s)

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Secondary and Advanced Secondary Treated Municipal Wastewater	37° 34' 50" N	122° 14' 45" W	Lower San Francisco Bay

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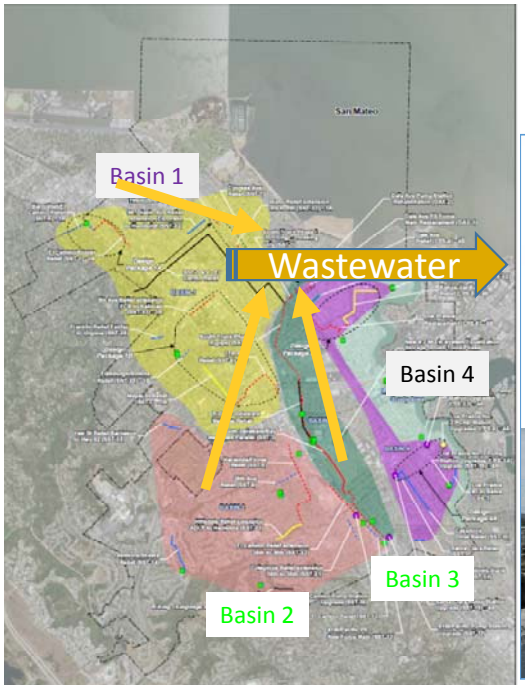
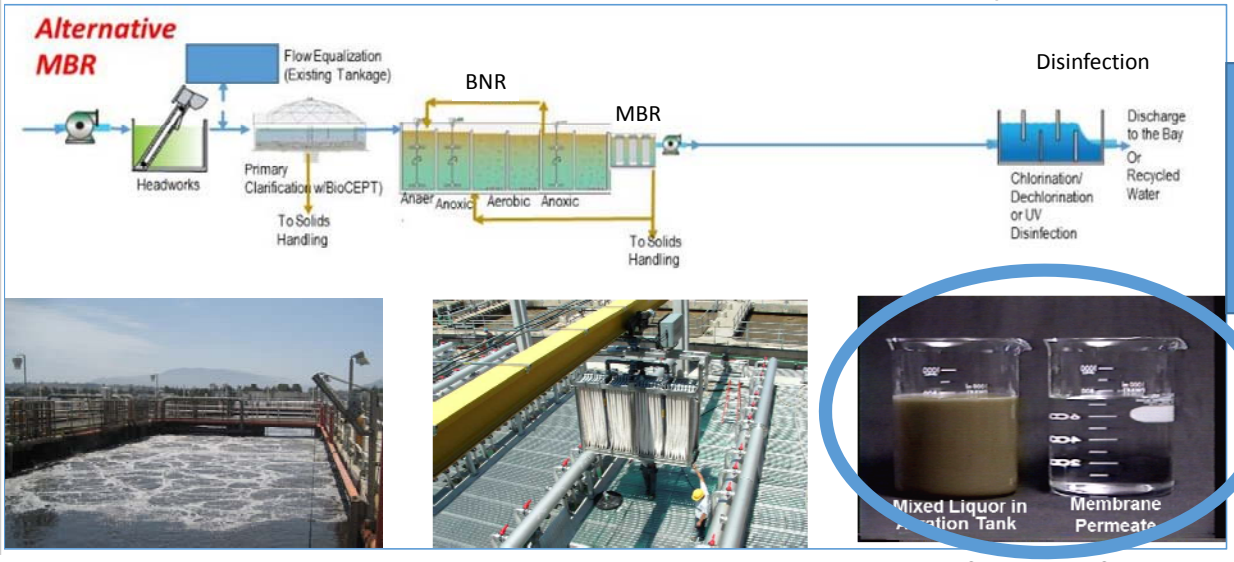
What is the Clean Water Program?

1. Collect	2. Treat	3. Discharge



Sewer In-System Storage Upgrades to Prevent SSOs

New WWTP Treatment Approach to Prevent Sewer Overflows to SF Bay



Before & After Treatment

Reusable Clean Water

PEIR was Certified in June 2016 & Council Selected this Alternative

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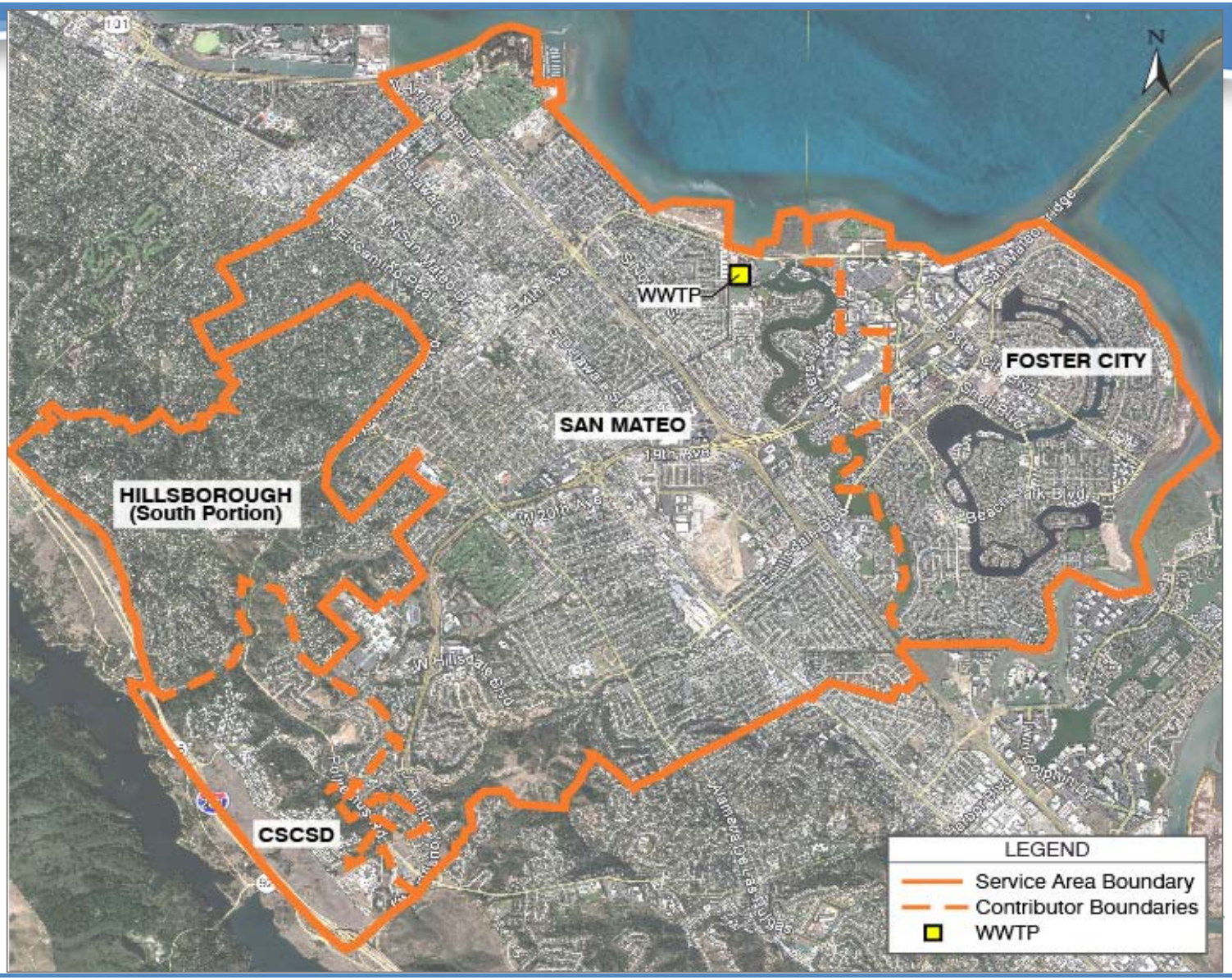
Commissioner's Feedback, Questions and Input

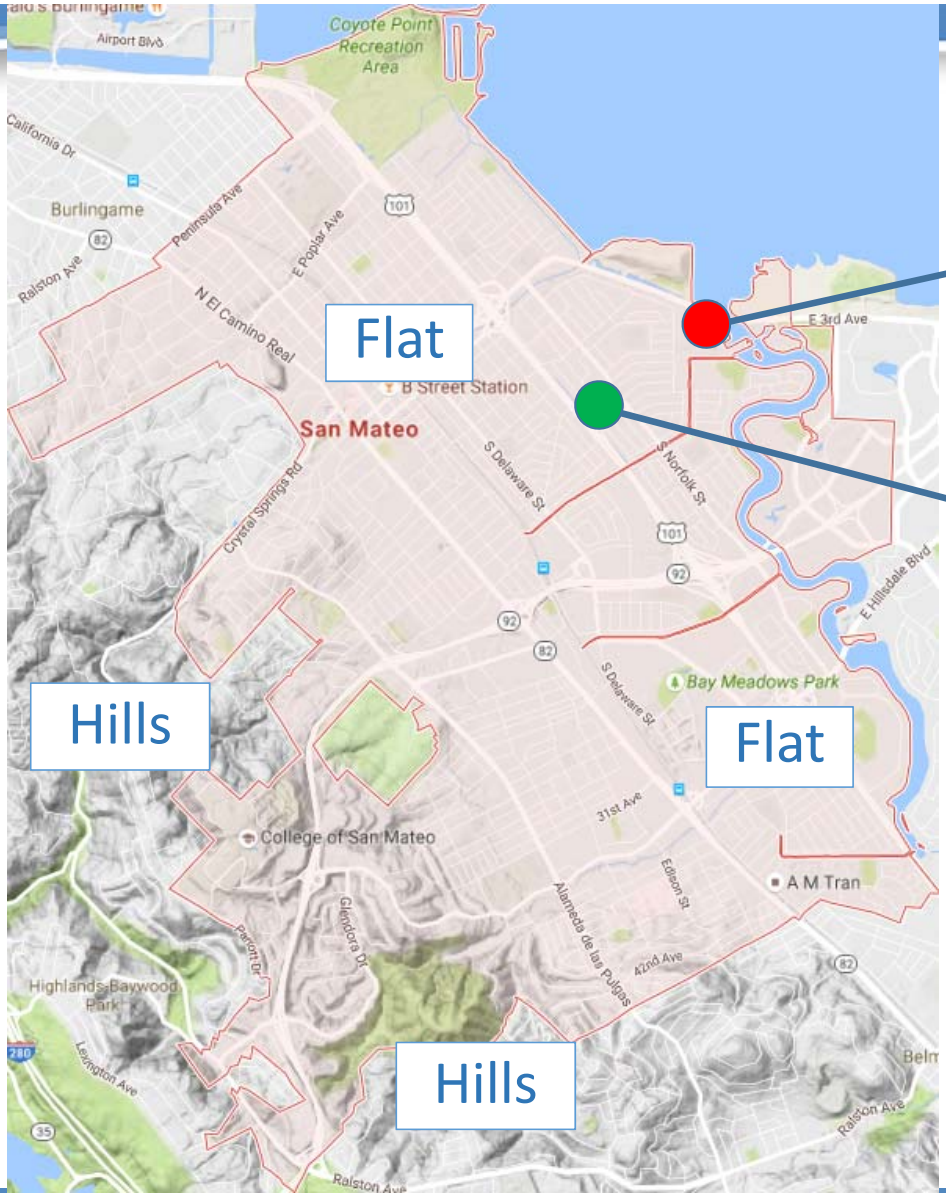
Topic 2

How Sewers Work in San Mateo today and in the future with Underground Storage

Wastewater Management System



San Mateo Topography



Liquids Flow to the Low Areas

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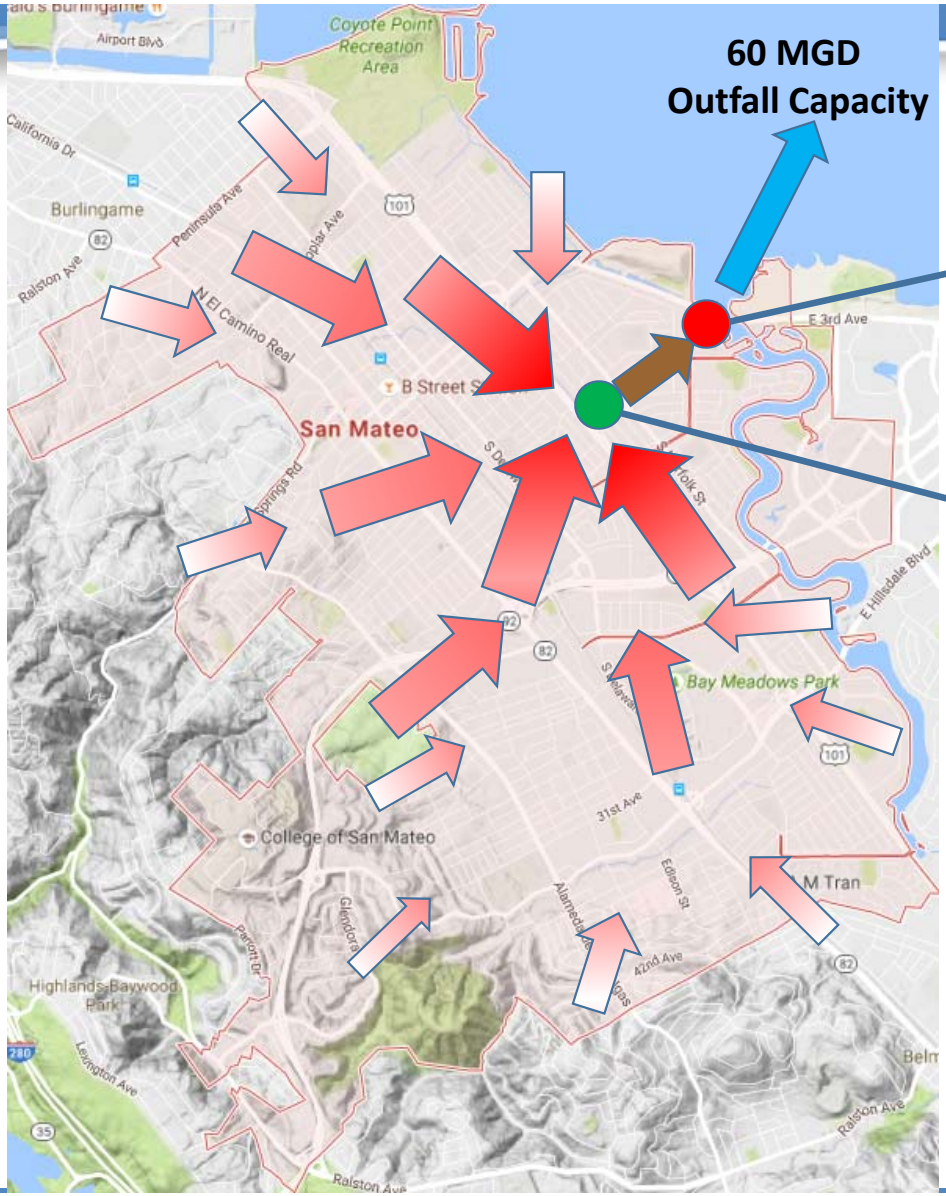
Dry Weather Gravity Sewers and Hydraulic Operations



All Flows go through DAPS to get to WWTP

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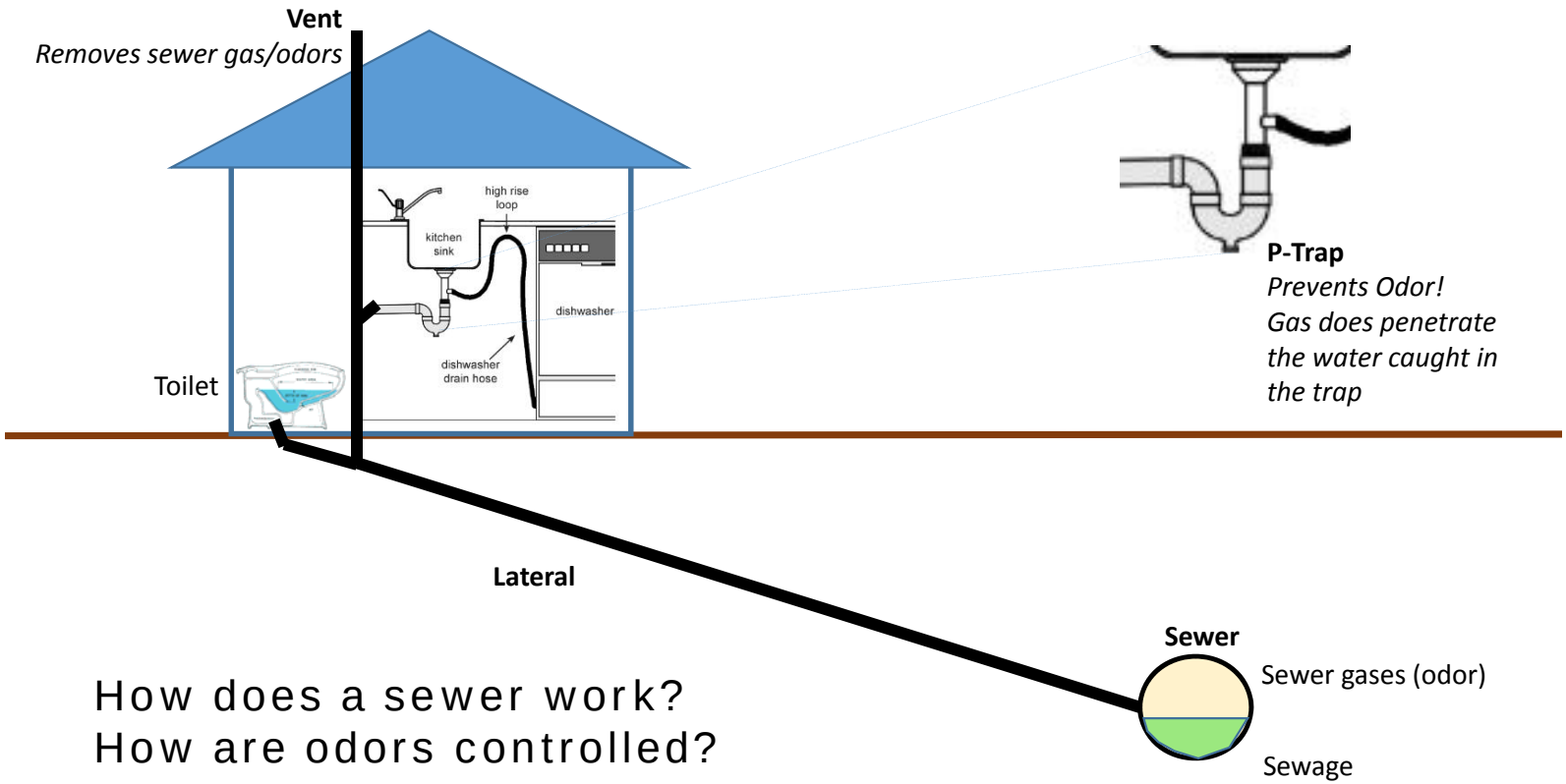
Wastewater Basics: Dry Weather Conditions



How does a sewer work?
How are odors controlled?

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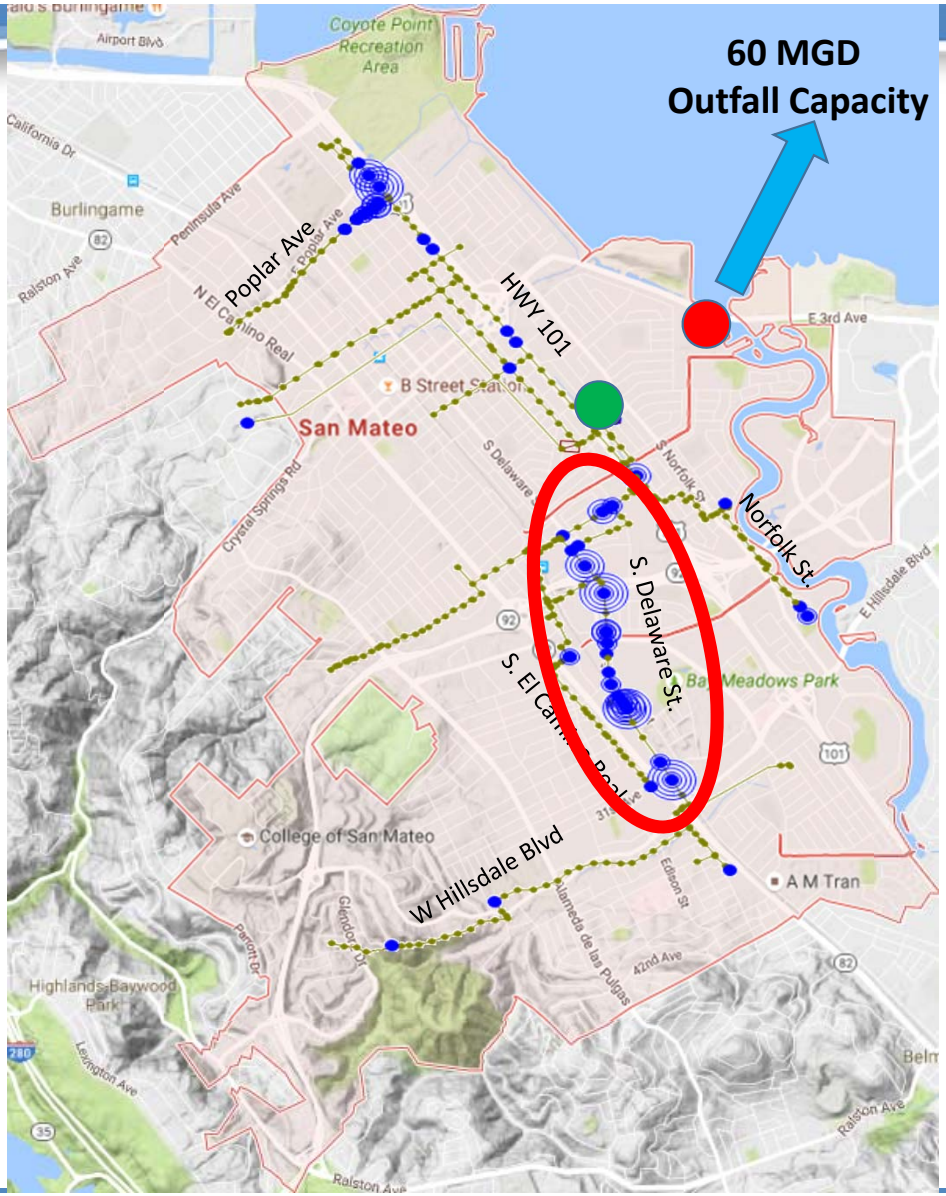
Peak Wet Weather Hydraulic Model and SSOs



Blue Dots are SSOs Identified through Hydraulic Modeling

High Concentration of SSO Occurrences Along Delaware St

Storage is best way to reduce peak flow

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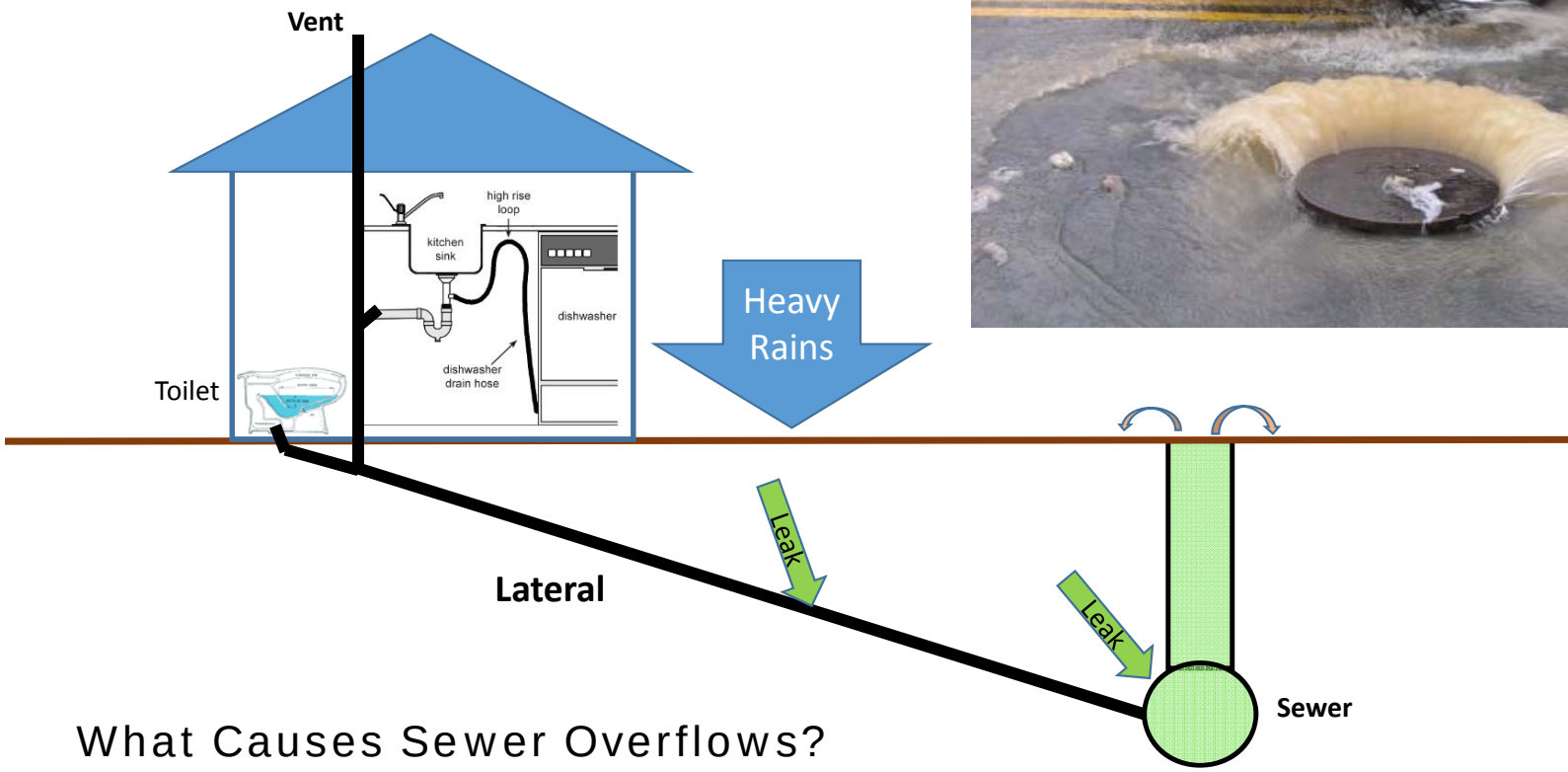
Wastewater Basics: Peak Wet Weather Conditions & SSOs



What Causes Sewer Overflows?

Sewage + Lots of Rain Water

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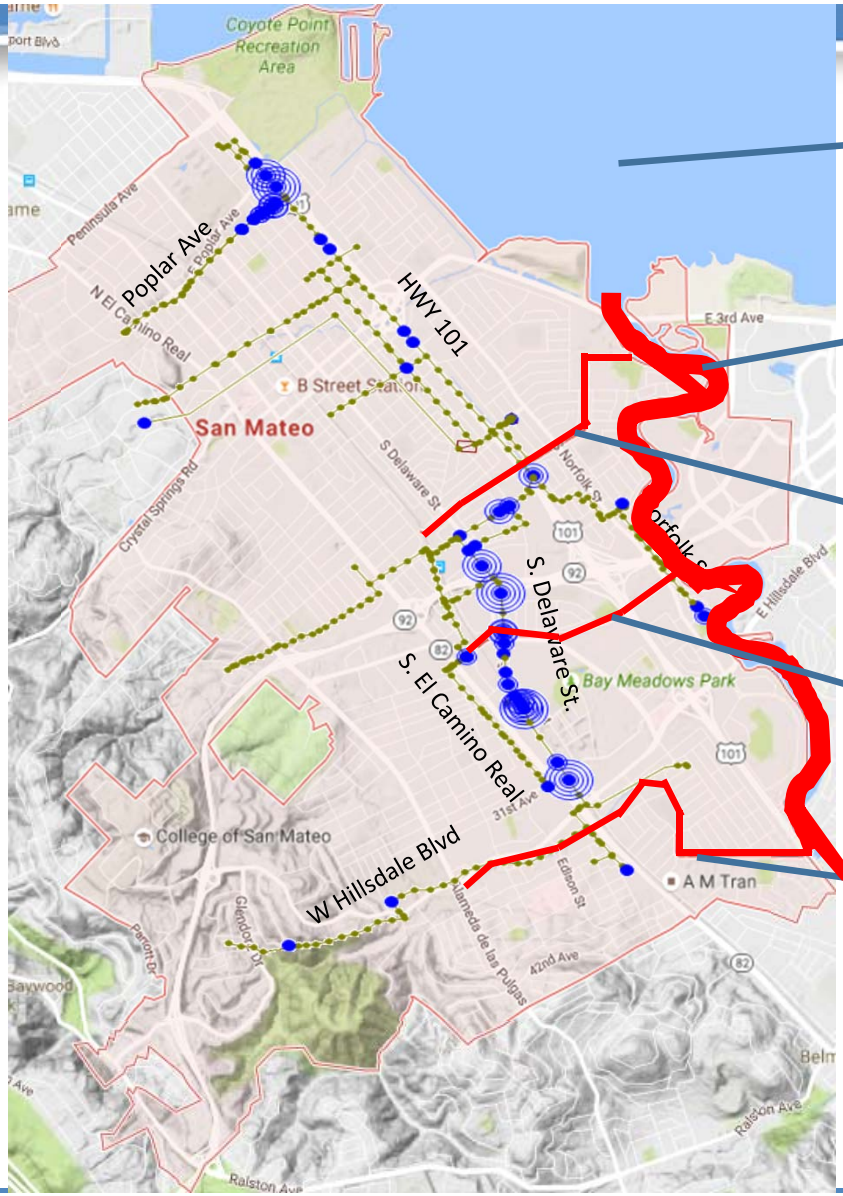
San Mateo Sanitary Sewer Overflows (SSO) to the Bay

SSO Video at Delaware & Saratoga

SSO Example (Not in San Mateo)

SSOs Flow onto Streets into Storm Drain Inlets then to Lagoon and Bay



SF Bay

Seal Slough

Leslie Creek

Borel Creek

Laurel Creek

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SSO Impacts to Water Quality at San Mateo Beaches

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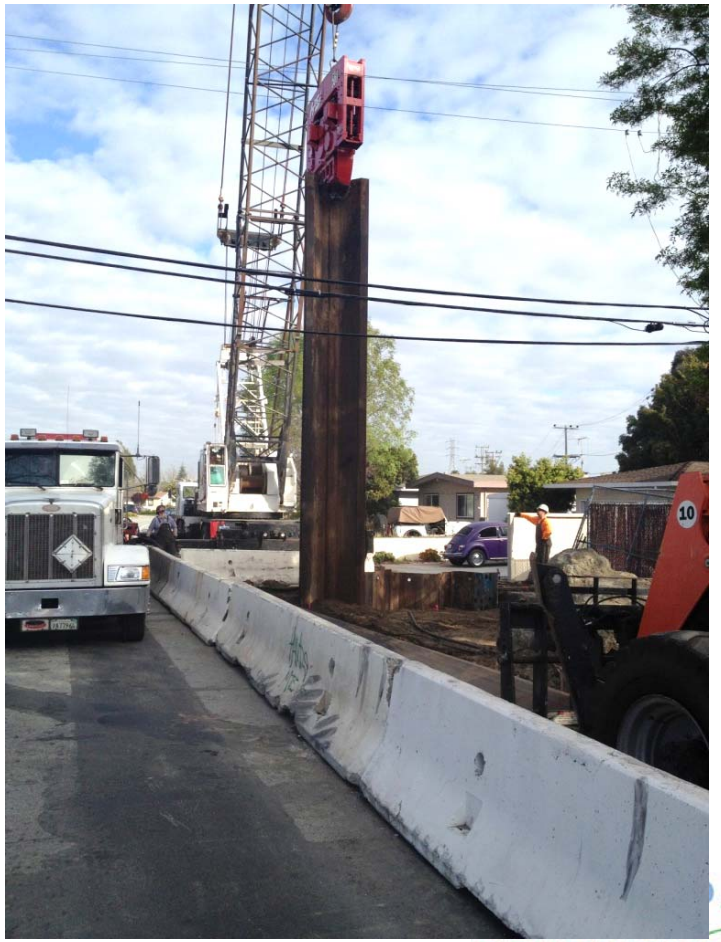
Storage Alternatives

Full Conveyance	In-System Storage
• All wet weather storage located at WWTP • Bigger pipes and pump station to convey all flow to WWTP • New wet weather pump station and force main at Dale Ave location	• Wet weather storage located upstream of WWTP & at WWTP • Smaller pipes to convey controlled amount of wet weather flows • Better odor control • $150M less expensive than full conveyance alternative • *Council selected this option in June 2016*

Collection System Improvements

Relief Sewers

Pump Station Upgrades



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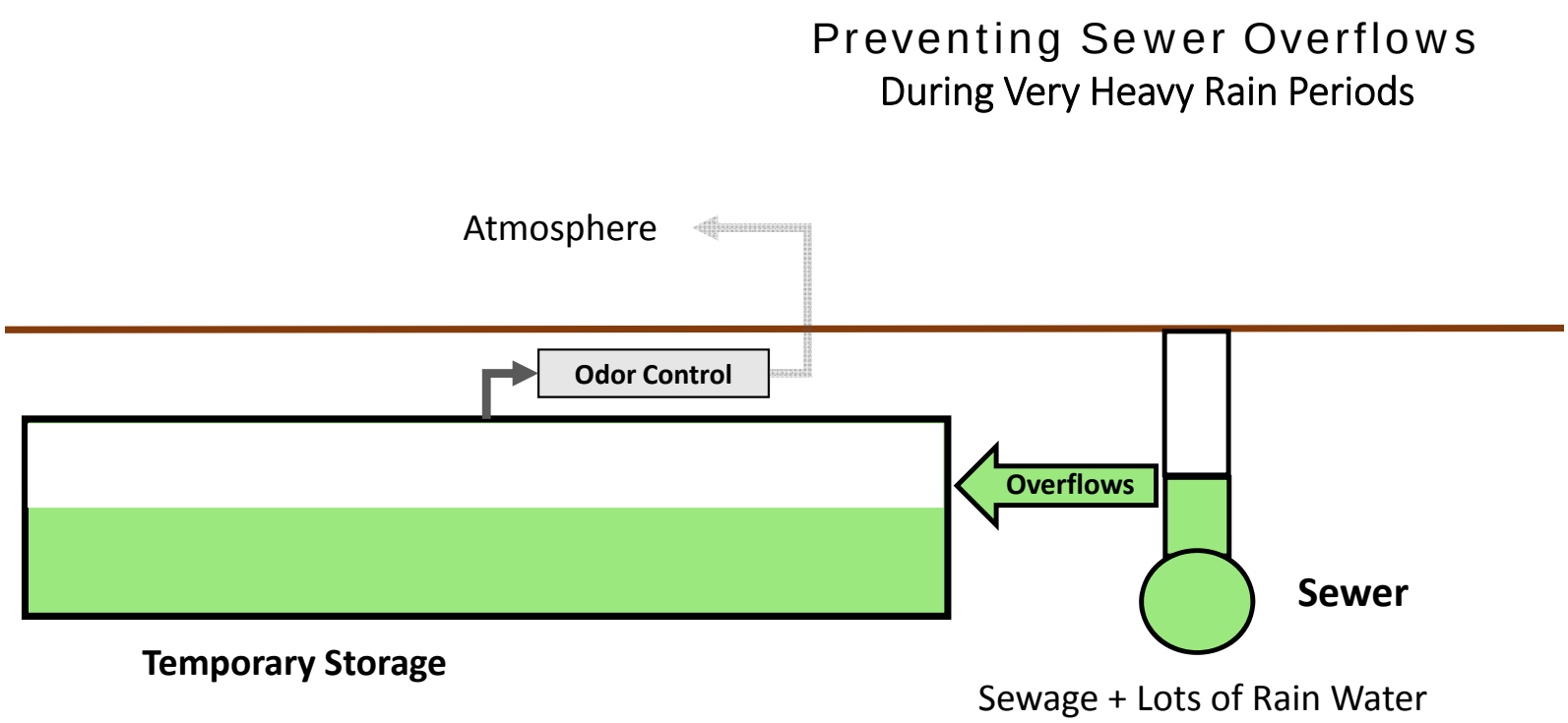
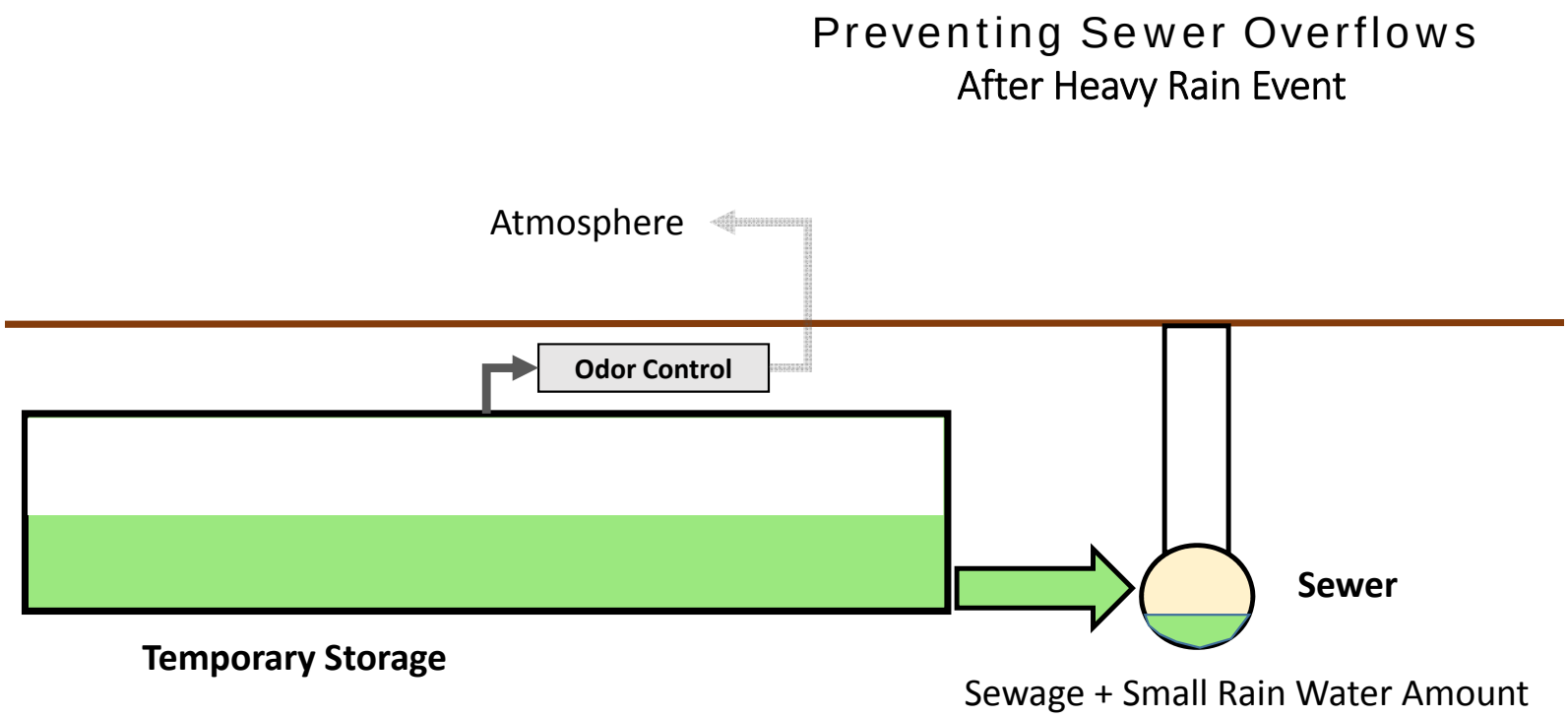
Storage Facility: Peak Wet Weather Conditions



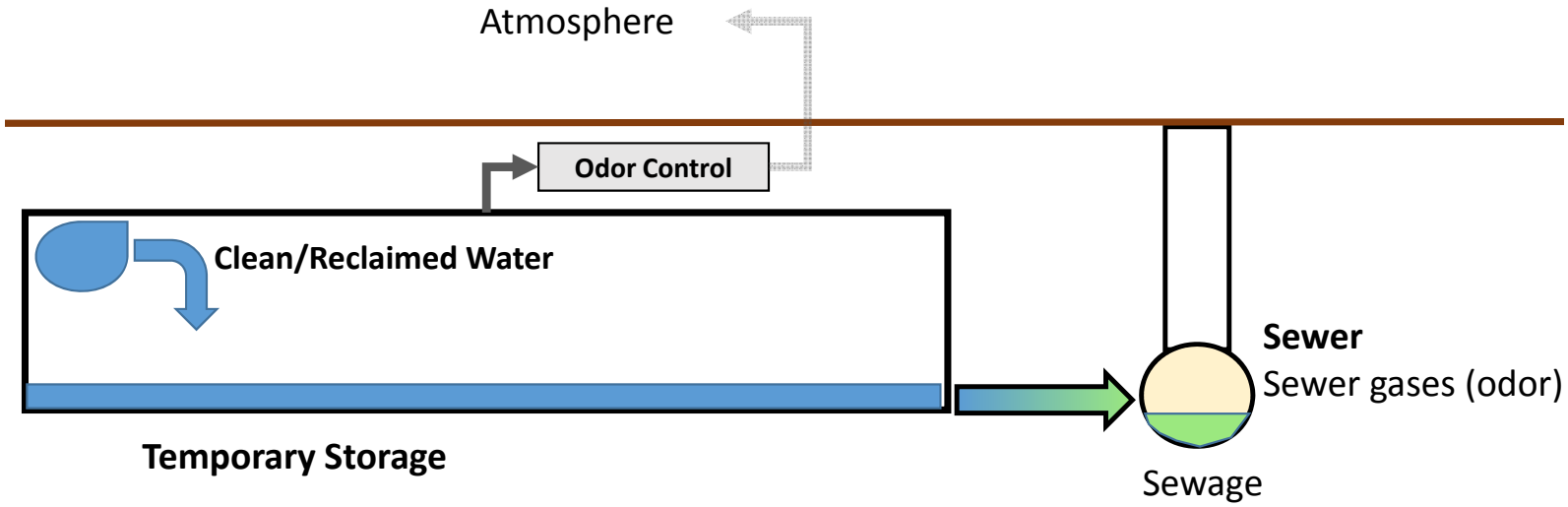
Storage Facility: After Wet Weather Conditions



Storage Facility: After Wet Weather Conditions
Odor Control & Self Cleaning Mechanisms

Preventing Sewer Overflows

Cleaning Temporary Storage



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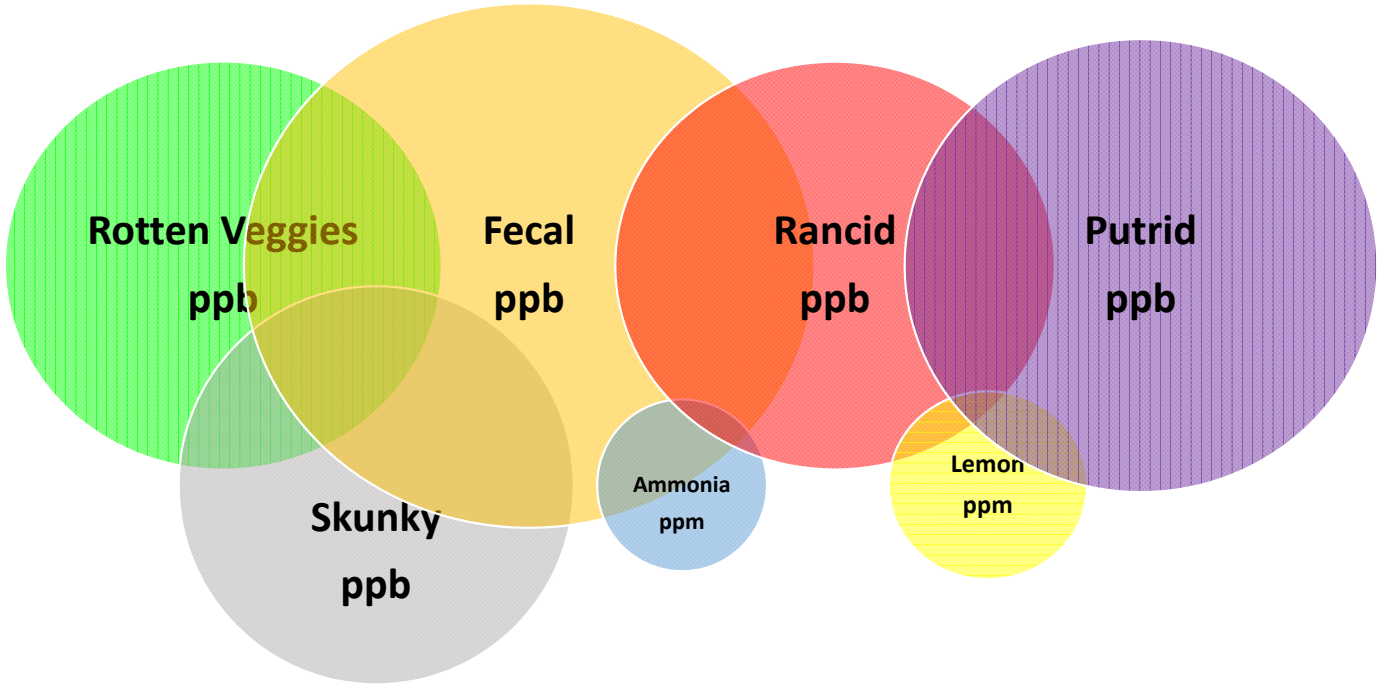
Potential Odorants From In-System Storage



Larger circle = lower the concentration @ Public Nuisance Level

1 ppb = 1 green tennis ball in a pool of 1 billion tennis balls

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Managing Odors to Reduce Off-site Odor Impacts

Very, Very Sensitive — Our Noses — **Average Sensitive**

CWP Odor Control Goal

1 in 100 people may
detect a slight odor at property
Potentially 20 times per year

BAAQMD Regulatory Odor Control Limit

Limit set to protect Human Health and Well Being

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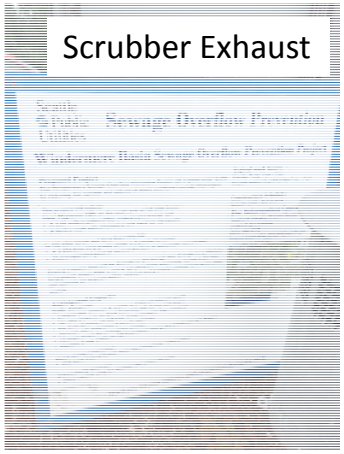
Storage Facility: Odor & Noise Control and Self Cleaning

Air Tight Vaults

Carbon Odor Scrubber



Scrubber Exhaust

Flushing Curbs

Self Cleaning Tipping Buckets

Storage Facility After SSO is Managed

Tipping Buckets Dropping Water Load at 2000 gals/bucket

Storage Facility being Washed

Final Results - Clean Floor

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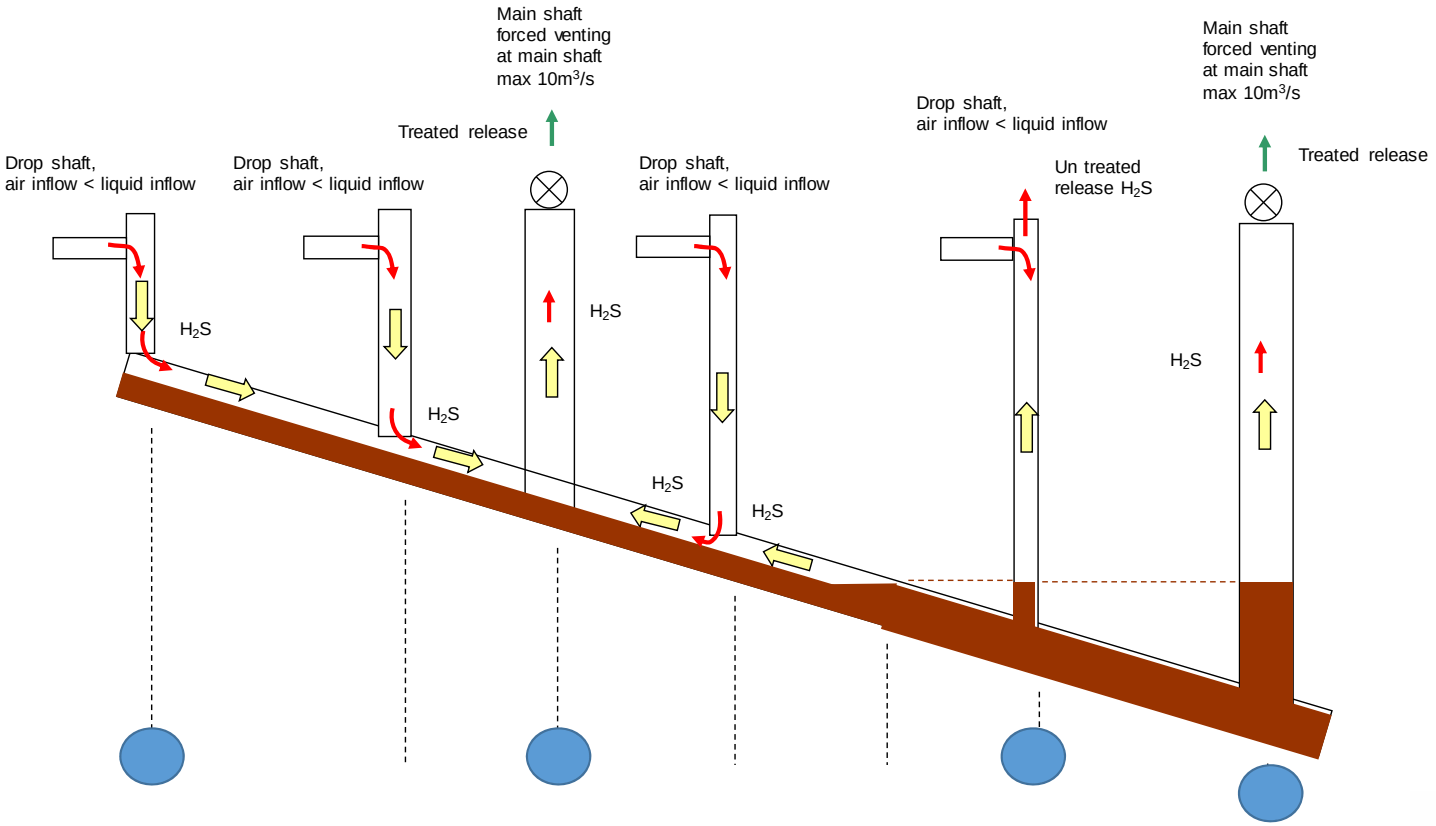
Tunnel Shaft Odor Control Needs



= Odor Control Locations

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Commissioner's Feedback, Questions and Input

Topic 3

Underground Storage Facility Location Selection Process

Storage Site Evaluation Criteria & Selection Process

PEIR Full List

Space
- Municipal property
- Schools
- Undeveloped property
- Private property
- No existing residential, state, or federal property included
- Proximity
- Storage Capacity

55

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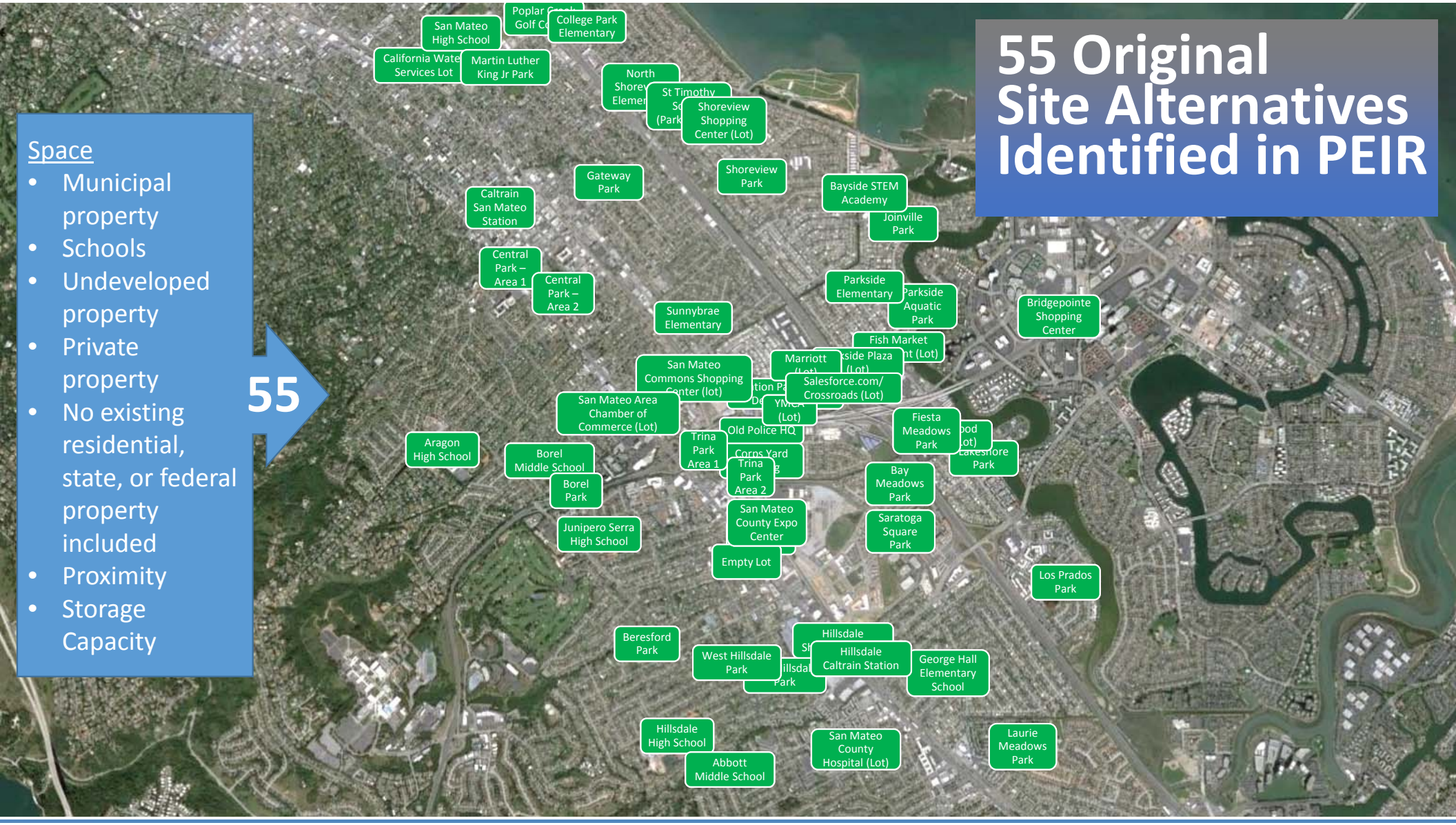
55 Original Site Alternatives Identified in PEIR



Storage Site Evaluation Criteria & Selection Process

PEIR Full List

Space
- Municipal property
- Schools
- Undeveloped property
- Private property
- No existing residential, state, or federal property included
- Proximity
- Storage Capacity

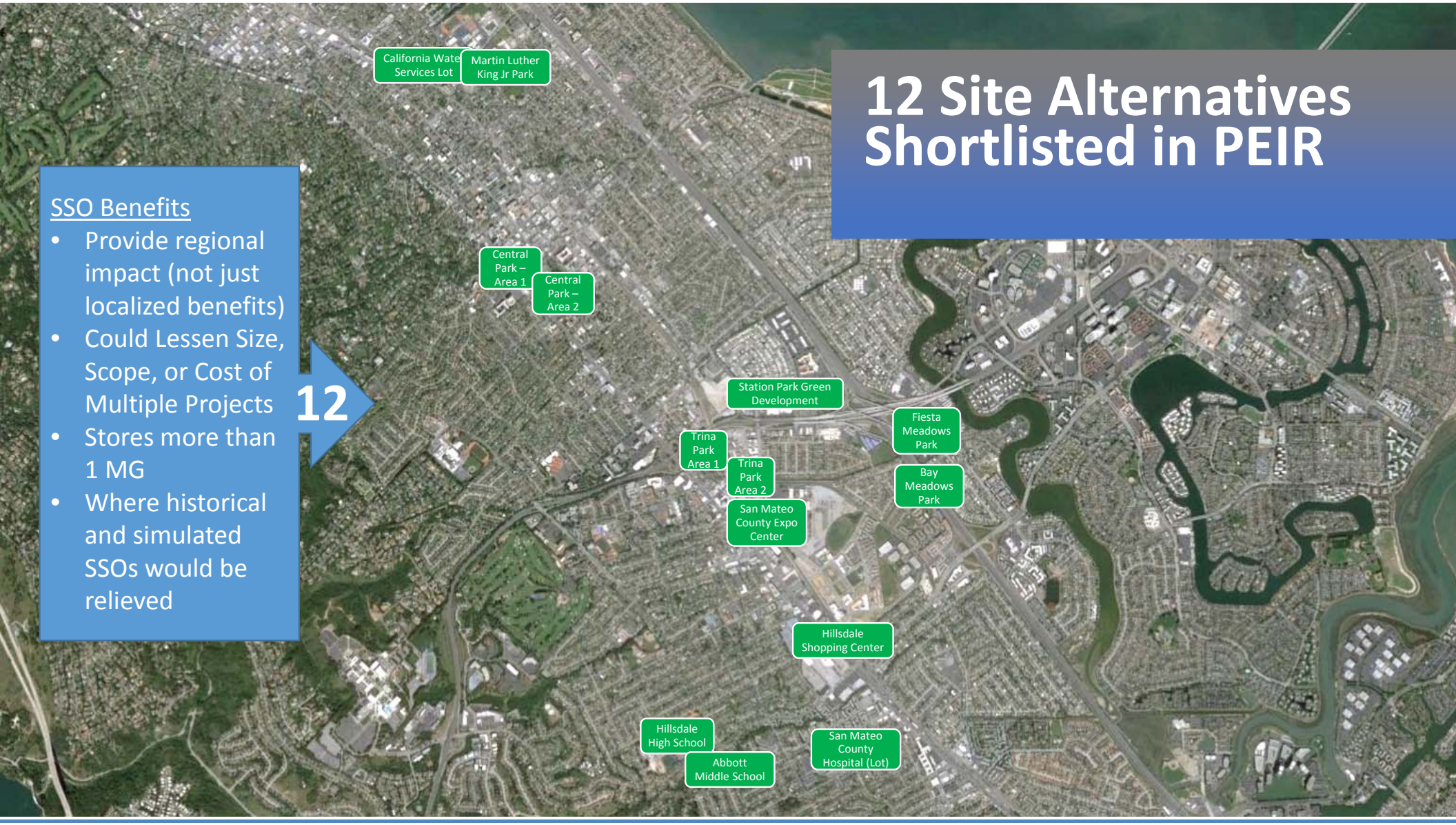
55

PEIR Short List

SSO Benefits
- Provide regional impact (not just localized benefits)
- Could Lessen Size, Scope, or Cost of Multiple Projects
- Stores more than 1 MG
- Where historical and simulated SSOs would be relieved

12

12 Site Alternatives Shortlisted in PEIR



SSO Benefits

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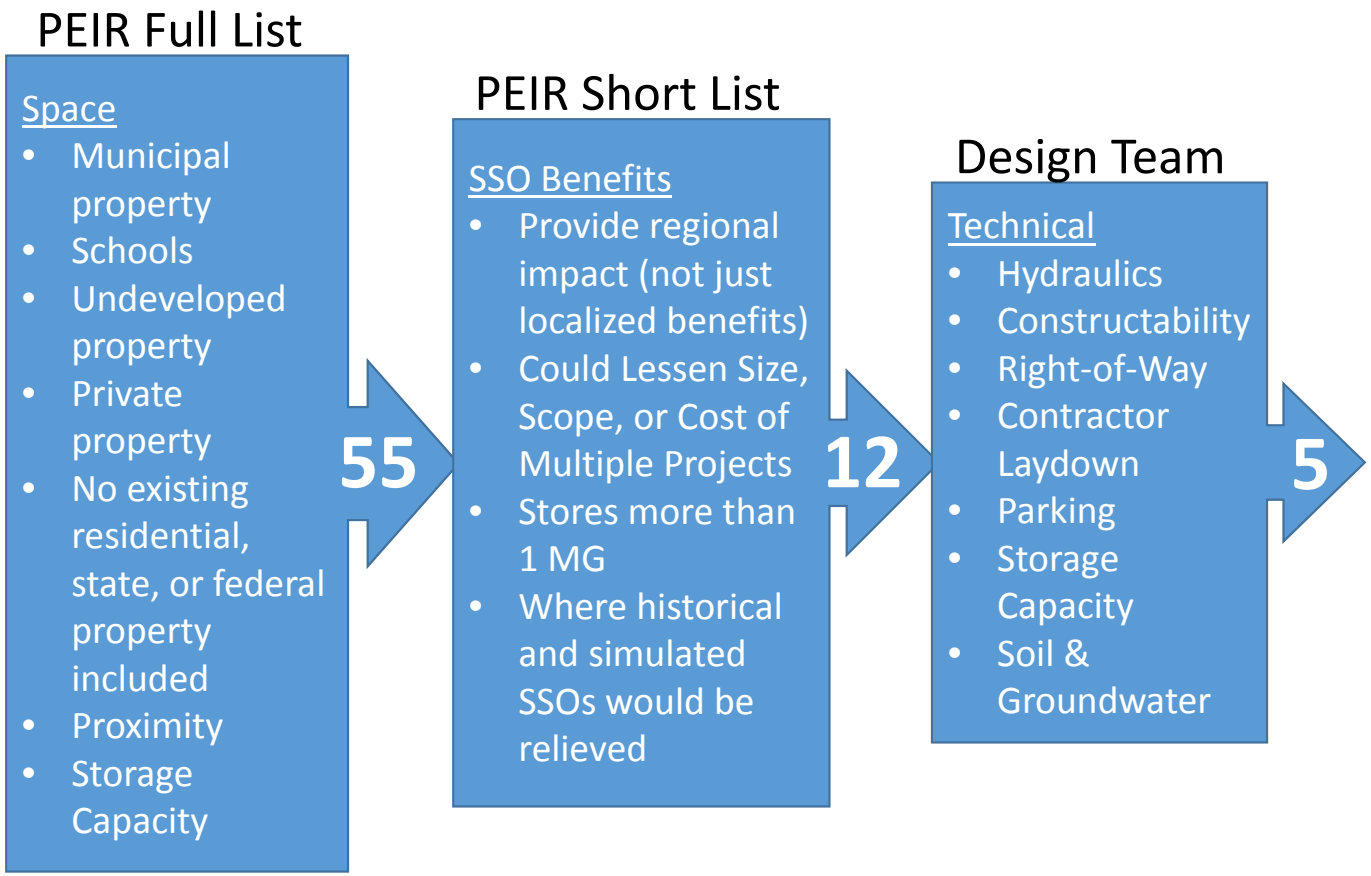
12

Storage Site Evaluation Criteria & Selection Process



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Delaware Street Alignment Tank
Fiesta Meadows Park
Expo Center Parking Lot
Bay Meadows Park
Hillsdale Plaza
Technical
• Hydraulics
• Constructability
• Right-of-Way
• Contractor Laydown
• Parking
• Storage Capacity
• Soil & Groundwater
5
5 Alternatives


Expo Center
Parking Lot

Expo Event Center - North

Parking lot repaved over storage facility

Not a City Owned Property

Usage Costs Associated

Access hatches installed at pavement grade so traffic can drive on them

Construction would be coordinated with Event Center to avoid conflicts with large events

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Expo Center
Parking Lot
Hillsdale Plaza

Hillsdale Plaza/Expo Event Center

Parking lot repaved over storage facility

Not a City Owned Property

Usage Costs Associated

Access hatches installed at pavement grade so traffic can drive on them

Construction would be coordinated with Event Center, Site Developer & Joint Powers Board to avoid conflicts with large events

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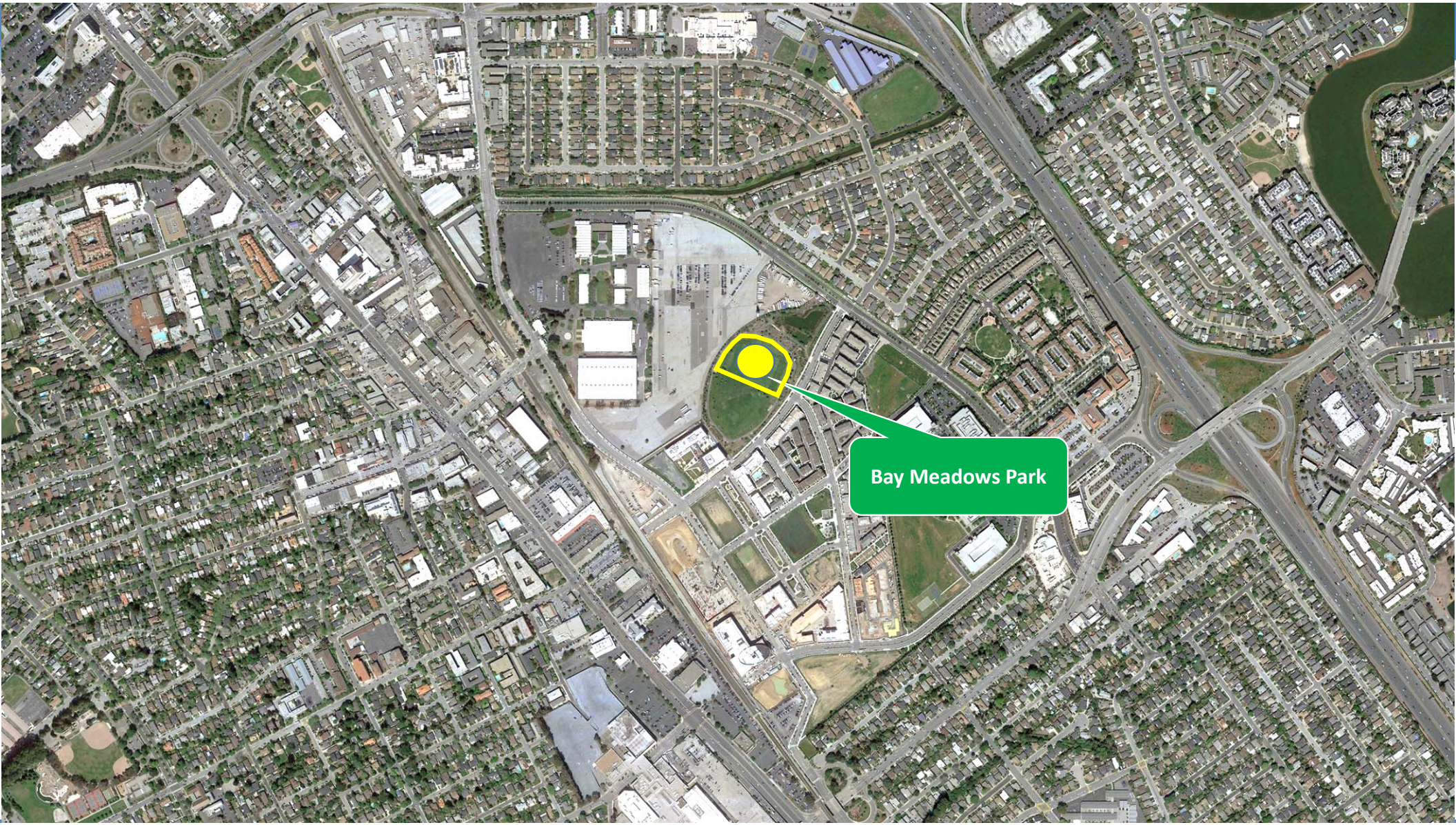
Bay Meadows Park

Bay Meadows Park

North Eastern Half of Grass field is currently a storm water overflow facility that can't be built over and must remain a field

Storage Facility would only utilize North Eastern Half of grass field

New topsoil and grass would be replaced over storage facility

City Owned Property

South Western half of grass field would remain open

Access hatches can be located at the edge of the grass field or within the asphalt pathway

City has Future Plans to build Community Center at South Western half of field

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Fiesta Meadows
Park

Fiesta Meadows Park

Opportunity to Redesign Parking Lot to Increase Parking

Access hatches located at edges of grass or within asphalt paved areas

City Owned Property

New Synthetic Turf or Grass Field can be built over storage Facility

Synthetic Turf would reduce maintenance costs and provide all-season surface

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6,300 Feet Long
12 Foot Diameter
60 Feet Deep

Tunnel Boring Machine (TBM) Required

Feeling vibrations is unlikely at the proposed depths

Requires Special Tunneling Permit

North End: Near Concar Dr
South End: Near 28th Ave

Entry/Exit Locations for TBM and Intermediate Maintenance Access Locations Require Property Not Owned by City

Deeper Excavations for TBM Entry/Exit Locations & Maintenance Access Hatches

Tunnel will be concrete pipe or lined with concrete segments

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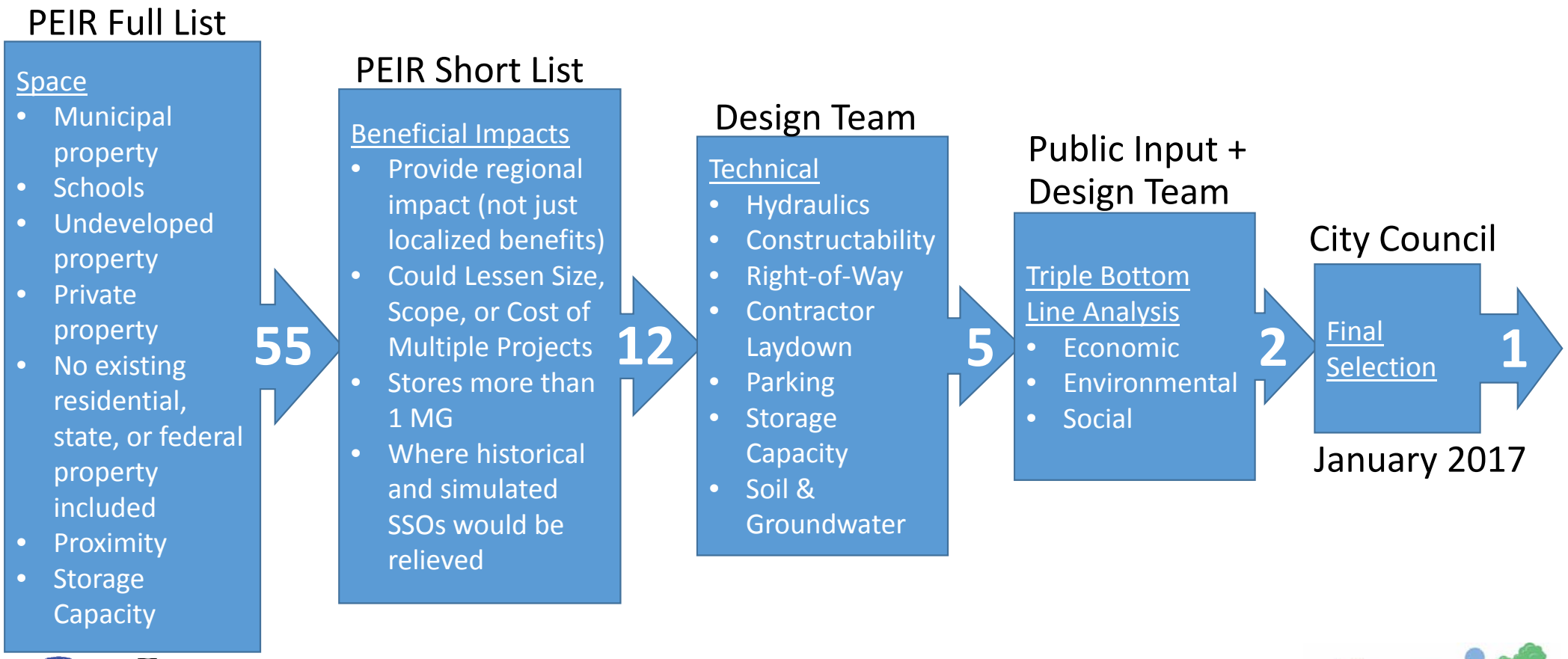
Storage Site Evaluation Criteria & Selection Process



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Tentative Meeting Schedule

Technical
- Hydraulics
- Constructability
- Right-of-Way
- Contractor Laydown
- Parking
- Storage Capacity
- Soil & Groundwater

5

Two Community Meetings
August 23rd
August 25th

Two Commission Meetings
P&R September 7th
PW September 14

Triple Bottom Line Analysis
- Economic
- Environmental
- Social

2

Two Community Meetings
October 4th
October 6th

Two Commission Meetings
P&R October 12th
PW November 7th

Final Selection

1

January 2017

PLEASE NOTE:
Due to public input the process is being reevaluated. Refer to www.cleanwaterprogramsanmateo.org for the most current schedule of upcoming meetings.

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Commissioner's Feedback, Questions and Input

Topic 4

Underground Storage Facility Construction, Seismic & Odor Control Considerations

Underground Storage Facility Examples – Daly City

- 1989 Construction Under Softball Field
- Enhanced Softball Field Facilities after Construction
- Adjacent to Community Center, Park, Senior Center, Library & Daycare/Pre-School
- Near School, Retail, Restaurant & Residential Properties

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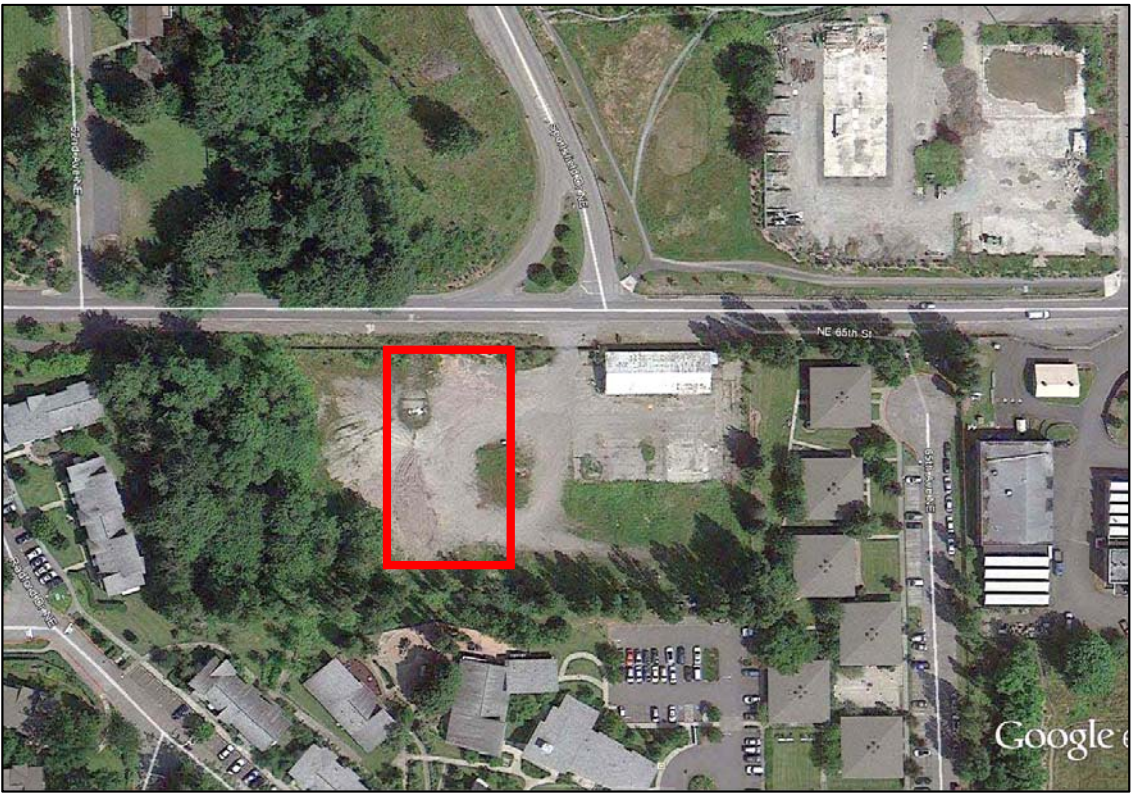
Underground Storage Facility Examples – Daly City

Underground Storage Facility Examples – Daly City

Underground Storage Facility Examples – Windermere Tank (Before Construction)



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Underground Storage Facility Examples – Windermere Tank (During Construction)

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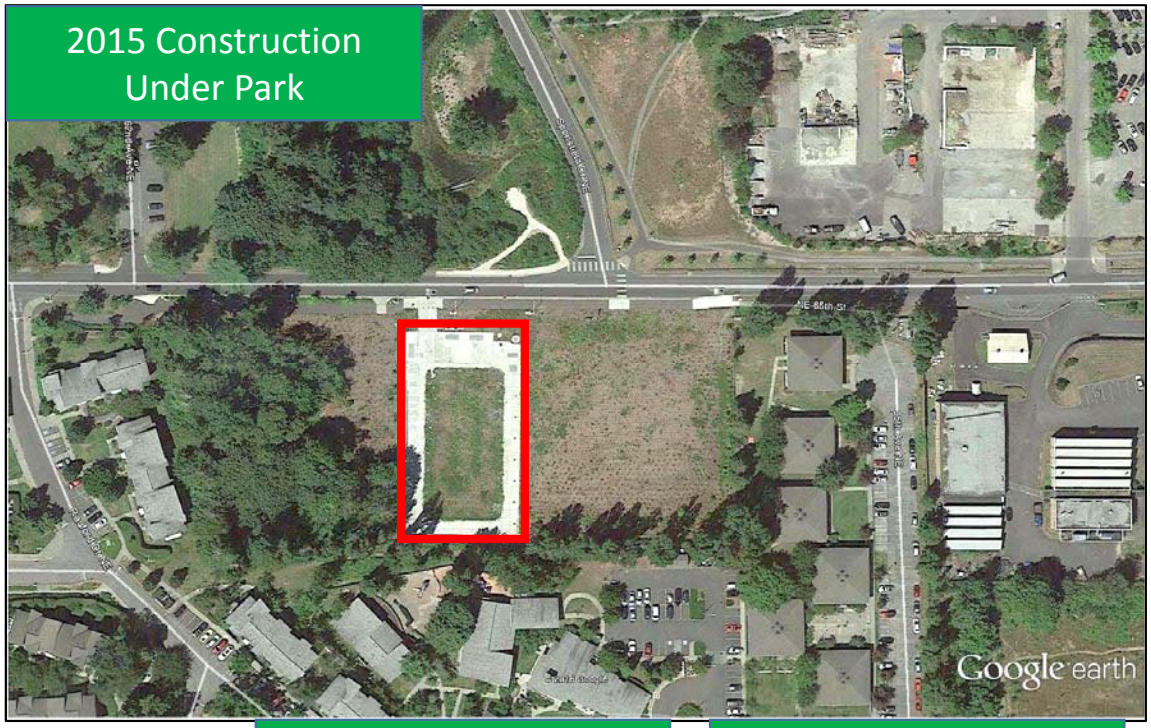
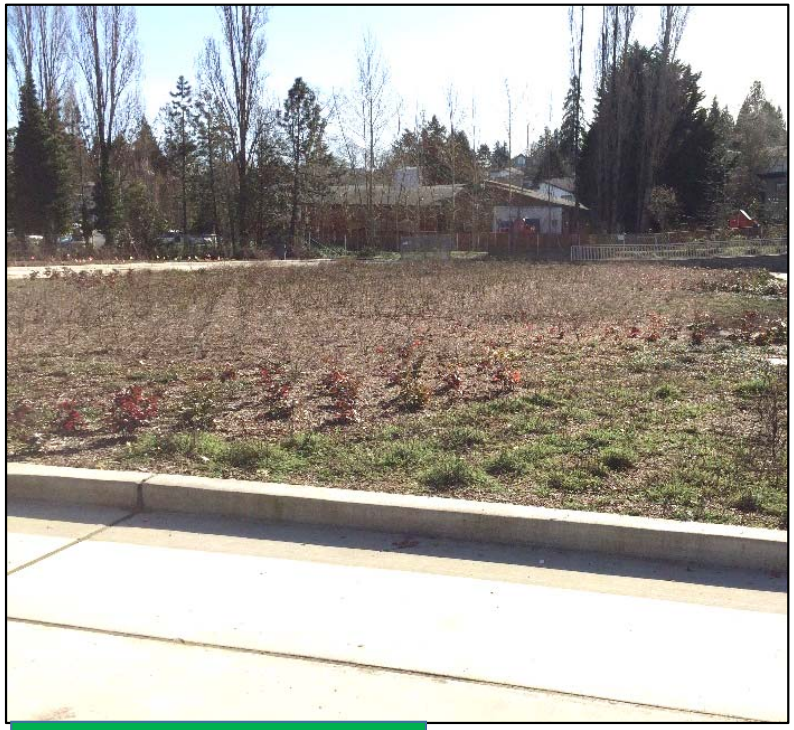
Underground Storage Facility Example – Windermere (Completed)

2015 Construction Under Park





Adjacent to Daycare Center and Student Housing

Near School, Park, & Government Facilities

Site restored with topsoil and grass over tank

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Underground Storage Facility Example – Genesee Tanks (Before Construction)

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Underground Storage Facility Examples – Genesee Tanks (During Construction)

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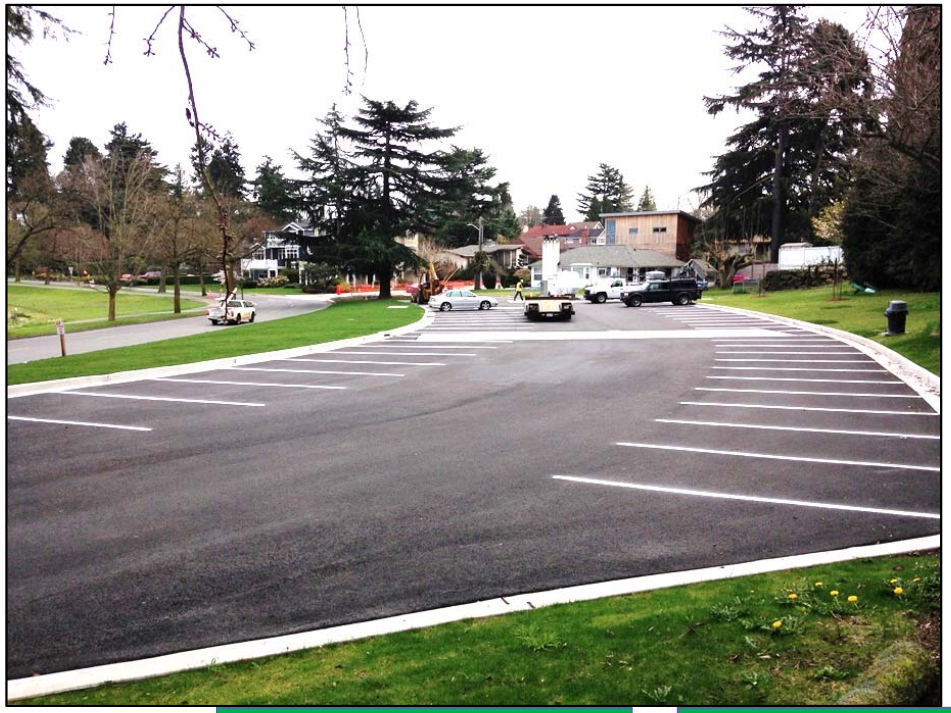
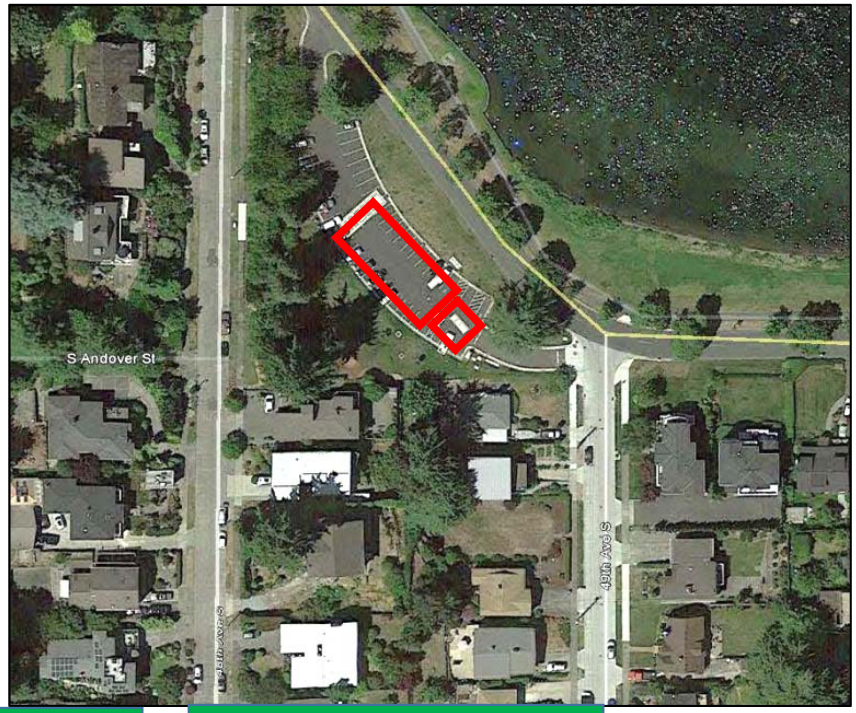
Underground Storage Facility Examples – Genesee (Completed)



2015 Construction Under Parking Lots



Adjacent to Trails, Residential Homes, and Lake Washington

Tanks covered and repaved with new parking lot

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Underground Storage Facility Examples – Genesee Tanks (Completed)

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Underground Storage Facility Examples – Henderson (Before Construction)

Adjacent to residential waterfront homes and Seward Park

Under-used tennis court facilities in park setting

Near sensitive environmental resources

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Underground Storage Facility Examples – Henderson (During Construction)

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Underground Storage Facility Examples – Henderson (Upon Completion)

2017 Construction Completion, Operational 2018

Restored parking and improved lake front habitat

Tanks will be covered and new tennis courts and parking lot will be installed on top

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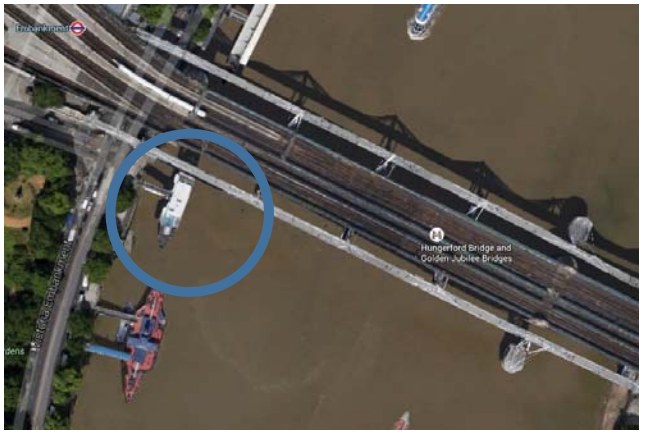
Tunnel Shaft Construction



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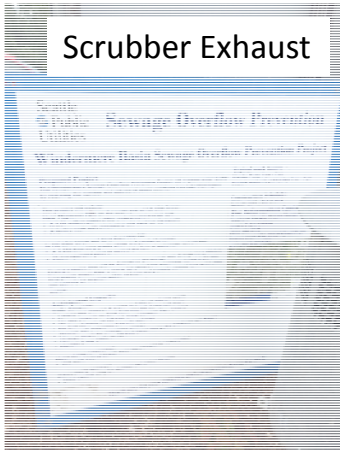
Storage Facility: Odor & Noise Control and Self Cleaning

Air Tight Vaults

Carbon Odor Scrubber



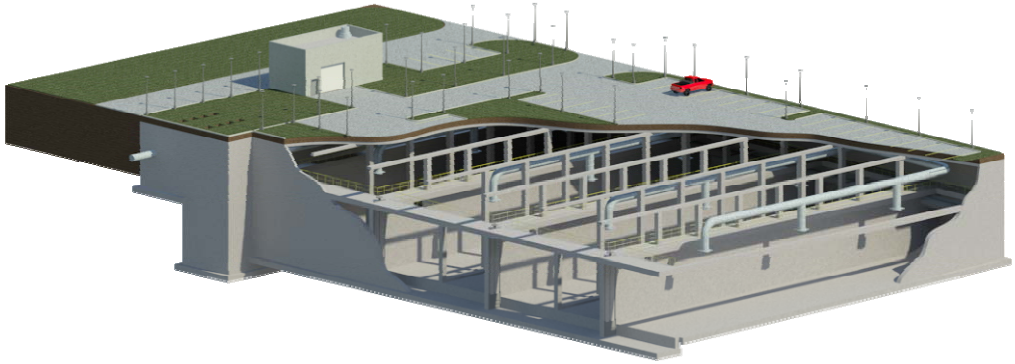
Scrubber Exhaust

Flushing Curbs

Self Cleaning Tipping Buckets

Seismic & Leak Resistance

- USGS Site Specific Seismic Acceleration 1.9 g
- Ductile Reinforced Concrete Regular Shear Wall Structure
- Governing Codes:
  - Reinforced Concrete ACI 350,
  - California Building Code 2013,
  - Design Loads for Buildings and other Structures, ASCE 7-10



Commissioner's Feedback, Questions and Input

Summary

Summary

- Underground Storage Facilities is the best SSO prevention alternative and provides useable surface space
- Underground Storage Facilities can be built with proven odor, noise and nuisances controls
- Underground Storage Facilities will only be operated at heavy wet weather events
- Underground Storage Facilities will store wastewater that will be diluted 1 to more than 10 times with rain or groundwater
- Final Selection Process is progressing to meet regulatory requirements and include additional analysis, environmental documentation preparation and detailed design
- Construction approach will minimize noise, vibrations, odors, and traffic impacts
- Constructed Underground Storage Facilities offers many above ground options for Public and Private use

Methods to Stay Informed & Provide Input

Sign Up for Email Updates

info@cleanwaterprogramsanmateo.org

Register for Private Neighborhood Updates

www.NextDoor.com

Contact Us

www.CleanWaterProgramSanMateo.org

650-727-6870

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Frequently Asked Questions

What is the Clean Water Program?
The Clean Water Program is a comprehensive plan to upgrade San Mateo's wastewater collection system and the San Mateo Wastewater Treatment Plant. The wastewater treatment plant is owned by the Cities of San Mateo and Foster City/Estero Municipal Improvement District "EMID". The Wastewater Treatment Plant also treats wastewater for Crystal Springs County Sanitation District, a portion of unincorporated San Mateo County, and the southern portion of the Town of Hillsborough. Those services are paid for by partner agency reimbursements.

What is a wastewater treatment plant? How does it work?
A wastewater treatment plant consists of a series of physical and biological processes that treat residential, commercial, and industrial wastewater so that it is suitable for reuse, or safe discharge into the Bay. After treatment, the water discharged from the wastewater treatment plant is often referred to as "effluent".

What are the goals for the Clean Water Program?
The goals of the Clean Water Program are:

1. **To replace the aging infrastructure and facilities.** Sewer pipes have an average lifespan of 50-60 years, and most of San Mateo's sewer pipes were constructed between 1900 and 1960. The wastewater treatment plant has many components that are over 75 years old, and nearly half of the system is reaching the end of its useful life. Although it has been upgraded over the years, improvements to accommodate current and future operating requirements are needed.

2. **To meet current and future regulatory requirements and build wet weather sewer system capacity assurance.** The regulatory environment that protects our community continues to change. We are responding to the current direction of our regulators (ie, Regional Water Quality Control Board "RWQCB") requiring specific corrective actions to ensure wet weather capacity, while planning for future regulations related to the quality of our effluent water.

3. **To align with long-term sustainability goals.** Improvements to the Wastewater Treatment Plant and sewer collection system have added environmental benefits, including a cleaner San Francisco Bay, production of new recycled water source to supplement precious water supplies, and alternative fuel sources for City vehicles.

What happens if we do not comply with regulatory requirements?
Failure to comply with permit requirements by mandated deadlines could result in large fines that will be passed on to ratepayers.

How are the Clean Water Program projects funded?
The Program is funded by sewer use fees paid by all properties that tie into the sewer collection system. The City is seeking grants and low-interest loans to minimize impacts on sewer rates.

What is the City's strategy to engage and educate the public about this program?
Public outreach and transparency are important components of the Clean Water Program. The City of San Mateo and Foster City/EMID will be looking at a variety of public outreach methods including providing information on the Clean Water Program website (www.CleanWaterProgramSanMateo.org) and the distribution of information through other communication channels.

Questions or More Information?
Contact Clean Water Program staff at (650) 727-6870 or info@cleanwaterprogramsanmateo.org

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