Managing ‘One Water’ – What Role Will Stormwater Play?

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Sewer System Improvement Program (SSIP)

Presentation for: National Association of Clean Water Agencies (NACWA)
Agenda

- Overview of San Francisco’s Sewer System
- Drivers for San Francisco’s Capital Program
- Sewer System Improvement Program
- Urban Watershed Approach
Separate Storm Sewer System Areas

- Current SF MS4 Areas
- Port of San Francisco
- Future MS4 Acquisition

Other Features:
- Water Bodies
- Arterial Streets

Map showing San Francisco with markings for separate storm sewer system areas.
Miles of Sewer

Sewer Categories

- Local sewers (≤ 36 inches) 793 miles
- Major sewers (> 36 inches) 166 miles
- Transport storage boxes 17 miles
- Discharge locations 2
- Tunnels 17
- Force mains 11
- Effluent outfalls 5

Total miles 1,011
Wastewater Treatment
Combined Sewer Discharge Points
Drivers for San Francisco’s Capital Program

Digesters at Southeast Plant
San Francisco’s Priority Issues

- Aging Infrastructure
- Seismic Reliability
- Combined Sewer Discharges to the Bay and Ocean
- Rising Sea Level
- Environmental Justice
- Flooding
- Odors, Noise, and Visual
- Future Regulatory Changes
- Environmental Stewardship
- Operational Reliability
Flooding Areas

We need to figure out the best way to minimize flooding.
Permit Compliance requires us to assess Low Impact Design and Green techniques to control stormwater.
### Commission Endorsed Levels of Service
#### July 27, 2010

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
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<tbody>
<tr>
<td>1.</td>
<td>Provide a Compliant, Reliable, Resilient, and Flexible System that can Respond to Catastrophic Events</td>
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<td>2.</td>
<td>Minimize Flooding</td>
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<td>3.</td>
<td>Provide Benefits to Impacted Communities</td>
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<td>4.</td>
<td>Modify the System to Adapt to Climate Change</td>
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<td>5.</td>
<td>Achieve Economic and Environmental Sustainability</td>
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### SSIP Program Cost

<table>
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<tr>
<th>SSIP Proposed Projects</th>
<th>Project Cost Estimate ($ Millions)</th>
<th>Compliant, Reliable, Resilient, Flexible System</th>
<th>Minimize Flooding</th>
<th>Provide Benefits to Impacted Communities</th>
<th>Modify the System to Adapt to Climate Change</th>
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<tbody>
<tr>
<td><strong>Treatment</strong></td>
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<td>Biosolids Digester Project</td>
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<td><strong>Collection System</strong></td>
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Managing stormwater runoff generated by rainfall with **constructed elements to capture rainwater** thereby reducing the peak flow volume that can overwhelm the collection system.

- Automate stormwater data
- Refine the Hydraulic Model
- Storm Surge Modeling
- Survey of Combined Sewer Discharge (CSD) structures
- Low Impact Design (LID) evaluation
- Interdepartmental Coordination Meetings
- Identify Triple-Bottom Line Decision-Making Tools
- Identify watershed prioritization
Flood Control, Collection System, and Low Impact Design Improvements

Flooding on Mission St. at Sunset Circle
Balancing Issues Related to LID in San Francisco

- Physical Limitations
  - Limited infiltration
  - Liquefaction zones
  - Steep hills

- Financial
  - Rate structure
  - O&M costs
  - Bond limitations

- Social
  - 70% rental/parking impact
  - Neighborhood stewardship

- Organizational Coordination
Example of Improvements that have been completed in San Francisco

Leland Avenue Streetscape Project
Permeable paving parking zones and bio-infiltration planters within curb extension.
Stormwater Management Improvements can provide multiple benefits

- Flood Control
- Stormwater, Graywater and Recycled Water Use
- Groundwater Recharge

- Improved Receiving Water Quality
- Neighborhood Enhancement
- Improved Watershed Function

- Optimization of Collection System Capacity
- Pollution Prevention
- Water Resource Conservation

- Jobs
- Education
- Recreation
Thank You