



Public Works Commission Meeting Underground Storage Facility Alternatives Process & Progress Update

Wednesday, October 12, 2016

Purpose

- Update Commission on activities over the past month
- Outreach Process Updates
- Presentation of Seven Topic Areas
 - Clean Water Program Drivers and Goals
 - Wastewater Management – Additional Information
 - Program Approaches
 - CEQA Process
 - Alternatives Selection Process
 - Construction Impacts & Operational Considerations
 - Environmental & Air Quality Mitigations
- Question & Feedback

Outreach Process Updates

- Two October Community Meetings (193 attended)
- Neighborhood Meetings
- Receipt of emails & hotline messages
- Presentations and FAQ responses on CWP website

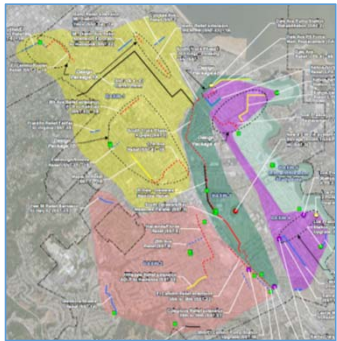


Topic 1

Clean Water Program Drivers & Goals

Clean Water Program – Drivers & Goals

Replace Aging Infrastructure

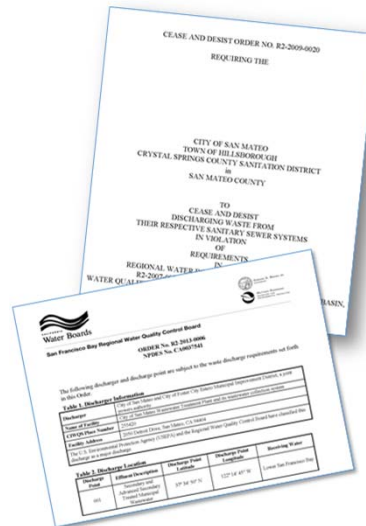


Collection System

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

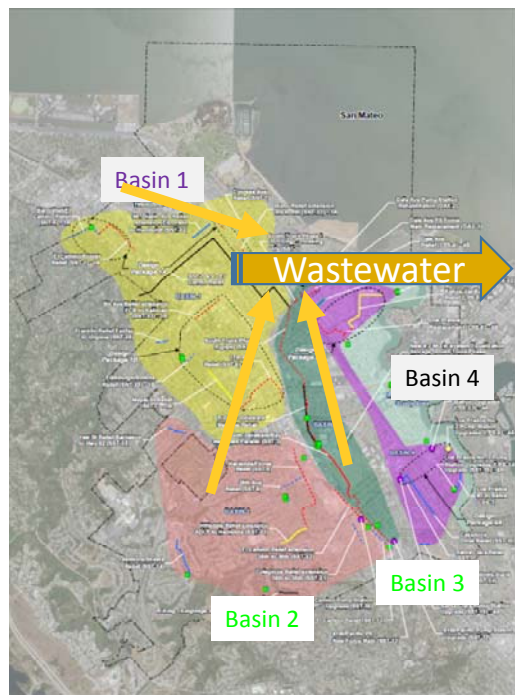


Infrastructure Sustainability Metrics



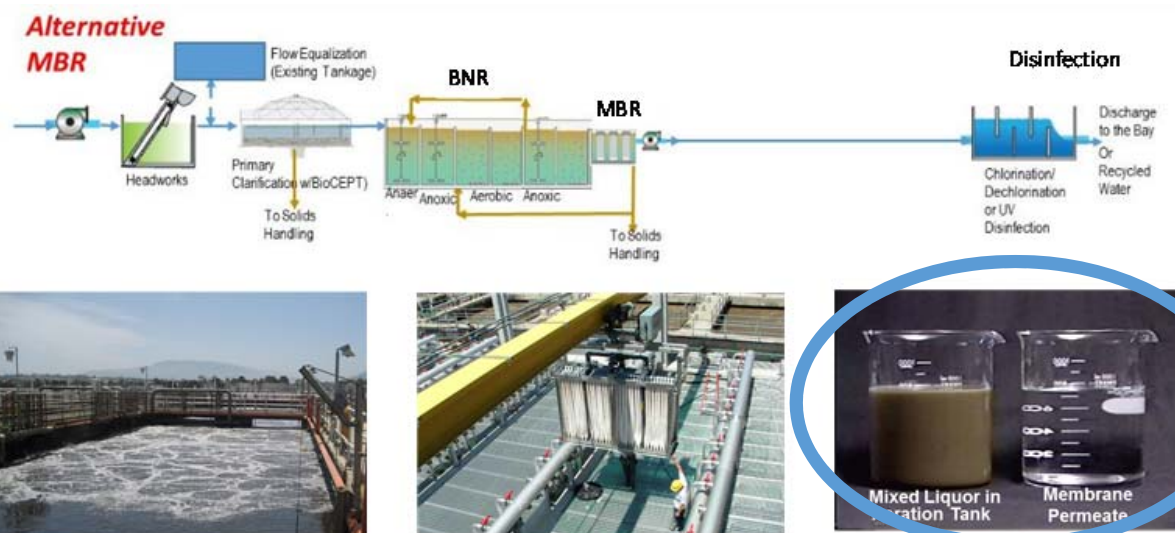
What is the Clean Water Program?

1. Collect



2. Treat

New WWTP Treatment Approach to Prevent Sewer Overflows to SF Bay



Reusable
Clean
Water

Before & After
Treatment



*PEIR was Certified in June 2016 &
Council Selected this Alternative*

6

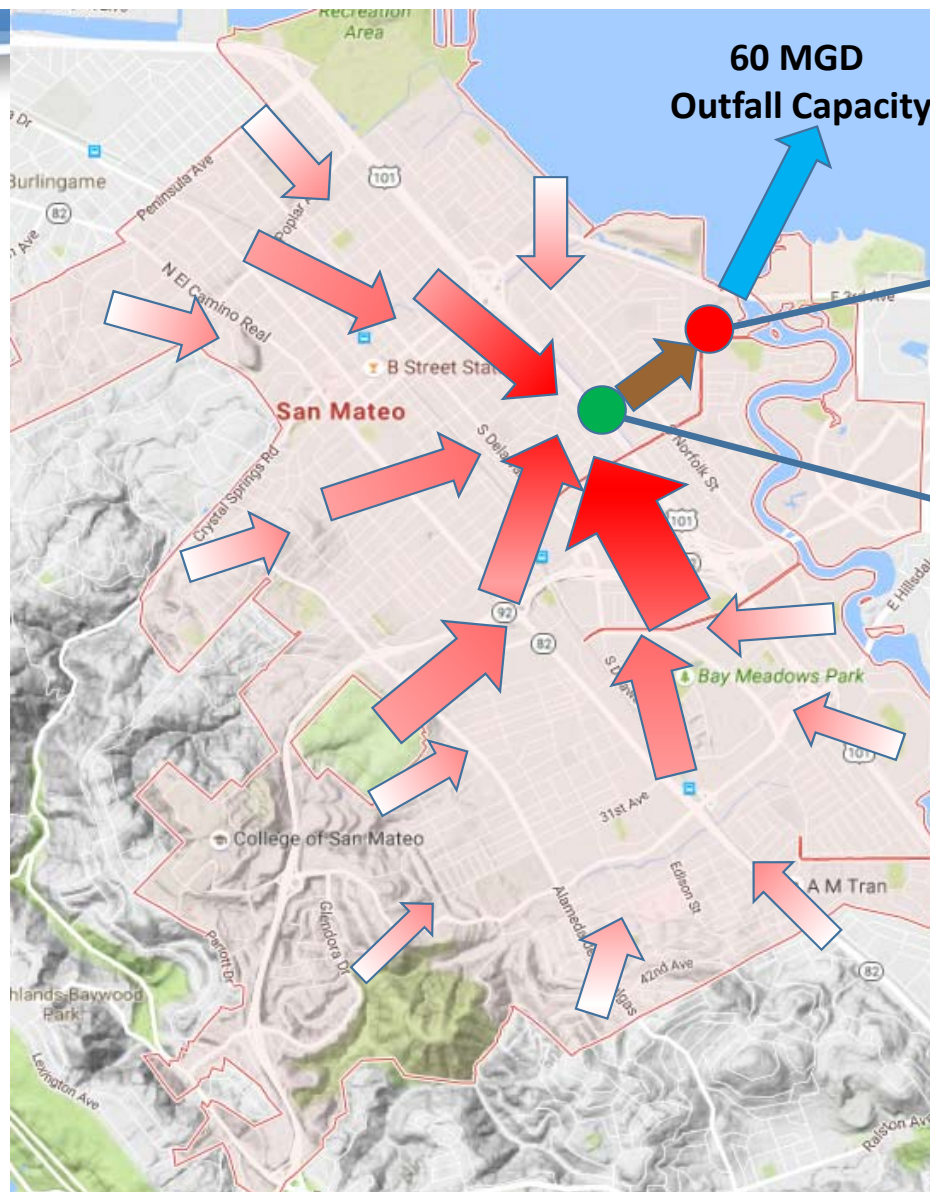
Sewer In-System Storage
Upgrades to Prevent SSOs

Topic 2

Wastewater Management Additional Information



Dry Weather Gravity Sewers and Hydraulic Operations

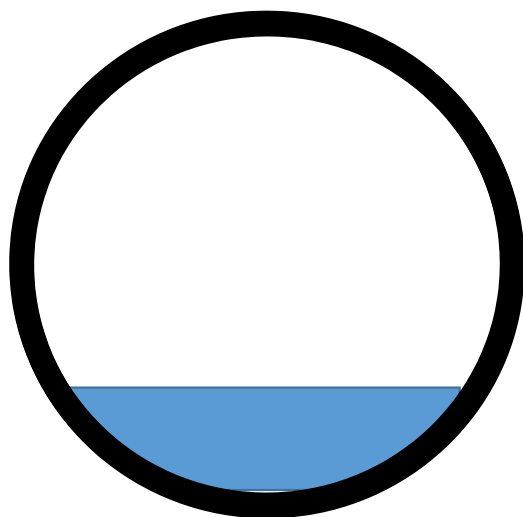


Most Flows go through DAPS to get to WWTP



Sewer Capacity

14 MGD

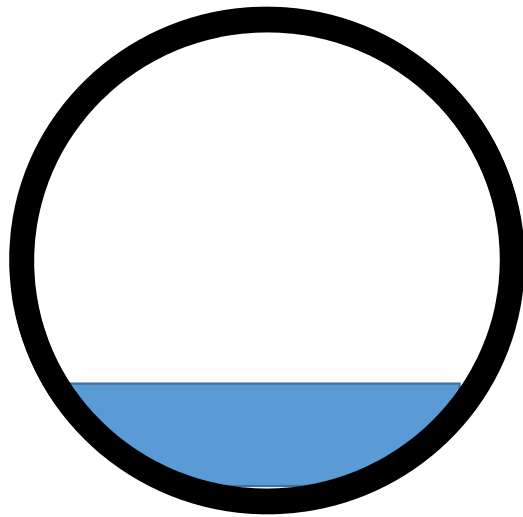


Existing dry weather sewage

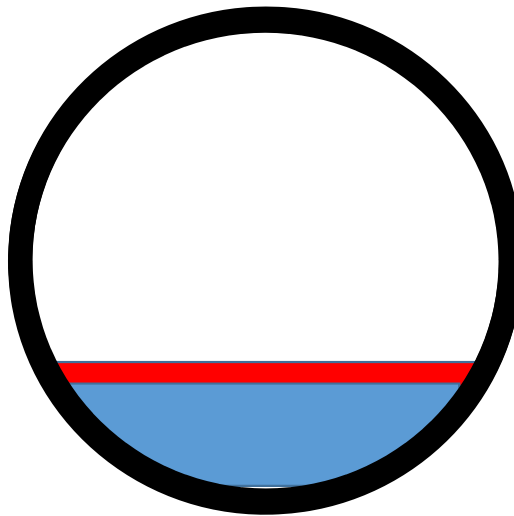


Sewer Capacity

14 MGD



16 MGD

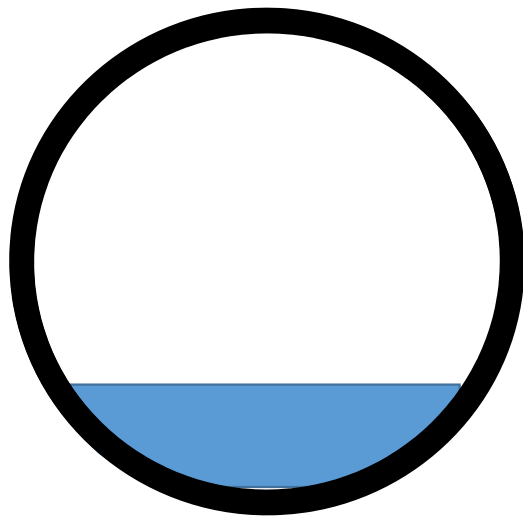


Existing and future dry weather sewage

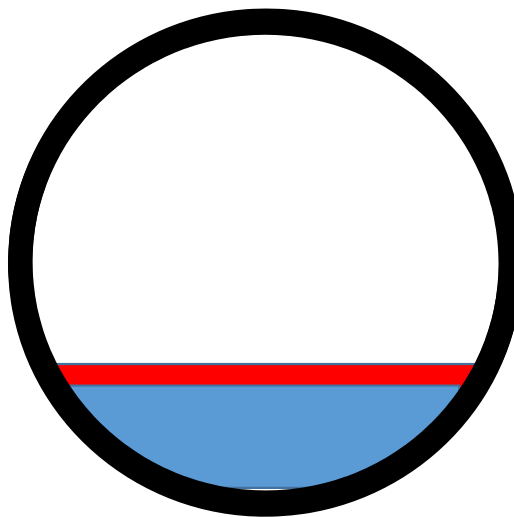


Sewer Capacity

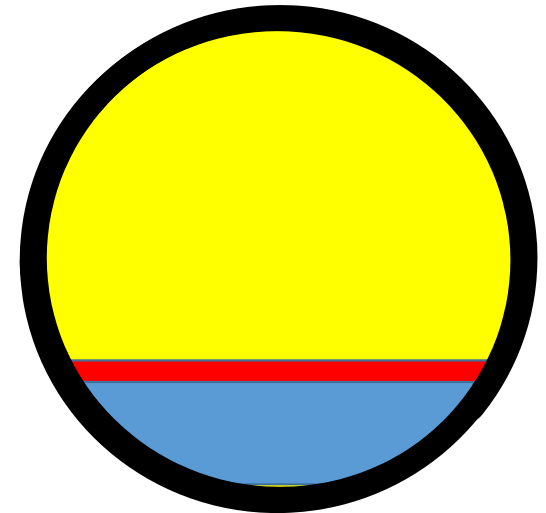
14 MGD



16 MGD



98 MGD

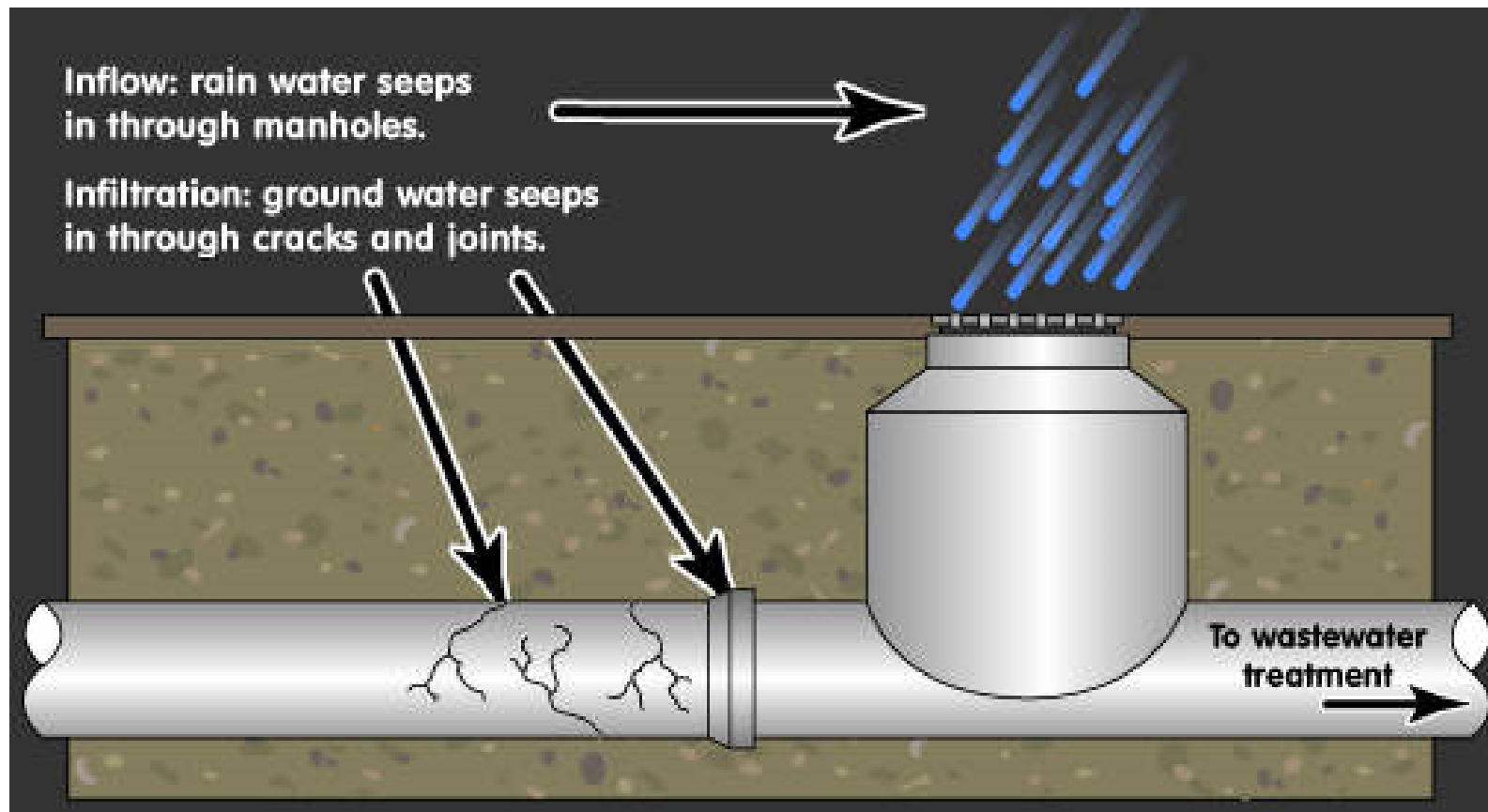


***Existing and future sewage with
rain induced inflow and infiltration***



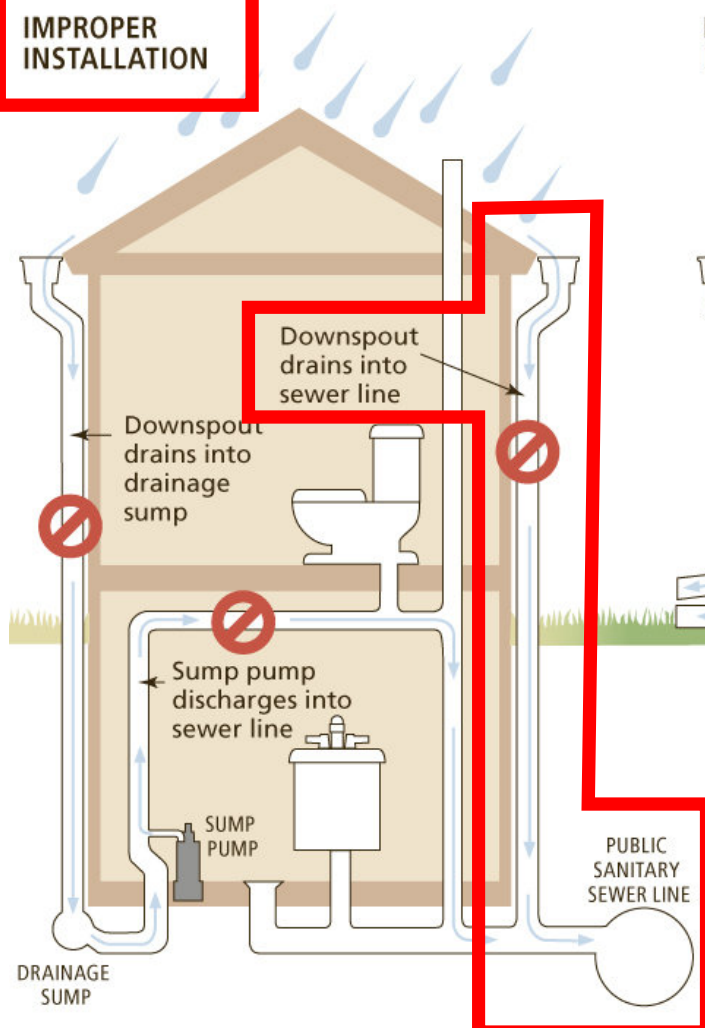
Contributors to SSOs

INFILTRATION & INFLOW (I&I)

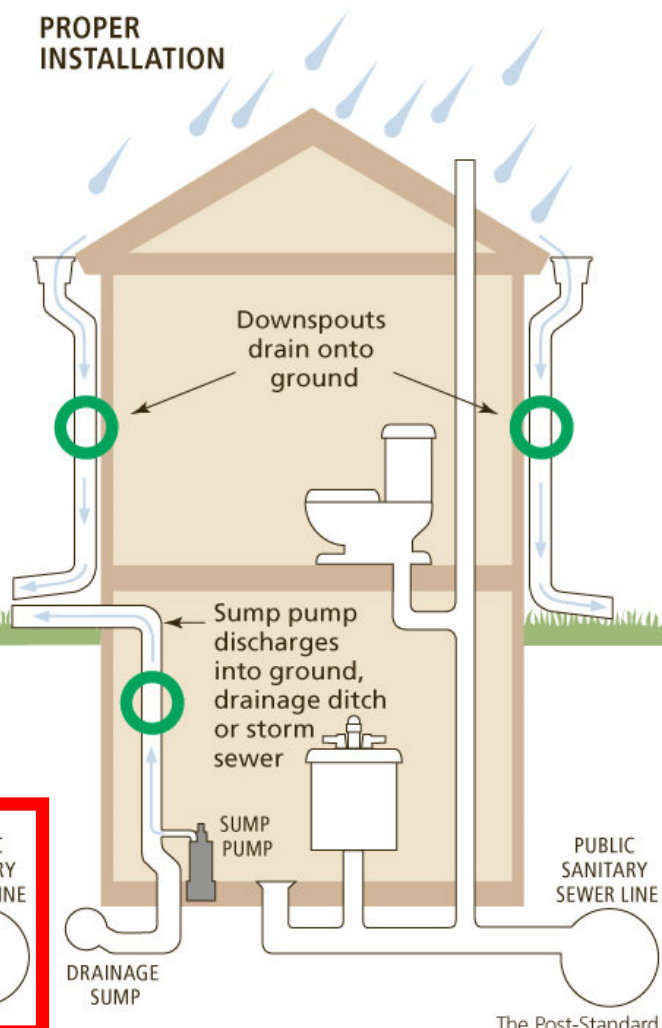


Contributors to SSOs

**IMPROPER
INSTALLATION**



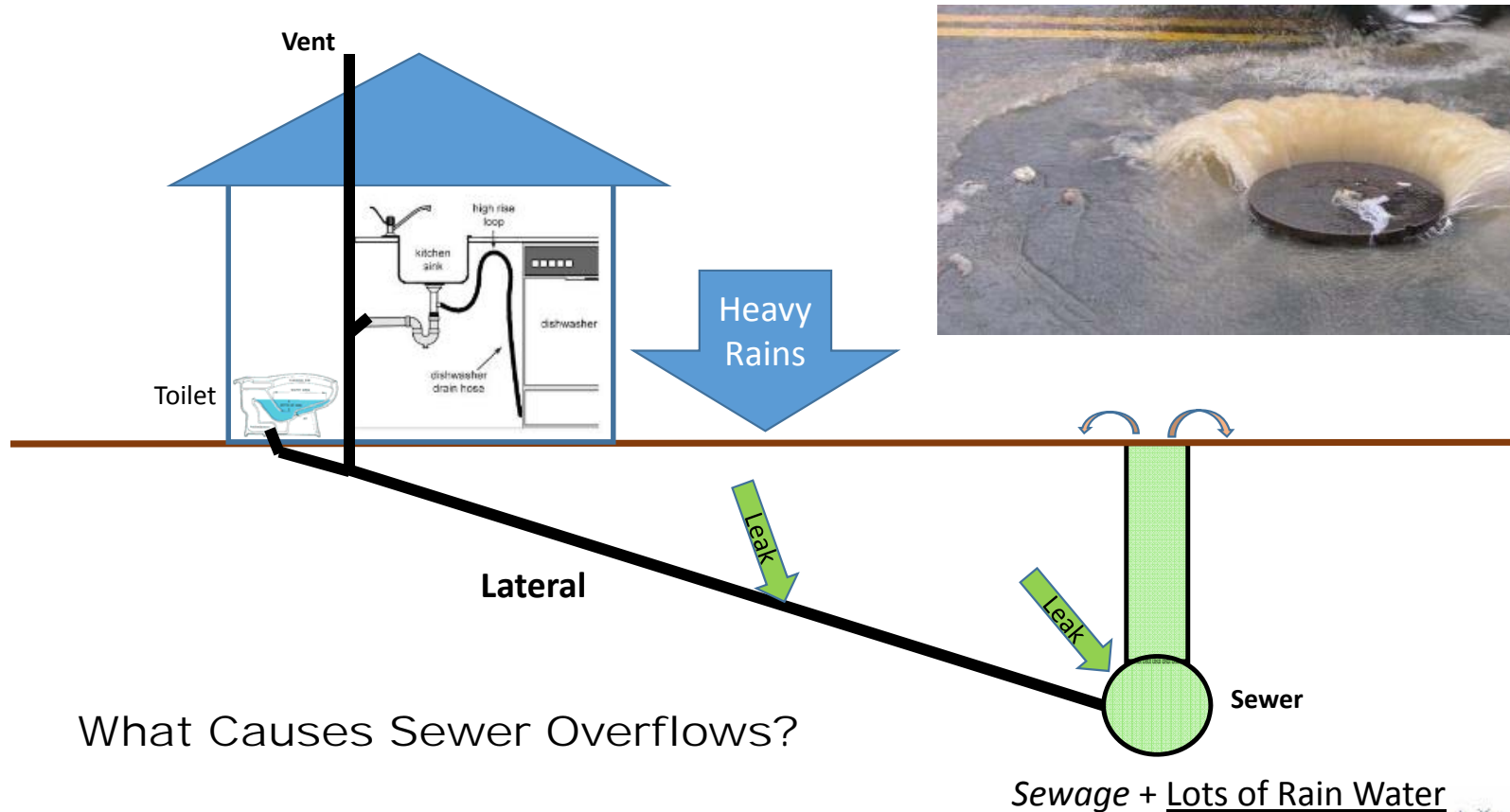
**PROPER
INSTALLATION**



**ILLEGAL
STORM DRAIN
CONNECTIONS**



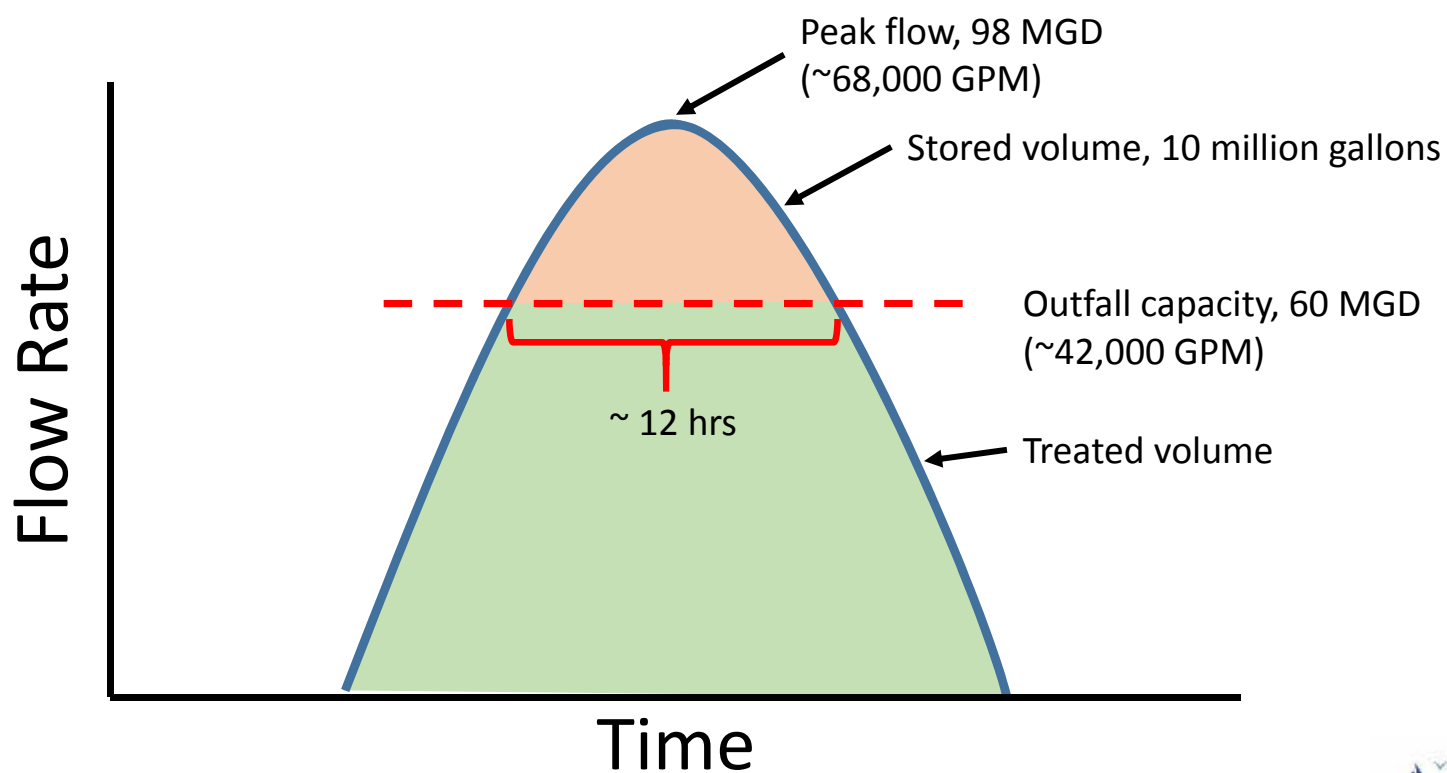
Wastewater Basics: Peak Wet Weather Conditions & SSOs



What Causes Sewer Overflows?



Plant Flow and Storage Volume



Topic 3

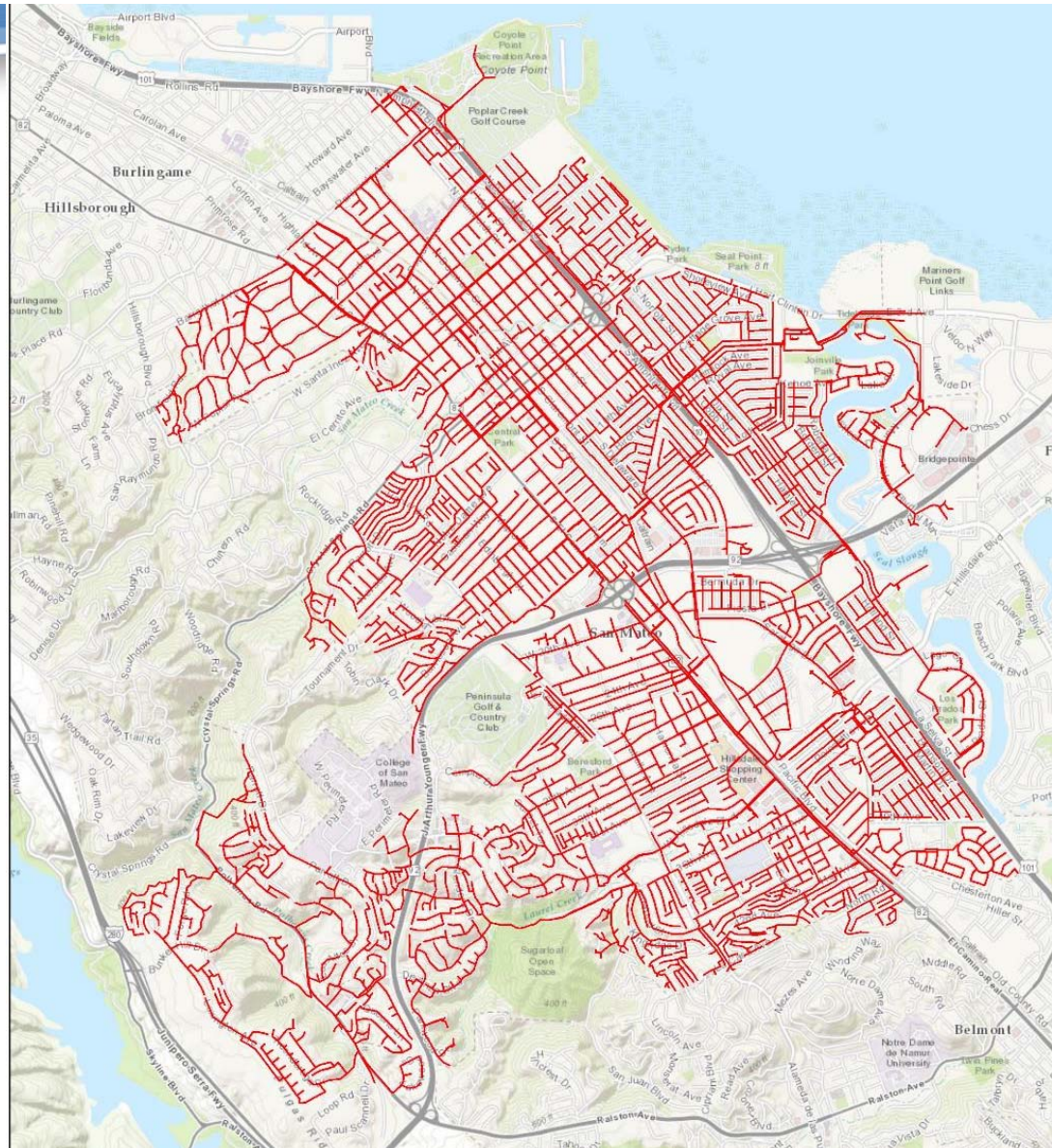
Program Approaches

Program Approaches

Alternative	Major Characteristics	Significant Impacts	Meets CWP Objectives?
In-System Storage Program	One or more underground storage basins upstream of the Dale Avenue Pump Station to detain wastewater flows during peak wet weather events	<ul style="list-style-type: none"> Significant and unavoidable construction noise and vibration impacts All other impacts less than significant with mitigation 	Yes
Full Conveyance Program	New pump station next to the existing Dale Avenue Pump Station and larger pipelines to deliver peak wet weather flows to WWTP.	<ul style="list-style-type: none"> Significant and unavoidable construction noise and vibration impacts. All other impacts less than significant with mitigation. 	Yes
Conveyance system replacement program	Replacement of all pipelines in City's conveyance system.	<ul style="list-style-type: none"> Significant and unavoidable construction noise and vibration impacts. Would not address all SSOs or aging infrastructure at WWTP. Would not meet current or future regulatory requirements. Would not support creation of opportunities for recycled water use. 	No

Program Approaches – Conveyance System Replacement

*“Why don’t we just
fix all the leaks by
replacing all the pipes?”*



Program Approaches – Conveyance System Replacement

Conveyance System Replacement

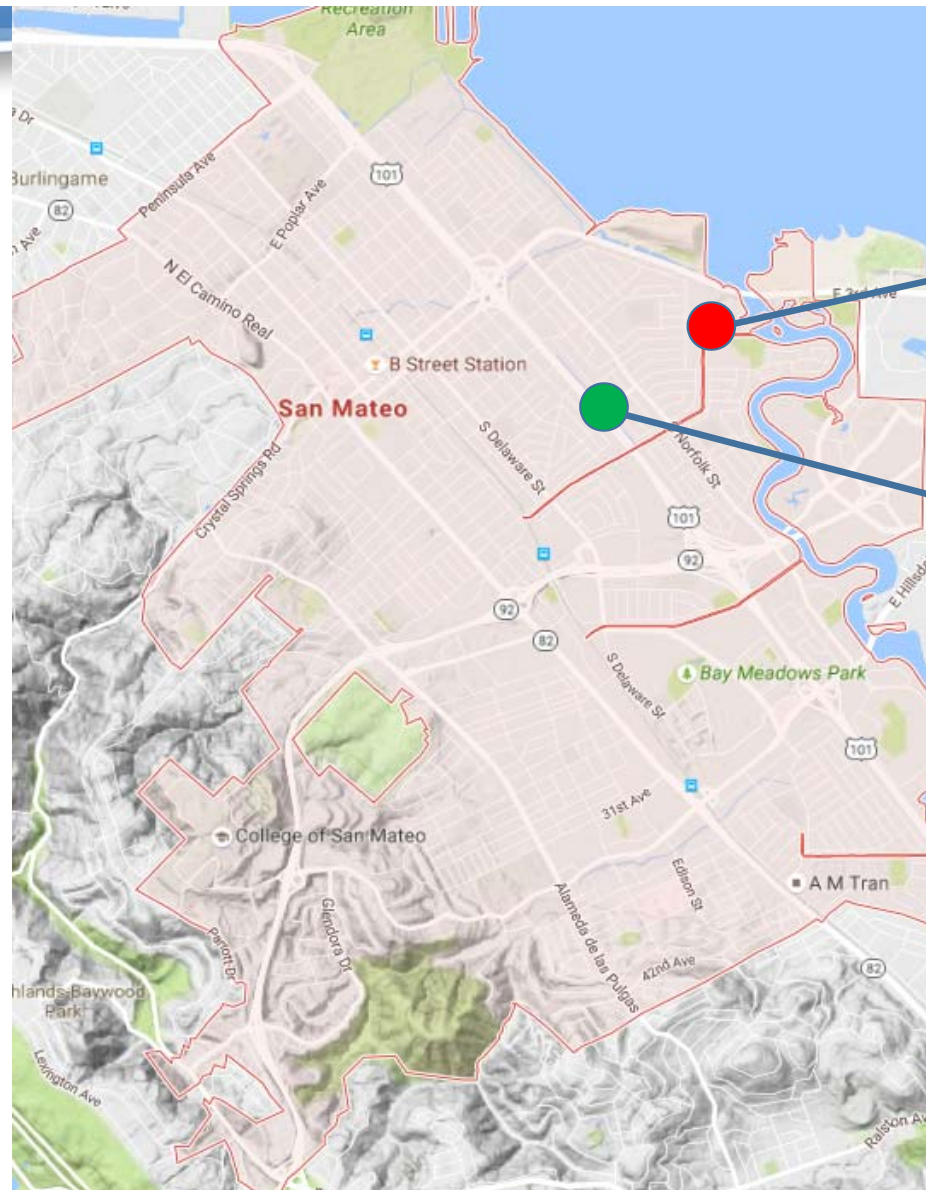
- | | |
|--|---|
| <ul style="list-style-type: none">● Replace ALL pipes● Does not Include WWTP Improvements | <ul style="list-style-type: none">● ~235 miles of sewer mains<ul style="list-style-type: none">● 64% mains in roads [~ 150 miles]● 36% mains in easements [~ 85 miles]● City Wide Impacts to All Properties● ~28,000 lateral connections● \$1.3 Billion (Conveyance System Only, without WWTP Improvements)● ISS Alternative is \$900 M and includes both CS & WWTP Improvements● Approx. 3 to 4 times longer construction duration |
|--|---|

Full Conveyance vs In-System Storage Alternatives

Full Conveyance	In-System Storage
<ul style="list-style-type: none">• All wet weather storage located at WWTP• Bigger pipes and pump station to convey all flow to WWTP• Larger pipes will increase odor• New wet weather pump station and force main at Dale Ave location• WWTP improvements must be completed before Full Conveyance alternatives can be implemented	<ul style="list-style-type: none">• Wet weather storage located upstream of WWTP & at WWTP• Smaller pipes to convey controlled amount of wet weather flows• Better odor control• Independent from WWTP improvements• Sooner benefit to reducing SSOs• Preserves space at WWTP for future improvements for recycled water• Estimated at least \$30M less expensive than full conveyance alternative for same WWTP Option

Full Conveyance Alternative

New Dale Ave Pump Station



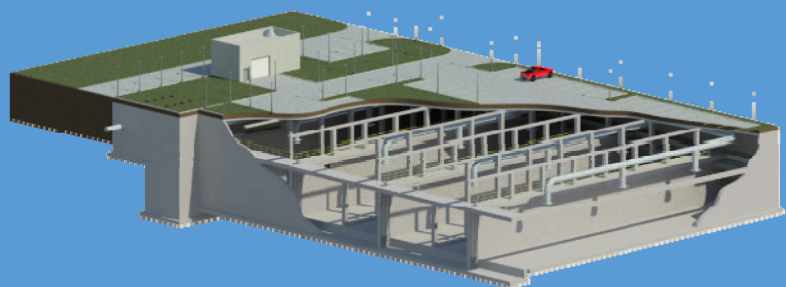
WWTP

Dale Ave
Pump Station
(DAPS)



Full Conveyance vs In-System Storage Alternatives

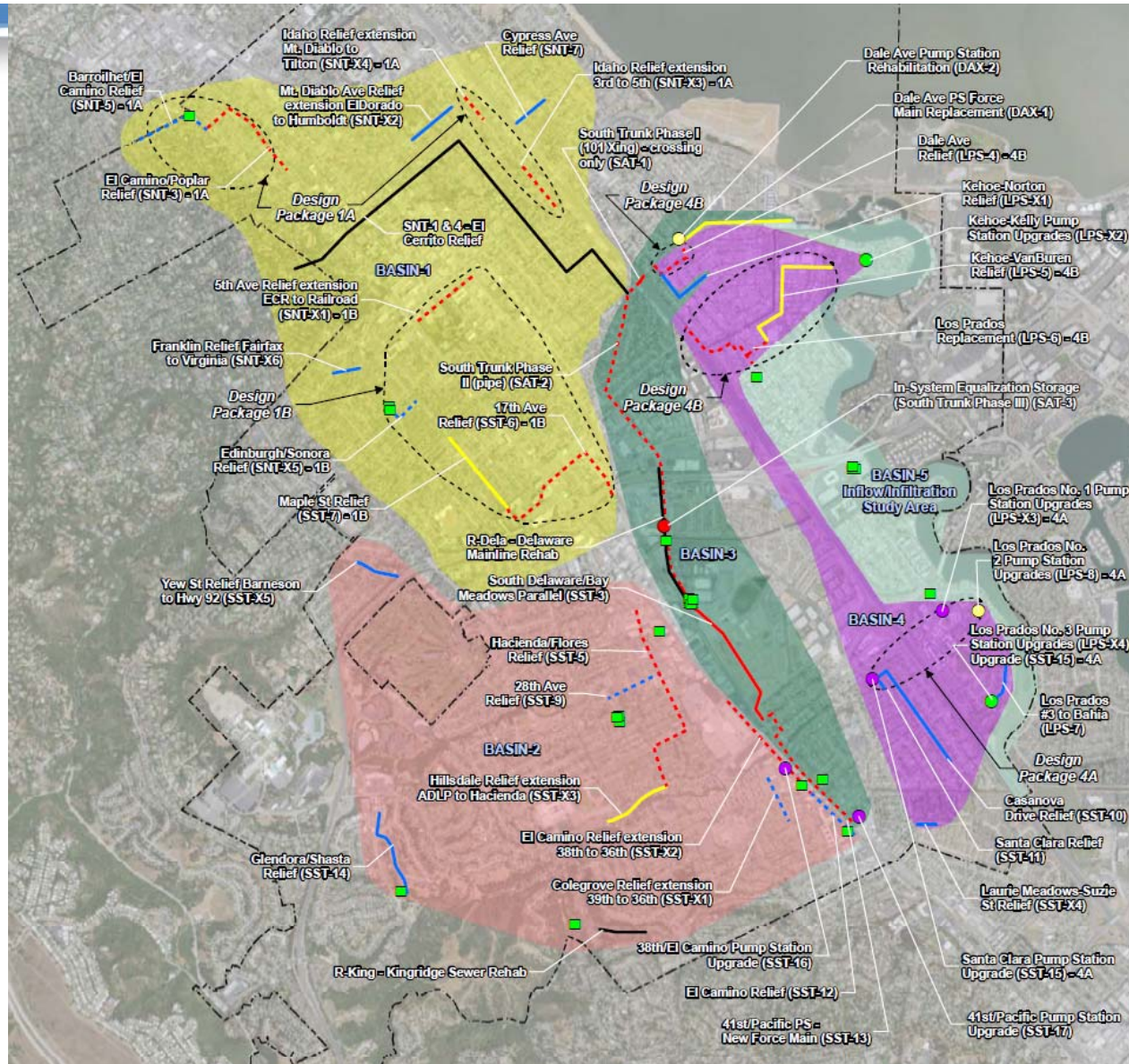
*Council selected the
In-System Storage
Alternative in June
2016*



In-System Storage

- Wet weather storage located upstream of WWTP & at WWTP
- Smaller pipes to convey controlled amount of wet weather flows
- Better odor control
- Independent from WWTP improvements
- Sooner benefit to reducing SSOs
- Preserves space at WWTP for future improvements for recycled water
- Estimated at least \$30M less expensive than full conveyance alternative for same WWTP Option

- 40 projects
- 31 pipeline projects
- 13 miles of pipe replacement
- 8 pump stations
- 1 in system storage facility



Topic 4

CEQA Process



What is CEQA?

The California Environmental Quality Act (**CEQA**) is a California statute passed in 1970, shortly after the United States federal government passed the National Environmental Policy Act (NEPA), to institute a statewide policy of **environmental protection.**



What does CEQA require?

CEQA requires state and local agencies within California to follow a protocol of analysis and public disclosure of **environmental impacts of proposed projects and adopt all feasible measures to mitigate those impacts.**

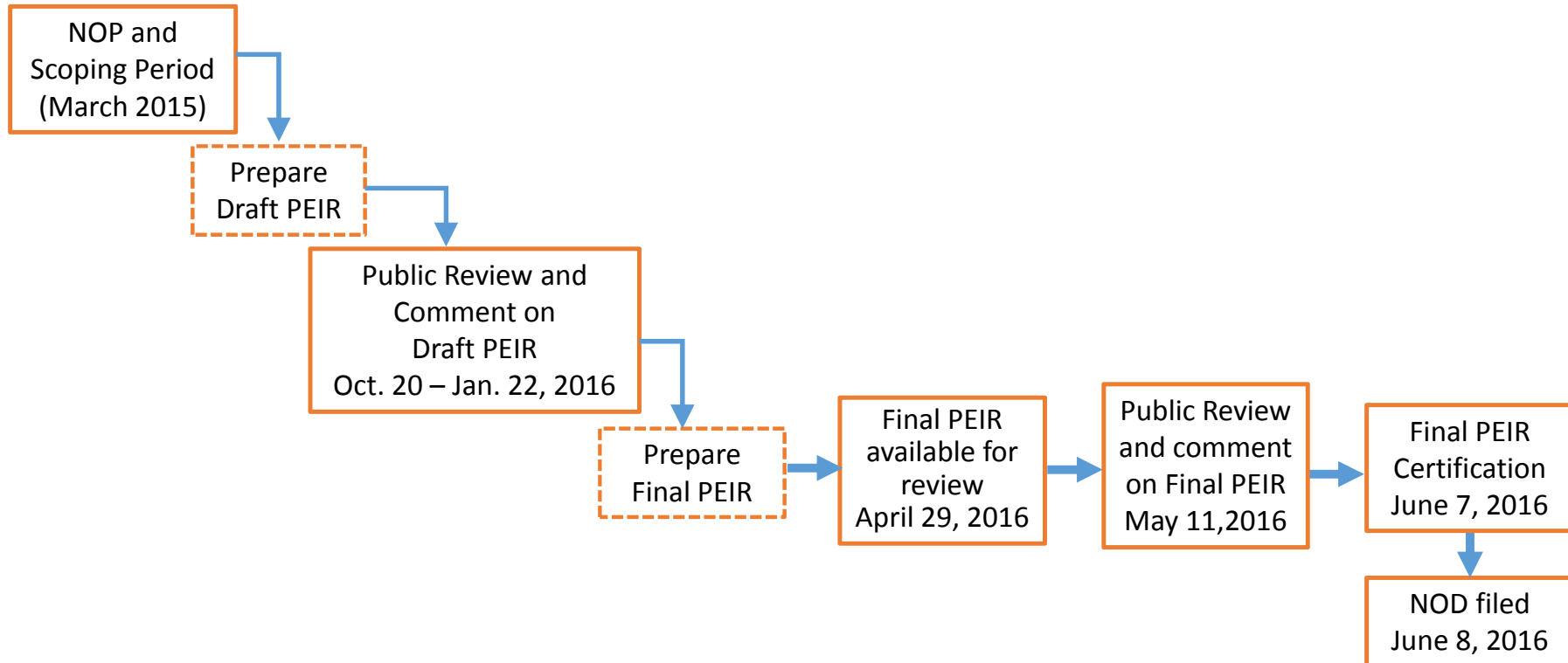


Resource Areas Evaluated

- Aesthetics
- Air Quality (including odors)
- Biological Resources
- Cultural Resources
- Geological and Soils
- Greenhouse Gases
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation and Traffic
- Utilities
- Cumulative and Growth-inducing Impacts

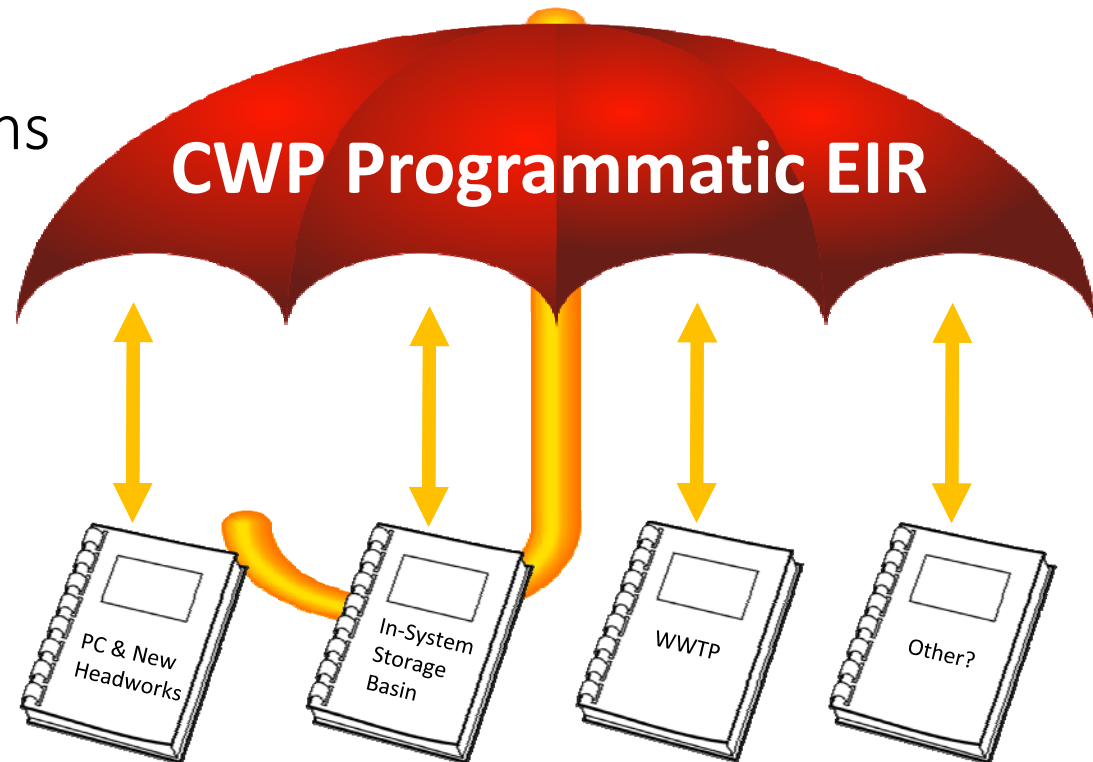


Overview of PEIR CEQA Process



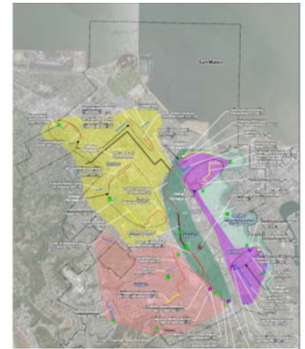
Programmatic EIR Approach

- Programmatic review used for a program or series of linked actions or projects
- PEIRs analyze broad environmental effects of a program; not all impacts can be evaluated at a detailed level
- Future project-specific environmental review may be required



Program Projects

- Two projects evaluated at project level of detail
 - *New Headworks Project*
 - *Primary Clarifier Replacement Project*
- New, extended, and upsized sanitary sewer relief pipeline projects
- Rehabilitation and upgrade of pump stations
- New and upgraded WWTP facilities including treatment process options
- Ancillary WWTP facilities (e.g. maintenance facilities, parking, etc.)



Bundled
Collection System



PEIR CEQA Process Highlights

- Full compliance with CEQA notifications, reviews, and requirements
- City provided over 90 days of public review for Draft PEIR; *CEQA requires minimum 45 days*
- City held three Public Works Commission hearings and three additional public outreach opportunities; *CEQA requires one public hearing for an EIR*
- Distributed to 15 resource agencies
- Addressed over 180 comments (written and verbal) on Draft PEIR



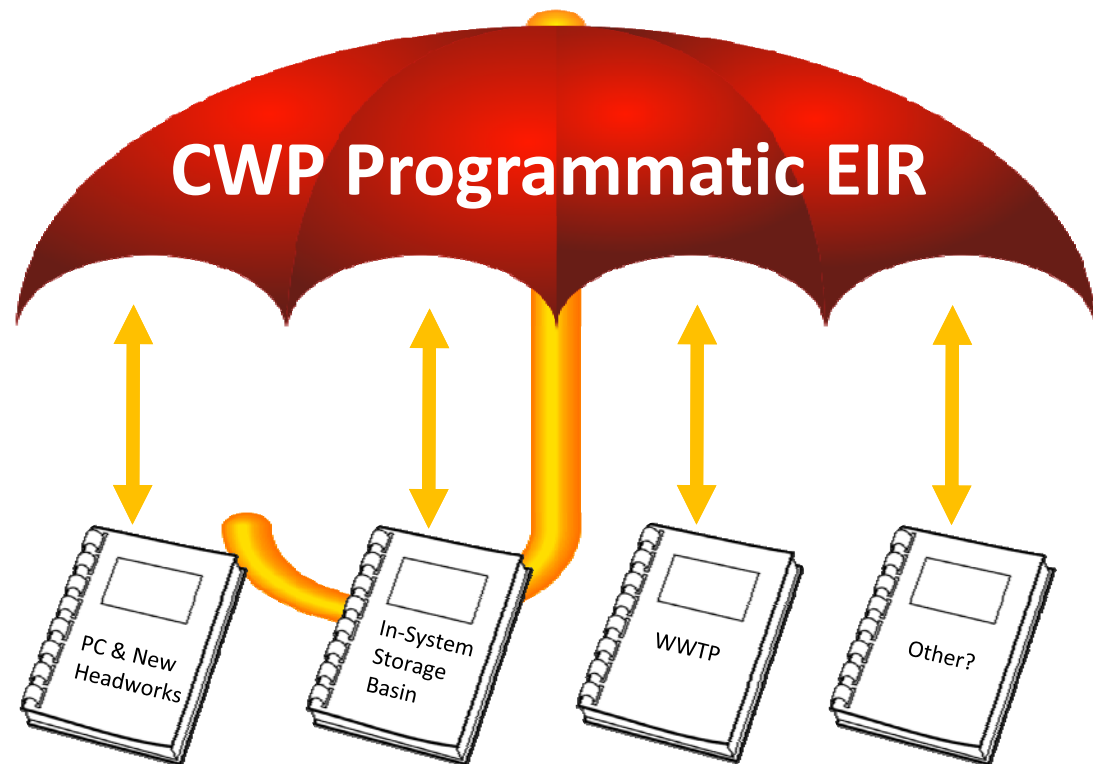
Final PEIR Approval & Certification

- Only minor changes were made and did not alter the fundamental assessment of environmental impacts
- Public Works Commission recommended that City Council certify the PEIR and adopt the In-System Storage Alternative
- Unanimous June 2016 City Council decisions:
 - Certify PEIR
 - Adopt In-System Storage Alternative
 - Adopt Mitigation Monitoring or Reporting Program (MMRP)



Future CEQA Evaluation

*Prior to implementation of individual projects, each project would be evaluated in relation to the Final PEIR and **additional CEQA evaluation may be conducted. Additional environmental permits may be required.***



Topic 5

Alternatives Selection Process

Space

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

55

55 Original Site Alternatives Identified in PEIR



Space

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

55



Unable to Store more than 1 MG

Does not relieve historical & simulated SSOs

Does not lessen size, scope, or cost of multiple projects

Does not provide regional impact

12 Site Alternatives Shortlisted in PEIR

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

California Water
Services Lot

Martin Luther
King Jr Park

Central
Park –
Area 1

Central
Park –
Area 2

Station Park Green
Development

Trina
Park
Area 1

Trina
Park
Area 2

San Mateo
County Expo
Center

Fiesta
Meadows
Park

Bay
Meadows
Park

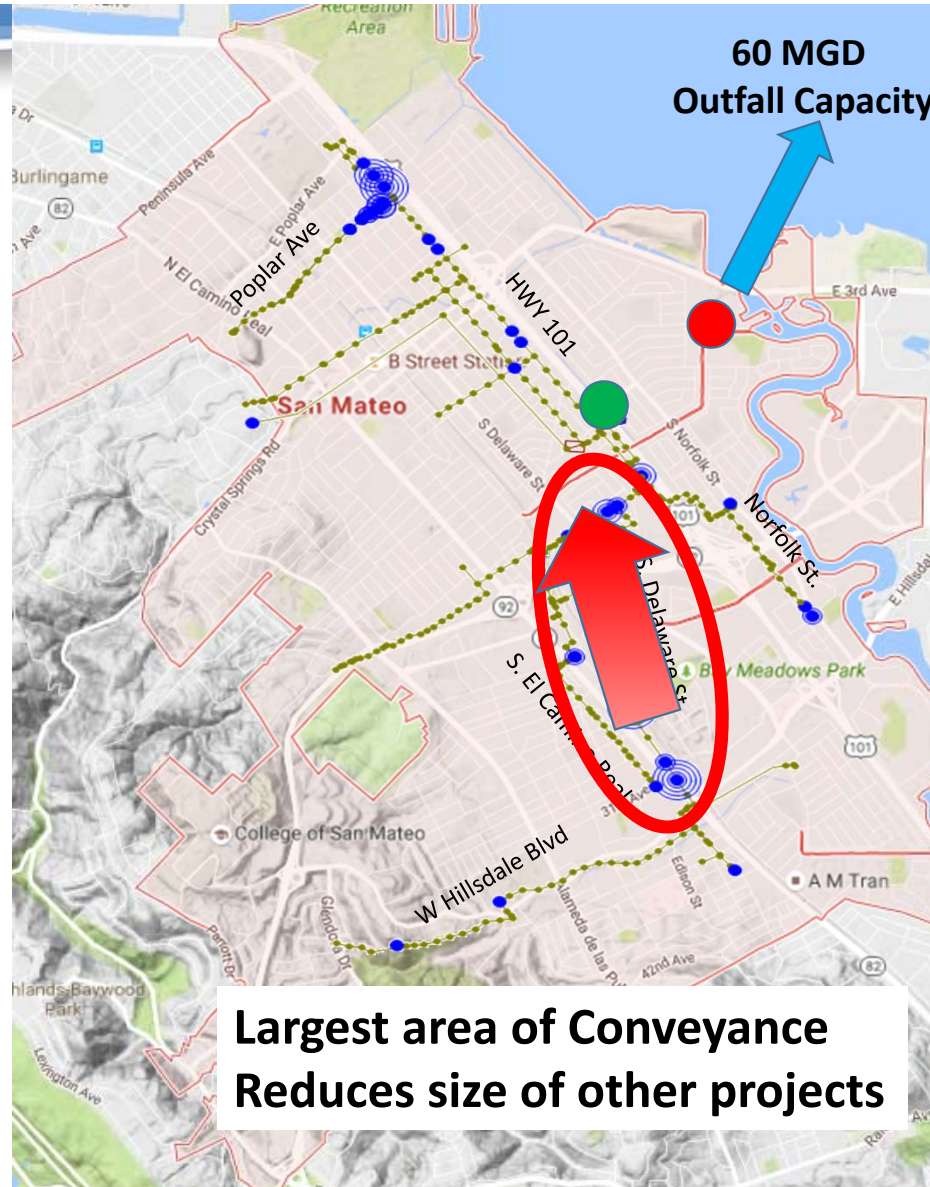
Hillsdale
Shopping Center

Hillsdale
High School

Abbott
Middle School

San Mateo
County
Hospital (Lot)

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

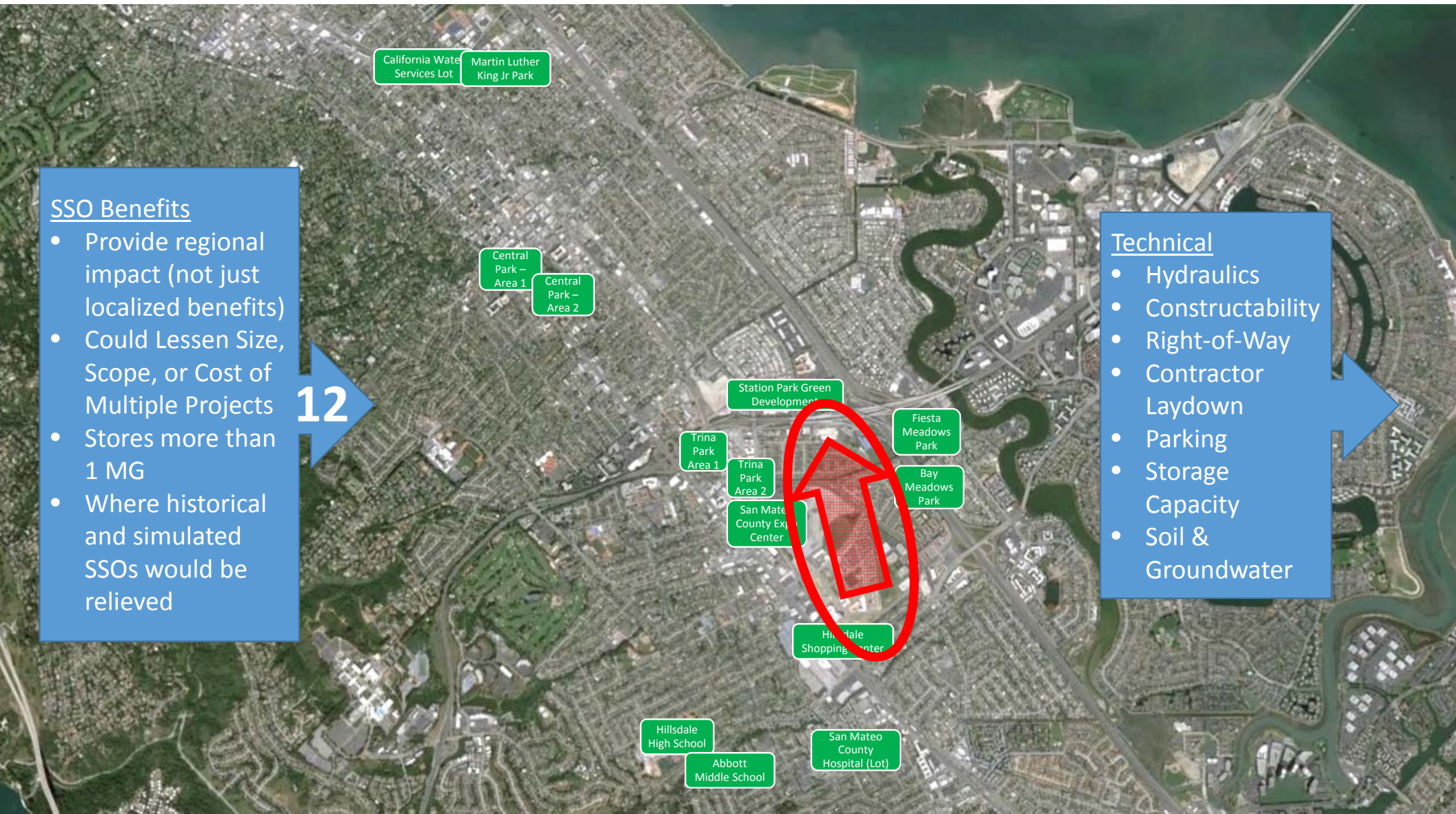
SSO Benefits

- 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

Technical

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





Corporation Yard

Delaware Street
Alignment Tank

Fiesta Meadows
Park

Technical

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

6

Expo Center
Parking Lot

Bay Meadows Park

Hillsdale Plaza

6 Alternatives

Corporation Yard

City Owned Property

Parking lot repaved over storage facility.

Construction would be coordinated with future Corporation Yard Plans

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

Corporation Yard

During Construction, minimal traffic impacts to residential streets

During O&M, minimal traffic impacts



Bay Meadows Park

When the Bay Meadows Community Park was dedicated to the city, the city accepted title to the property subject to a restriction that the use of the property “shall be limited to park and recreation uses only.” This restriction on the use of the property prevents the city from using the property for an in-system storage, since such use is not a park or recreation purpose.

The Program will no longer consider a basin in this location and have focused our attention and analysis on the other alternatives

The findings & this determination will be incorporated into the Alternatives Analysis Report.



What is the difference in estimated cost between the options?

Alt	Name	Construction Cost	Additional Costs
1	Expo Parking Lot	\$28.5 M	Easements, Use Fees
2	Corporation Yard	\$35.7 M	Use Fees
3	Bay Meadows	\$33.3 M	Potential Use Fees
4	Fiesta Meadows	\$33.0 M	Potential Use Fees
5	Hillsdale Plaza & Expo	\$34.5 M	Easements, Use Fees
6	Tunnel Tank	\$78.2 M	Easements

- Storage tank construction costs range from \$28 – \$36 million
- Does not include design costs, project and construction contingency, and special site restoration
- Does not include property acquisition or use fees
- Does not include other Basin 2 and 3 pump station and pipeline projects



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

Beneficial Impacts

- 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

Design Team

Technical

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

6

Public Input + Design Team

Alternatives Analysis

- Economic
- Environmental
- Technical
- Social

2 or 3

City Council

Final Selection

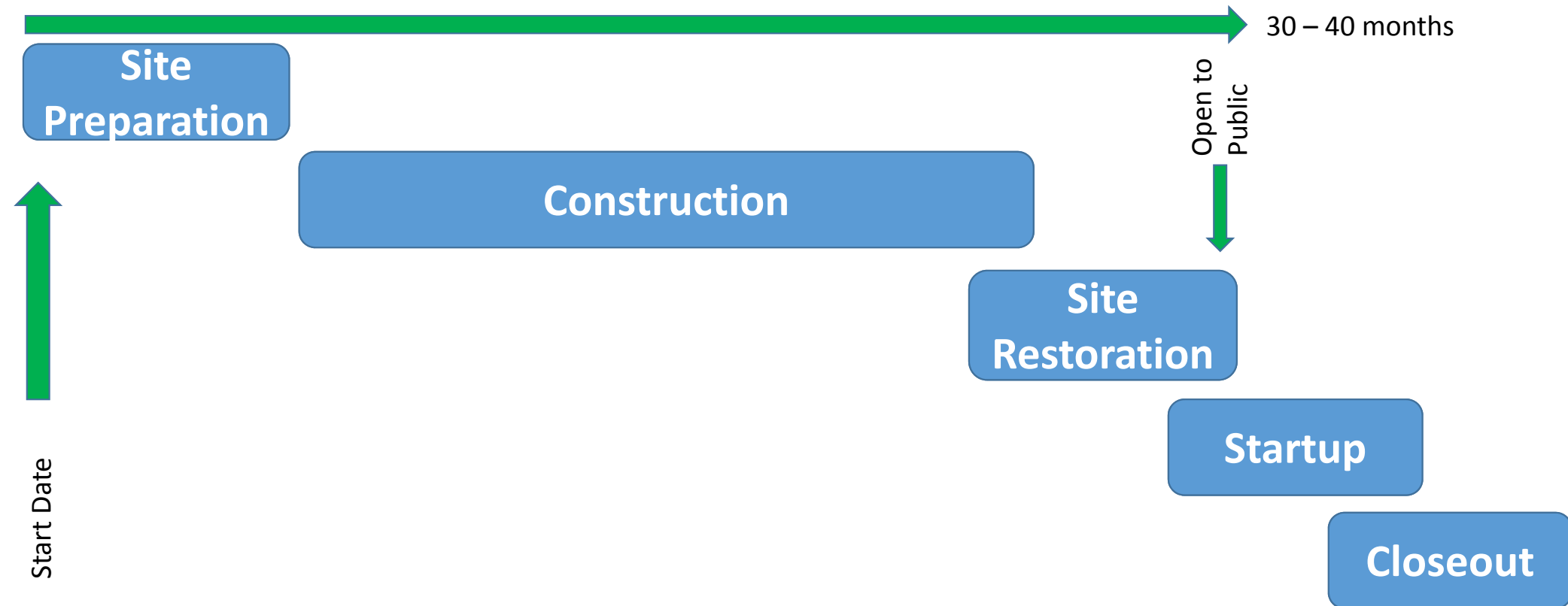
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Topic 6

Construction Impacts & Operational Considerations

Underground Storage Construction Schedule



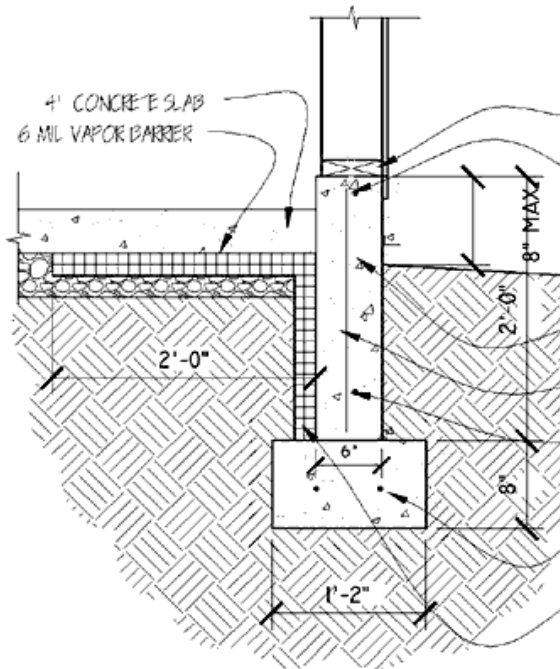
Entire Schedule could vary from 3 to 4 years based on site selected





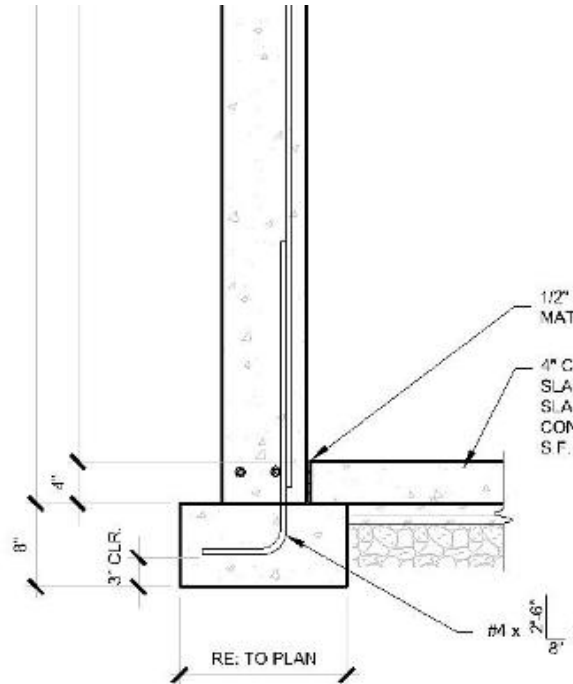
Design Criteria/ Design Consideration	Residential / Commercial	Hospital / Fire Station	Storage Facility
Liquid Tight, Long Term Durability	Goal is water-resistant, not watertight <ul style="list-style-type: none"> Architectural Materials used to keep water out 	Goal is water-resistant, not watertight <ul style="list-style-type: none"> Architectural Materials used to keep water out 	Watertight is a primary structural consideration <ul style="list-style-type: none"> Structural materials keep water tight Same as wastewater treatment plant tanks
Seismic Resiliency	Goal is life safety <ul style="list-style-type: none"> Significant damage is expected →Relative Strength: 1.0	Goal is immediate use <ul style="list-style-type: none"> Minor damage expected; facility must remain operational →Relative Strength: 1.5	Goal is continued operation <ul style="list-style-type: none"> Minor damage expected; facility may require minor repairs →Relative Strength: 2.08
Settlement Control	Shallow Reinforced Concrete (RC) foundations common <ul style="list-style-type: none"> Strip/wall footings Thin slabs 	Deep Foundations common <ul style="list-style-type: none"> Piles or Piers RC Grade Beams 	Deep Foundation Required <ul style="list-style-type: none"> RC Piles expected Thick structural slab over piles

Residential



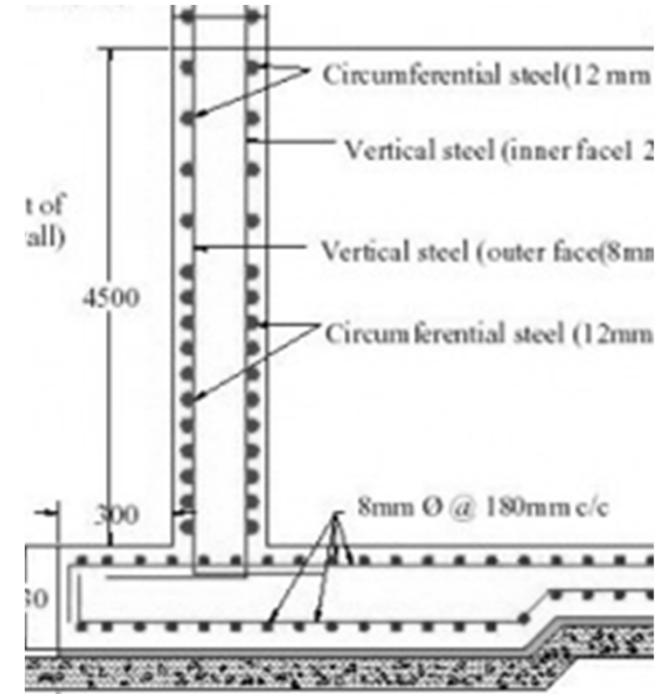
Relative Strength – 1.0

Hospital/Fire Station



Relative Strength – 1.5

Storage Tank



Relative Strength – 2.1



Impacts to Traffic

- Cumulative trips to and from site
- Vehicle Types: heavy trucks, other construction trucks, worker vehicles
- Similar to other commercial construction in Bay Meadows and Hillsdale Area - ie Survey Monkey building
- Estimated Peak Day: 60 Heavy Vehicle Trips, 50 Worker Commute Trips
- Estimated Average Day: 20 Heavy Vehicle Trips, 20 Worker Commute Trips



Typical Maintenance Requirements and Impacts

- Quarterly inspections
- Semi-Annual testing
- Annual cleaning
- Five year overhaul
- Twenty-five year equipment replacement
- Minimal noise
 - Less than level of park maintenance activities (i.e. mowing)
- Quarterly to annual maintenance requires 1 to 4 staff onsite
- Similar or lower frequencies than the maintenance at other City pump stations

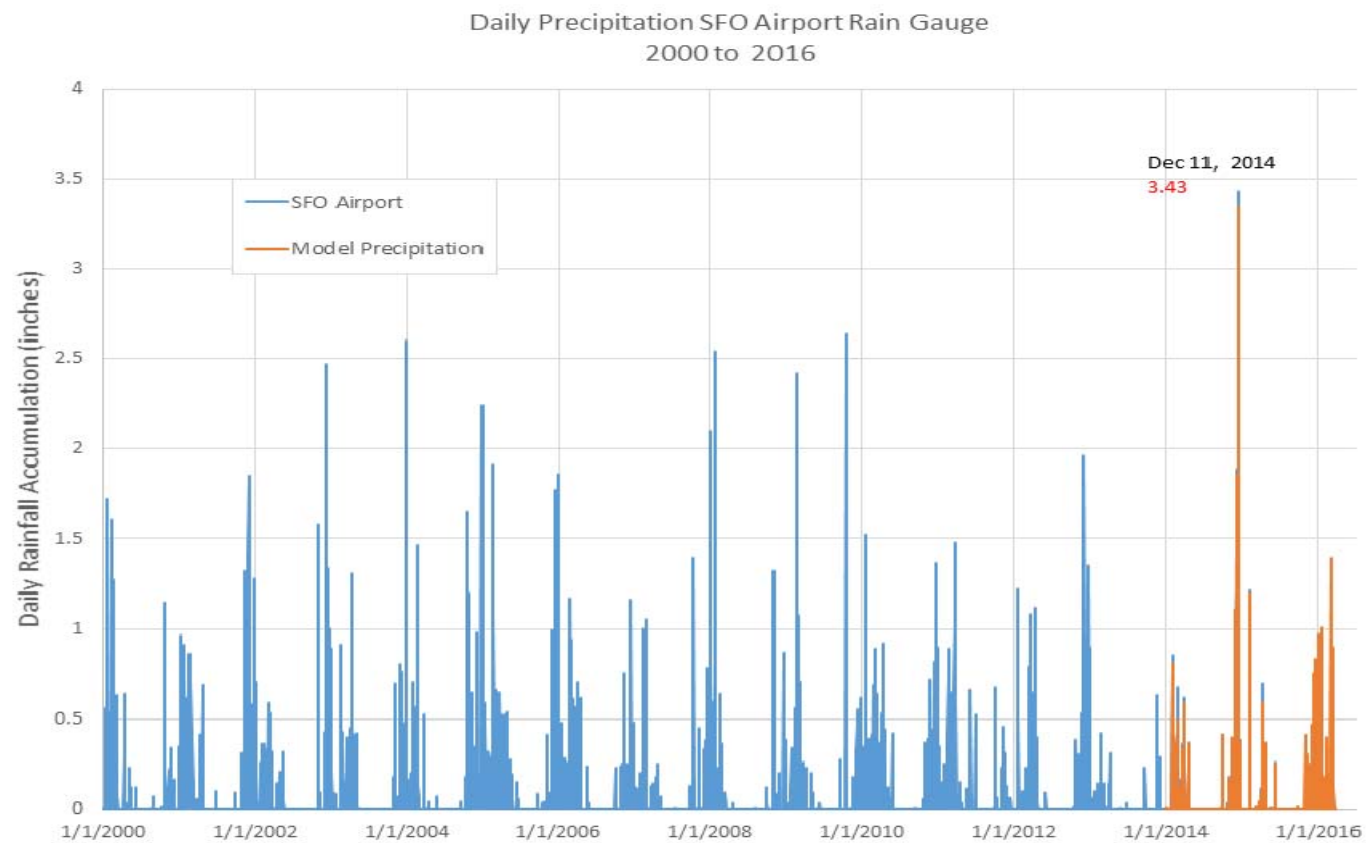


Remote Sensors Reduce On-Site Activity

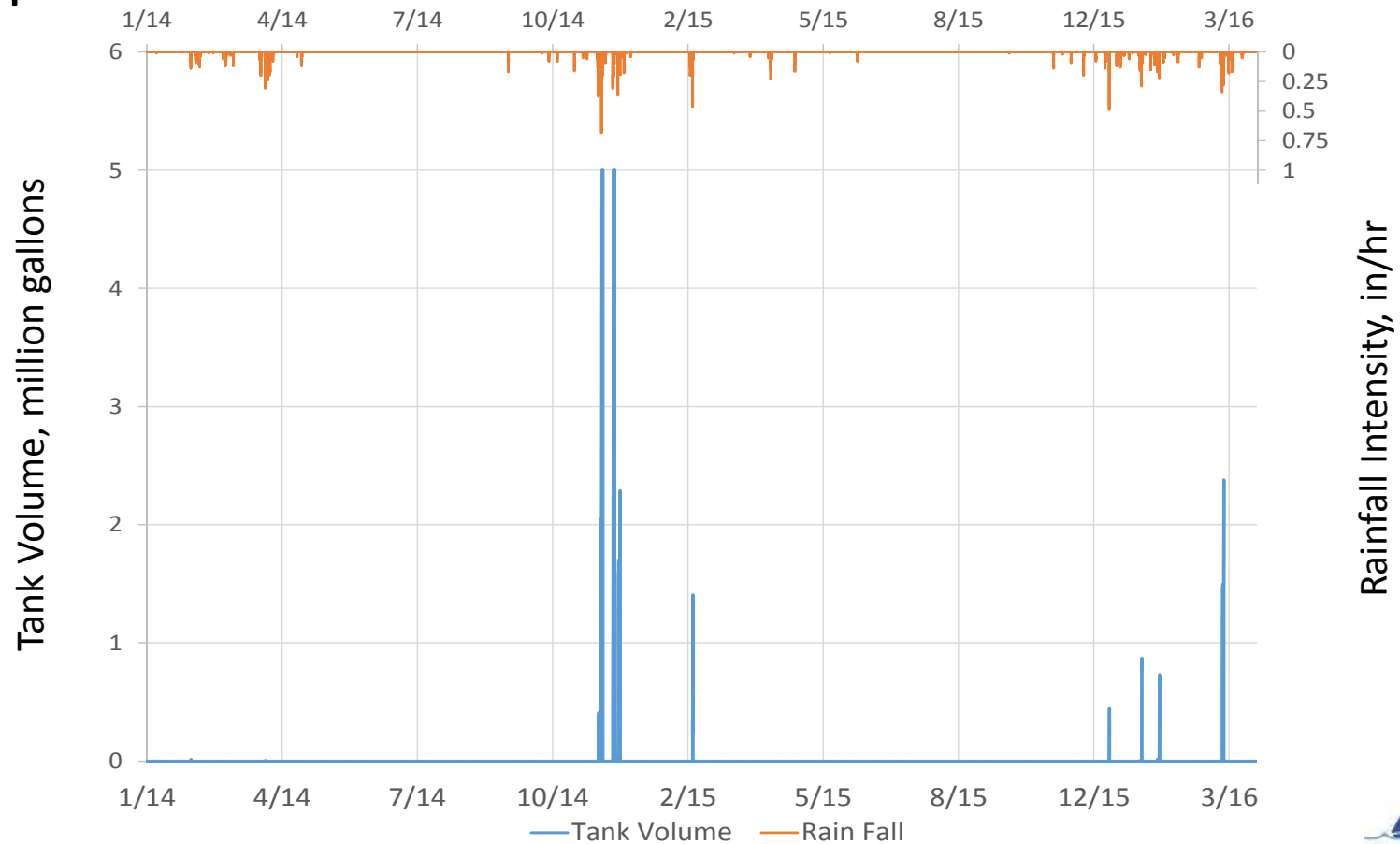
- Allow for remote monitoring and operation
- Limit presence of staff onsite
- Automatically operate pumps and valves, clean tanks, and open gates
- Monitor for harmful gasses in tank
- Monitor performance of odor control system
- Alert staff to O&M issues



Predicted Usage Frequency Example



Corp Yard



Model Prediction of Storage Use

Site Alternative	Uses Between Jan, 2014 and March, 2016
Fiesta Meadows Park	11
Expo Center	15
Hillsdale Plaza/Expo	10
Corp Yard	13
Delaware Tunnel	12



Water Usage

- Water used to flush tanks after each use
- Water usage during the two year period would be between 0.2 and 0.3 million gallons
- Less than half an Olympic swimming pool
- Represents a 2% to 5% increase in water usage for cleaning during period



Topic 7

Environmental & Air Quality Mitigations



Topics – Questions to Address

- Who Addresses Air and Odor Emissions?
- Where do Air Emissions Occur?
- How Are Air Emissions addressed in PEIR?
- What are the next steps after PEIR?
- What are the Regulatory Trigger Levels for Controls & Human Health Risk Assessments?
- How are other items of concern addressed?
- How is Underground Storage Facility Air Emissions Mitigated and Controlled?
- What is the ISS Facility Air Emissions Abatement Strategy?



Who Addresses Odors and Air Emissions

- Storage Basin's Air Emissions are addressed in US EPA, California EPA (CA EPA), and Bay Area Air Quality Management District (BAAQMD) laws and regulations that are focused on minimizing human health impacts and preventing public nuisances during construction and operations
- A valid BAAQMD Authority to Construct (A/C) and Permit to Operate (PO) for the Storage Basin will capture all US EPA, CA EPA and Local laws and regulations that are designed to prevent a public odor nuisance, keep any air emission exhausts below known "unacceptable" human health risks, and manage construction dust, dirt trucks and piling activities air emissions



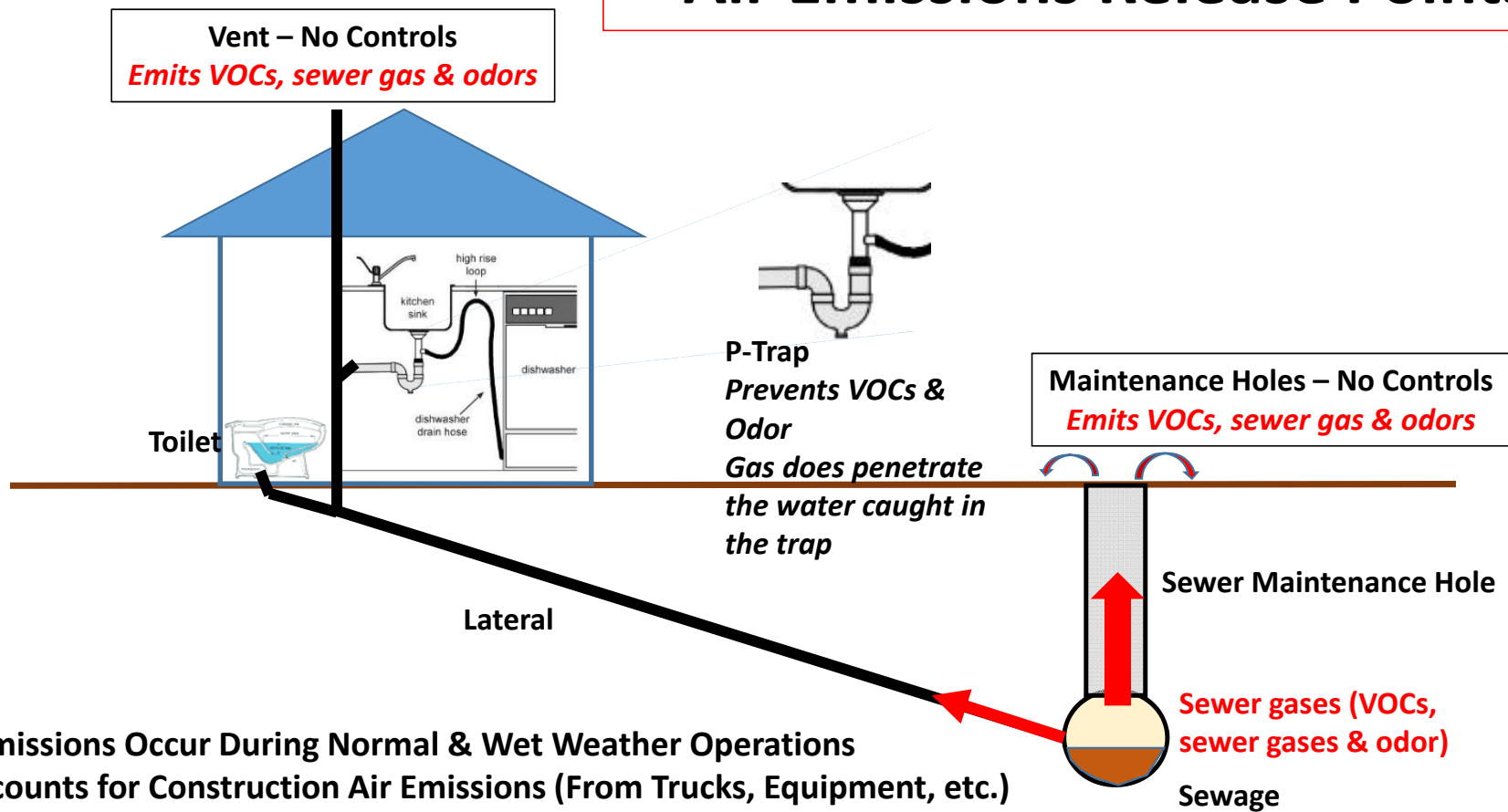
CA EPA



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT



Air Emissions Release Points



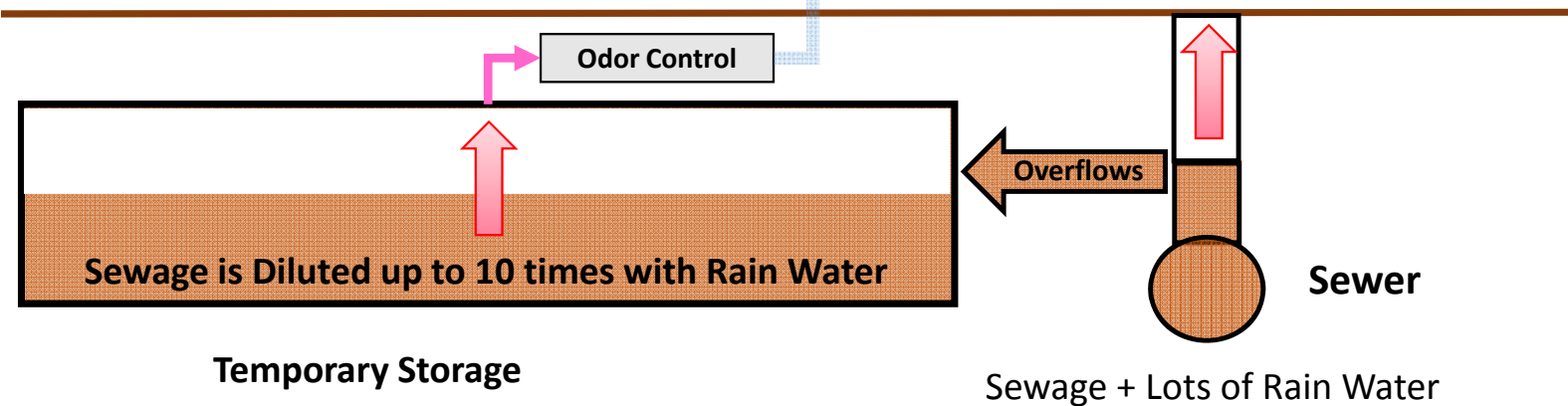
Where Air Emissions Occur During Normal & Wet Weather Operations
PEIR also Accounts for Construction Air Emissions (From Trucks, Equipment, etc.)



ISS Air Emissions Release Points

Odor Control provides over 99% Controlled*;
Vent emits only Treated Air Emissions

Maintenance Holes – No Controls
Emits "Dilute" VOCs, sewer gas & odors

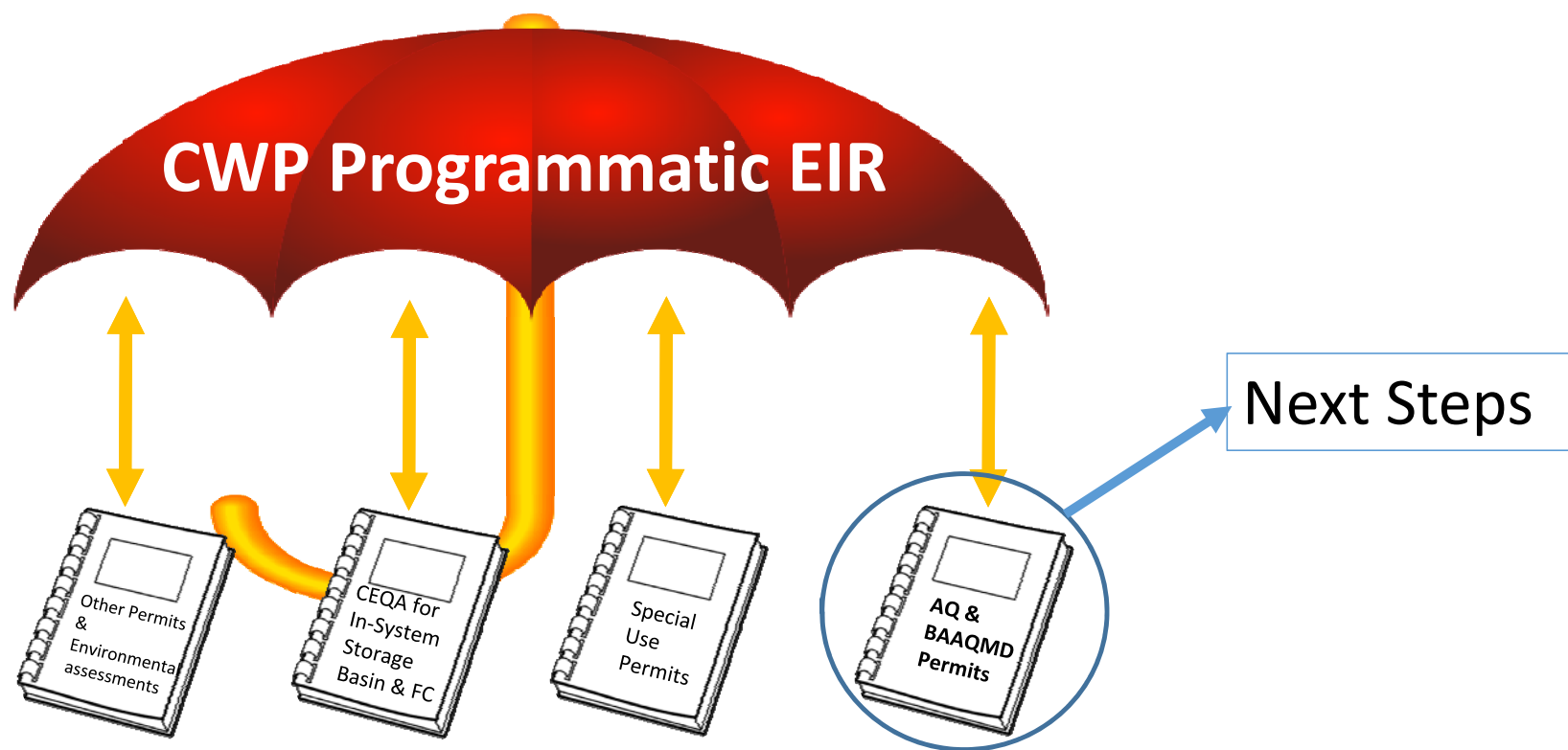


Where Air Emissions Occur During Wet Weather Operations
PEIR also Accounts for Construction Air Emissions (From Trucks, Equipment, etc.)

* = Industry Design Standard for
Activated Carbon Removal



How FC & ISS Air Emissions Are Addressed in the PEIR



Air Emissions Management Post PEIR

1.

CEQA Project Specific
Determination

**Possible Additional
Mitigation, Risk
Assessments, and
Environmental
Investigations**

**City Applies for BAAQMD
Permit To Operate**

2.

**BAAQMD Permit To
Operate (PTO)**

**PTO covers Local, CA, and
Federal Air Quality Laws &
Regulations**

**Protects Human Health &
Well Being**

**BAAQMD Conducts
Comprehensive Screenings**

3.

**PTO Verification Source
Testing**

**BAAQMD issues Authority to
Construct (A/C) with
Mitigation and Permit
Monitoring & Compliance
Conditions for Construction
& Operations**

Odor Control is Installed

**To Get PTO, must pass
Source Testing**

Regulatory Triggers for Controls, Risk Assessments and Further Environmental Investigations

Pollutant	Regulatory Trigger Amount (lb/day)	ISS Operating Worst-Case Emission (lb/day)	FC Operating Worst-Case Emissions (lb/day)
VOC – Major Source (MS) and BACT Trigger	10	< 1	<10
CO – General Conformity, MS	200,000	0	0
NOx – General Conformity, MS	200,000	0	0
SOx – General Conformity, MS	200,000	0	0
PM – General Conformity	200,000	0	0
HAPs – MACT Trigger (US EPA)	20,000 per HAP and/or 50,000 Total HAPs	<1	<10
Air Toxics – Risk- Assessment Trigger for Chronic Exposure	Greater than 1 (Unit) = Risk Assessment	<1	<1
Air Toxics – Risk Assessment Trigger for Acute Exposure	Emission Rates Greater than Allowed in BAAQMD Table 2-5-1 = Risk Assessment	All Emission Rates less than allowed in BAAQMD Table 2-5-1	All Emission Rates less than allowed in BAAQMD Table 2-5-1



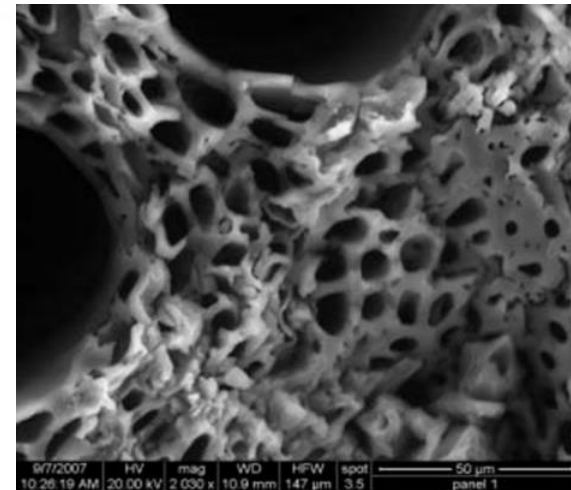
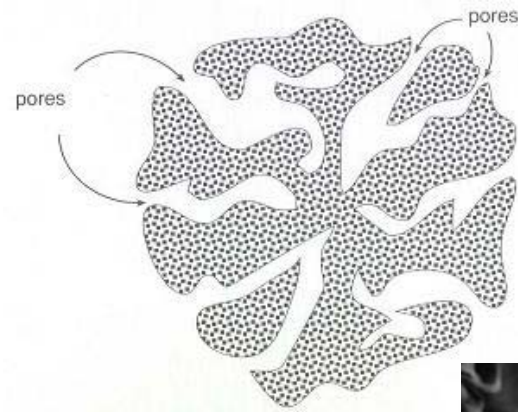
How Other Items Of Concern Are Addressed

Pollutant of Concern	Mitigation	Future Actions
Biotoxins – Mold & Fungi Spores	Cleaning after each use 24/7 continuous ventilation – system will be dry and out of use over 8,000 hrs/yr	If new Regulations warrant additional mitigation for these type of compounds, then mitigation will be implemented
By-Products of Construction Activities	Implement best practices for dust control Diesel emissions regulated under CA EPA regulations	Will require sources to meet any future emission standards during construction in construction contracts as passed by CA for these types of emission sources.
Additional Chemicals not currently or pending being regulated by Federal, CA, or BAAQMD Agencies	Most Compounds of Concern are currently regulated by Air Toxics, HAPS, PM, and VOCs regulations	If a new regulation focused on these compounds of concern is passed, then will implement mitigation as required



Carbon Odor Scrubbers are Highly Efficient at Removing Odors and Air Emissions

- Large pore surface area adsorbs large mass of odors & air emissions
- 3 grams (0.1 ounces) has surface of a football field!
- Removes +99 percent of H₂S and 90 percent + of other odors and air emissions



ISS Facility Air Emissions Abatement Strategy

Technology	H2S (% Removal)	Total Odors (% Removal)	Ammonia (% Removal)	VOCs (% Removal)	Other Pollutants – PM, HAPs, Air Toxics, Vapors (% Removal)
Carbon Scrubber System and Exhaust Vent	Range is 80 to +99 ISS Application is +99	Range is 70 to +99 ISS Application is +99	Range is 50 to 90 ISS Application is 90	Range is 90 to +99 ISS Application is +99	Range is 95 to +99 ISS Application is +99



Odor Control Requirements - BAAQMD

BAAQMD Law/Regulation	Allowable H2S & Odor Emissions	<u>Controlled</u> ISS Estimated H2S and Odor Emission
Regulation 9, Rule 2 – H2S Averaging Period = any 3 minutes period	<60 ppbv	6.7 ppbv
Regulation 9, Rule 2 – H2S Averaging period = any 60 minutes period	<30 ppbv	4.0 ppbv
Regulation 7 – Table 1 – Total Odors (D/T)*	<1000 D/T	300 D/T



How Odors & Construction Dust Are Measured



Dust Sampler



Odor Samplers



Trained Ambient Samplers



Field Analysis & Trained Panelist

**Field Sampling –
Odors and
Construction
Dust/Particulate
Matter (PM)**

**Ambient
Community
Odor Sampling**

**Laboratory
Analysis –
Field Analysis
and Odor Panels**



Next Steps

- Continue alternatives analysis
- Future meetings to restart in January, 2017
- Notifications via website, email, NextDoor, and mailers



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





www.cleanwaterprogramsanmateo.org