Stormwater Program Highlights 2016-17

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Program Manager

San Mateo Countywide Water Pollution Prevention Program

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Water Pollution Prevention Program
Clean Water. Healthy Community.
www.flowstobay.org

C/CAG Board of Directors
September 14, 2017

What is the Countywide Program?

- Support member agencies in meeting stormwater regulatory requirements
  - Do compliance directly for member agencies
  - Support local program implementation
  - Participate in regional compliance efforts
- Funded by:
  - Property Fee: $1.5 million
  - Vehicle License Fee: $750K
- Two full-time staff & consultants

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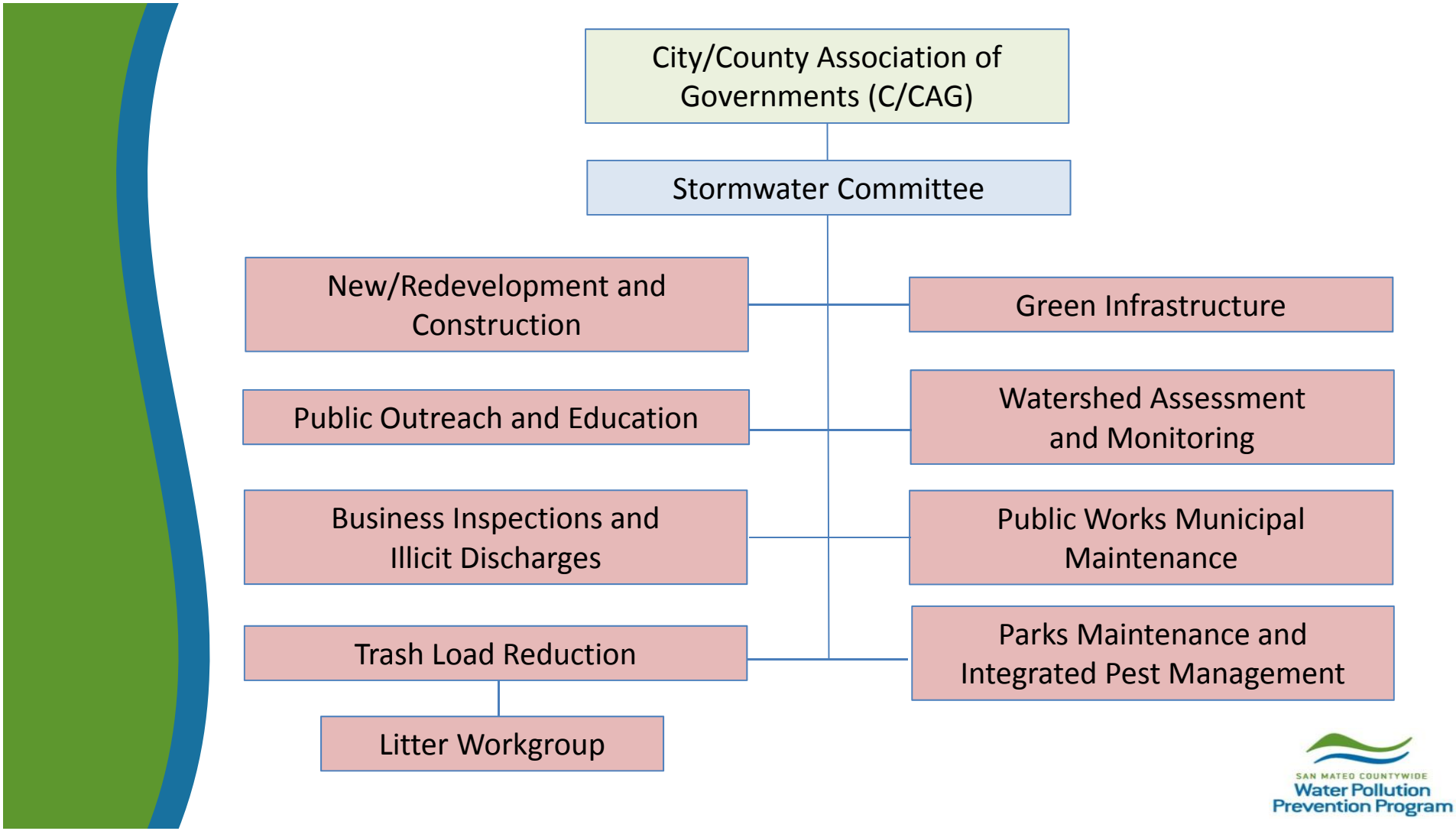

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Municipal Regional Permit

- Second five-year term ("MRP 2.0")
- Effective Jan 1, 2016
- Key Issues
  - Trash
    - —70% reduction by July 1, 2017
    - —80% reduction by July 1, 2019
  - Green Infrastructure Plans by Sept 2019
  - Mercury/PCBs
    - —3 kg/yr reduction by 2020
    - —3 kg/yr by 2040 via GI

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Ongoing Activities

- Committee/subcommittee/workgroup
- Training workshops
- Countywide outreach/education
- Countywide water quality monitoring
- Regional projects via BASMAA
- Annual reporting
- Rain barrel rebate program

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Trash Load Reduction

- Assist with local plan updates
- 500 on-land visual assessments
- Receiving Water Monitoring Plan
- Multi-Family Dwelling Toolkit
- Franchise Agreement guidance
- 70% reduction: July 1, 2017
  - Twenty agencies reporting 70%
  - One submitting compliance plan

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Stormwater Resource Plan

- Required to compete for state grants
- Manage stormwater as a resource, not a waste
- Approved by C/CAG Board in Feb 2017
- Prioritize stormwater capture opportunities
- Included 22 project concepts
  - $1.2 million in Prop 1 grants to Redwood City and San Mateo for five green street and parking lot projects
  - $22.8 million in Caltrans funding for regional stormwater retention in South San Francisco and Atherton

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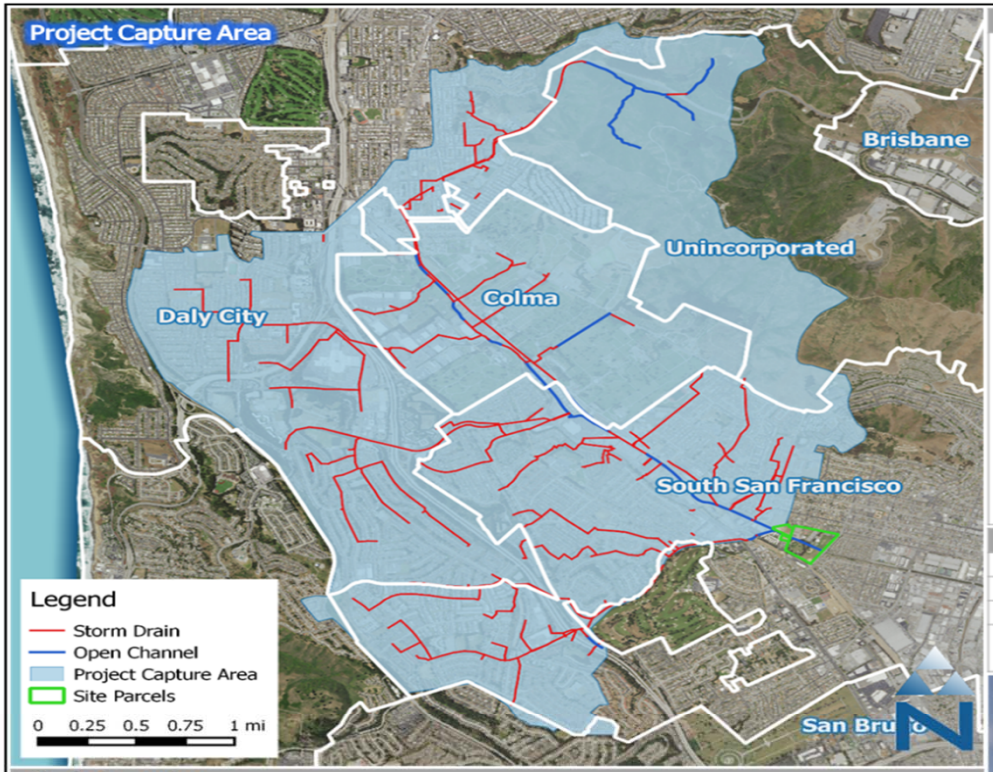


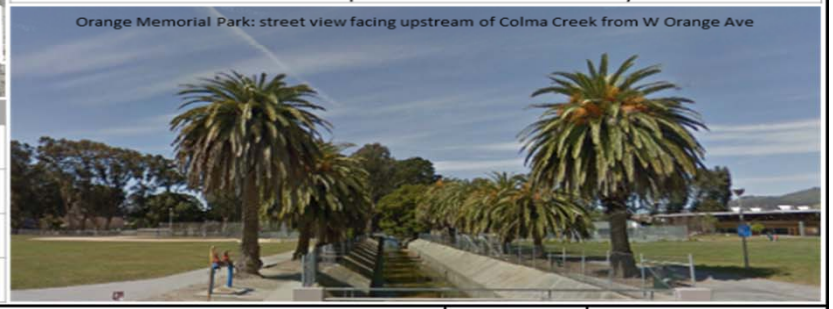
Site Description:

This project concept consists of two offline subsurface infiltration chambers at Orange Memorial Park. The park is a prime location to site a regional stormwater capture project and captures stormwater from large portion of the upper Colma Creek watershed and multiple city and county jurisdictions. The potential capture area of the project is roughly 6,300 acres that drains portions of the cities of South San Francisco, Colma, and Daly City and Unincorporated San Mateo County. A stormwater capture project at this location would aid these jurisdictions in meeting stormwater permit compliance and alleviate flooding in the lower reaches of Colma Creek. The project would also contribute to reductions of high-priority pollutants discharged to San Francisco Bay (including TMDLs that require reductions of mercury and PCB loads), augment water supply by recharging the Westside groundwater basin, and provide community enhancement through integration with the recreational facilities of the park. With the incorporation of a hydrodynamic separator for pretreatment of diverted water from the creek, the project also provides the reduction of trash transported through the creek to the San Francisco Bay. The Orange Memorial Park Master Plan (2007) was referenced in this design to ensure that the concept is consistent with the goals of future development for the park.

Although not specifically included within this project concept, the project also provides the opportunity for future integration of Low Impact Development (LID) within parking lots of the park to provide further community enhancement and opportunities for public education of LID and other project components.

Drainage Characteristics

Capture Area (acres)	6,300
Impervious Area (%)	38
Dominant Land Use	Residential
Jurisdictions	South San Francisco, Colma, Daly City, Unincorporated San Mateo County


Orange Memorial Park: street view facing upstream of Colma Creek from W Orange Ave

Site Information

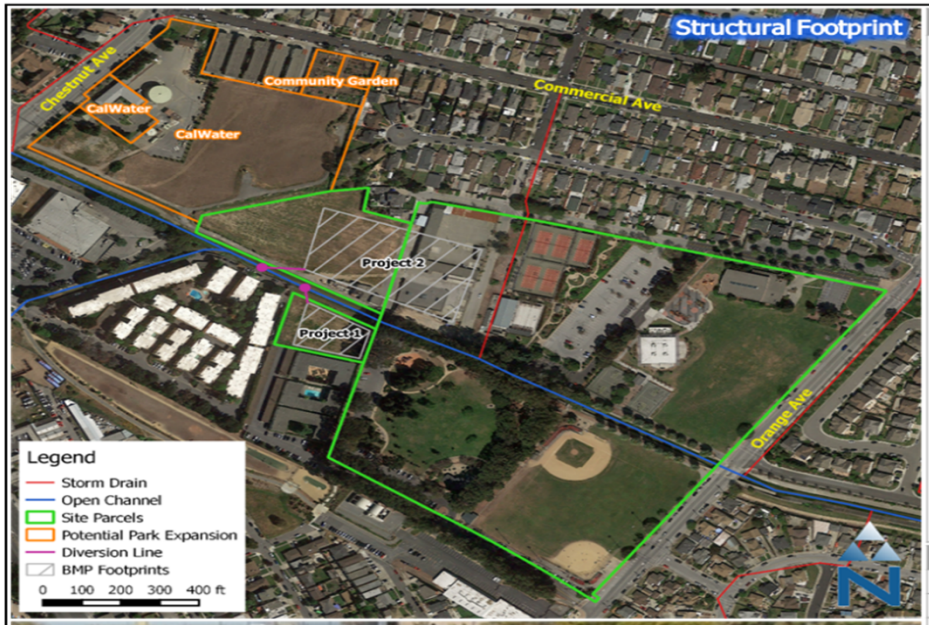
Land Owner	City of South San Francisco
Street Address	Orange Ave, South San Francisco, CA 94080
Latitude/Longitude	37° 39' 13.1" N / 122° 25' 35.4" W
Watershed	Colma Creek

Concept for a Multi-jurisdictional Regional Stormwater Capture Project

Site: Orange Memorial Park (City of South San Francisco)

SMCWPPP Water Pollution Prevention Program

PARADIGM ENVIRONMENTAL



Example concrete infiltration chamber

Site Description:

Two subsurface infiltration chambers will be considered on parcels owned by the City of South San Francisco to the west of Orange Memorial Park. Both parcels were acquired by the City of South San Francisco in 1996 and, while vacant, are included in plans for future park expansion. The first chamber (Project 1) will be located in the vacant parcel to the south of the Colma Creek channel. The second chamber (Project 2) will be located in portions of the vacant parcel to the north of the channel and the current park parcel. The Project 2 site represents the location of the future little league baseball fields according to the Master Plan. Runoff would be diverted directly from Colma Creek and details of the diversion structures will be determined during the design phase through coordination with the San Mateo County Flood Control District. A pretreatment unit (e.g. hydrodynamic separator) will be implemented to provide trash and sediment capture. Two projects are proposed to maximize the amount of available space used for the design and to provide an option for the City of South San Francisco to implement the design in two separate phases. This would allow the City to move forward with each phase separately as funding is acquired. The Master Plan also accounts for the possible purchase of the CalWater parcels along Chestnut Avenue for future park expansion, which could be used to expand Project 2 if that land becomes available. The proposed design (both chambers) would allow for the treatment of 26% of the 85th percentile, 24-hour runoff volume (36.4 of 142.4 ac-ft) for the Colma Creek watershed. As these volumes are completely removed via storage and infiltration, this provides an equivalent 26% reduction of pollutant loads for the storm event.

DISCLAIMER: All elements of this conceptual design are planning-level, based on desktop analysis. All assumptions and parameters must be re-evaluated during the detailed design process. Costs estimates are based on available data. Actual costs will vary.

Design Criteria

Precipitation, 85th percentile, 24-hr storm (in)	0.83
Colma Creek Runoff Volume, 85th percentile, 24-hr storm (ac-ft)	142.4
Colma Creek Peak Discharge, 85th percentile, 24-hr storm (cfs)	309
Infiltration Rate (in/hr)	0.5

Project Characteristics	Project 1	Project 2
Stormwater Capture Process	Subsurface Infiltration Chamber	
Footprint (acres)	0.5	2.3
Design Height (ft)	12	12
Depth of Excavation (ft)	15	15
Pumping Requirements	Dependent on Geotechnical Investigation	
Design Volume (ac-ft)	6	27.6
24-hr Infiltration Volume (ac-ft)	0.5	2.3
Total Treatment Volume (ac-ft) [1]	**6.5**	**29.9**
Percent Treated [2]	**5%**	**21%**

1 – sum of the Design Volume and 24-hr Infiltration Volume
2 – percentage the 85th percentile 24-hr storm Runoff Volume that is treated

Concept for a Multi-jurisdictional Regional Stormwater Capture Project

Site: Orange Memorial Park (City of South San Francisco)

Water Pollution Prevention Program

PARADIGM ENVIRONMENTAL

Green Infrastructure Planning

- Model GI Workplan – local approvals June 30
- Model language for planning doc updates
- Started "Green-suite" of guidance manuals
  - Policy & Overview
  - Technical
  - Streets
  - Buildings & Sites
  - Operations & Maintenance
- Developing model design details/specifications
- Development projections through 2040

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Reasonable Assurance Analysis

- Demonstrate GI Plans will achieve 2040 load reductions for mercury/PCBs
  - Model stormwater runoff and pollutant/sediment transport
  - Use prioritized stormwater capture opportunities from SRP
  - Model combinations of opportunities to determine cost-effective load reduction scenarios

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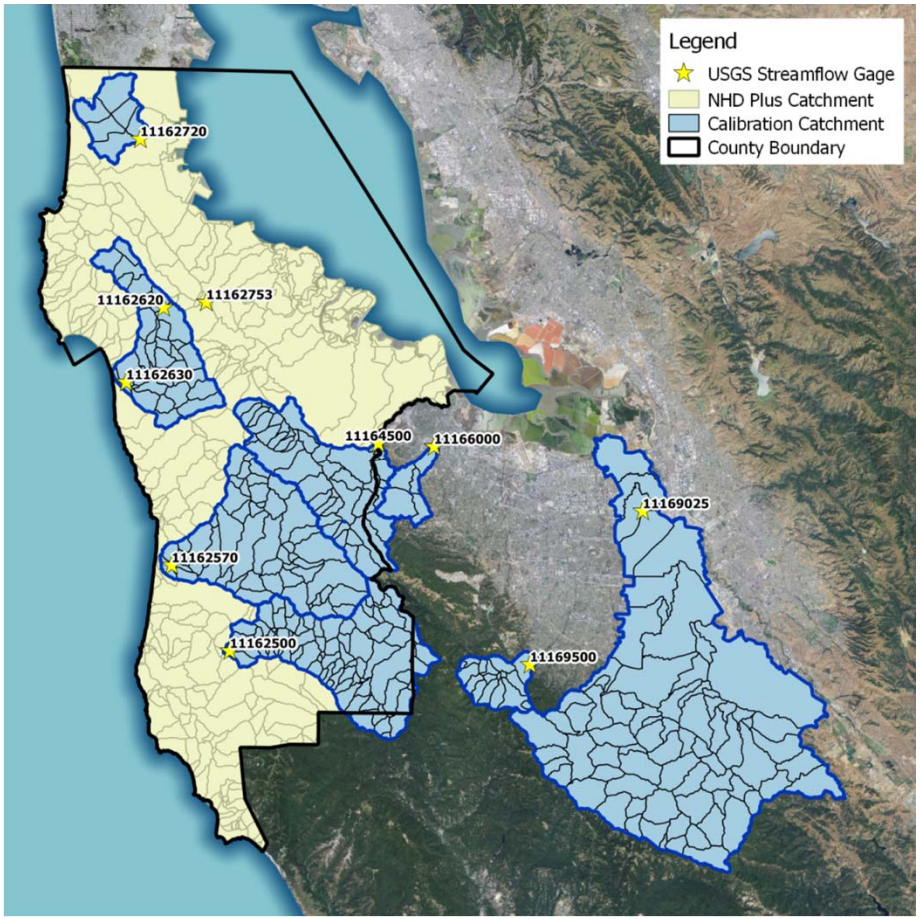
Model Calibration

- Selection of calibration watersheds based on:
  - Available flow and water quality data
  - Representation of land characteristics
  - Spatial and rainfall distribution
- Calibrated set of model parameters were then applied to all County watersheds



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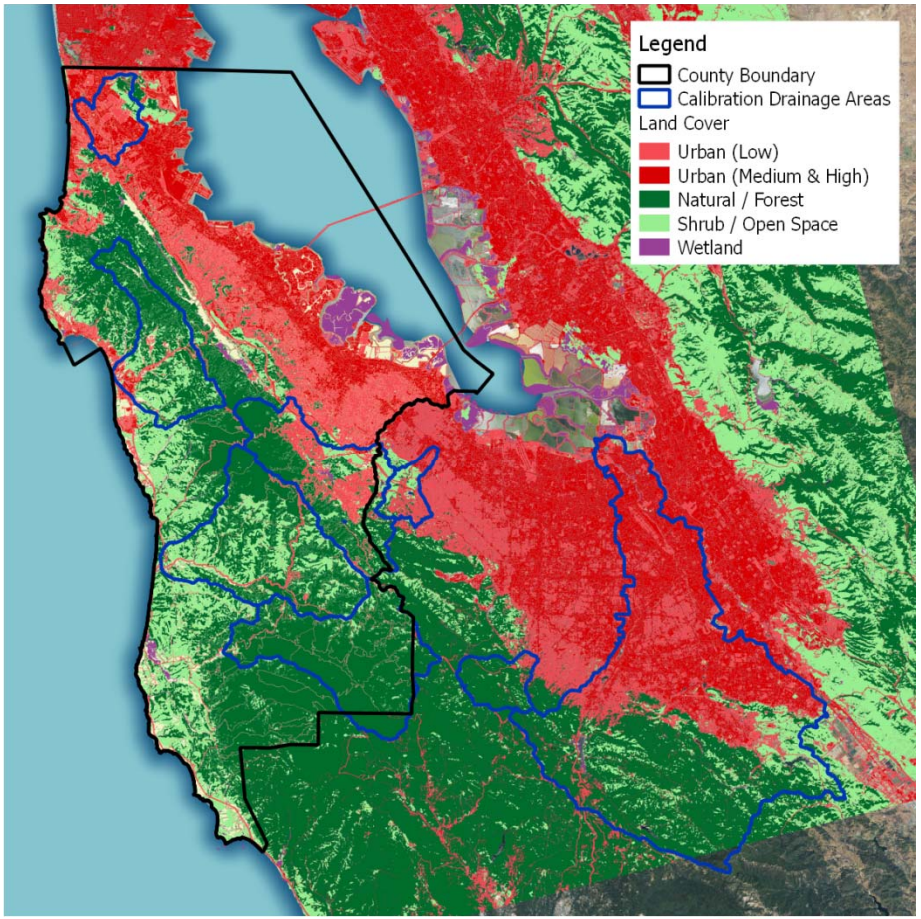
Hydrologic Response Units

- Runoff & Pollutant load:
  - Slope
  - Hydrologic Soil Group (HSG)
  - Land use/cover
  - Impervious cover (DCIA)
- Urban HRU categories:
  - Rooftop, Sidewalk, Driveway, Roads based on analysis of typical parcels



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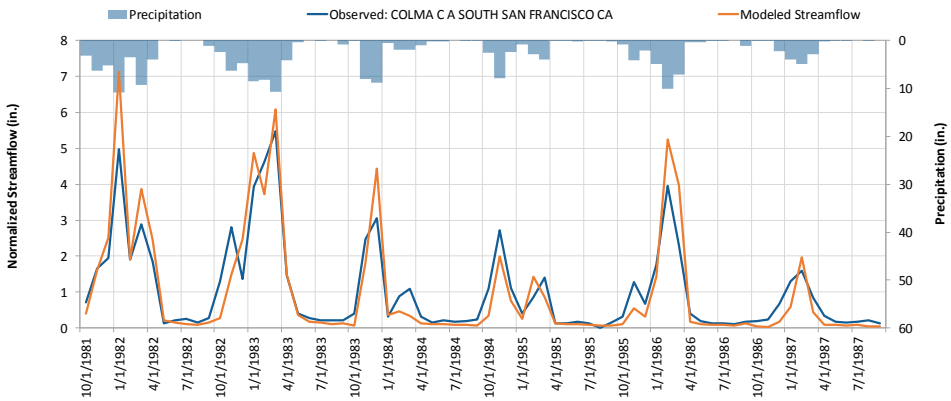
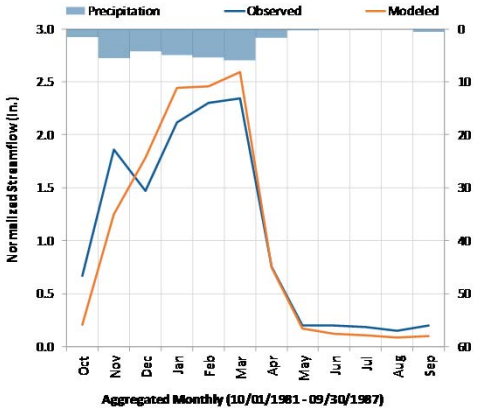
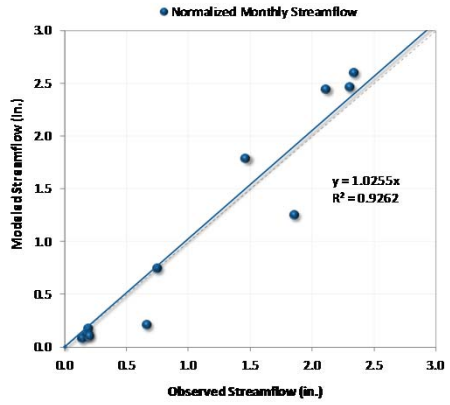
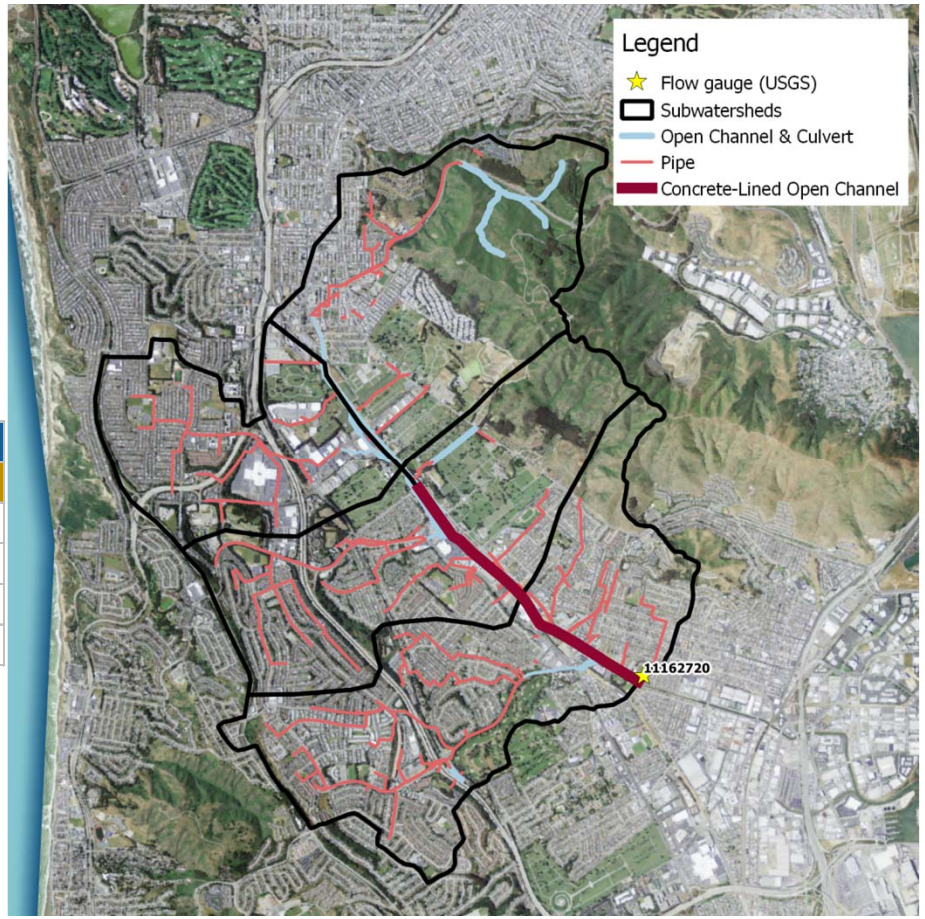
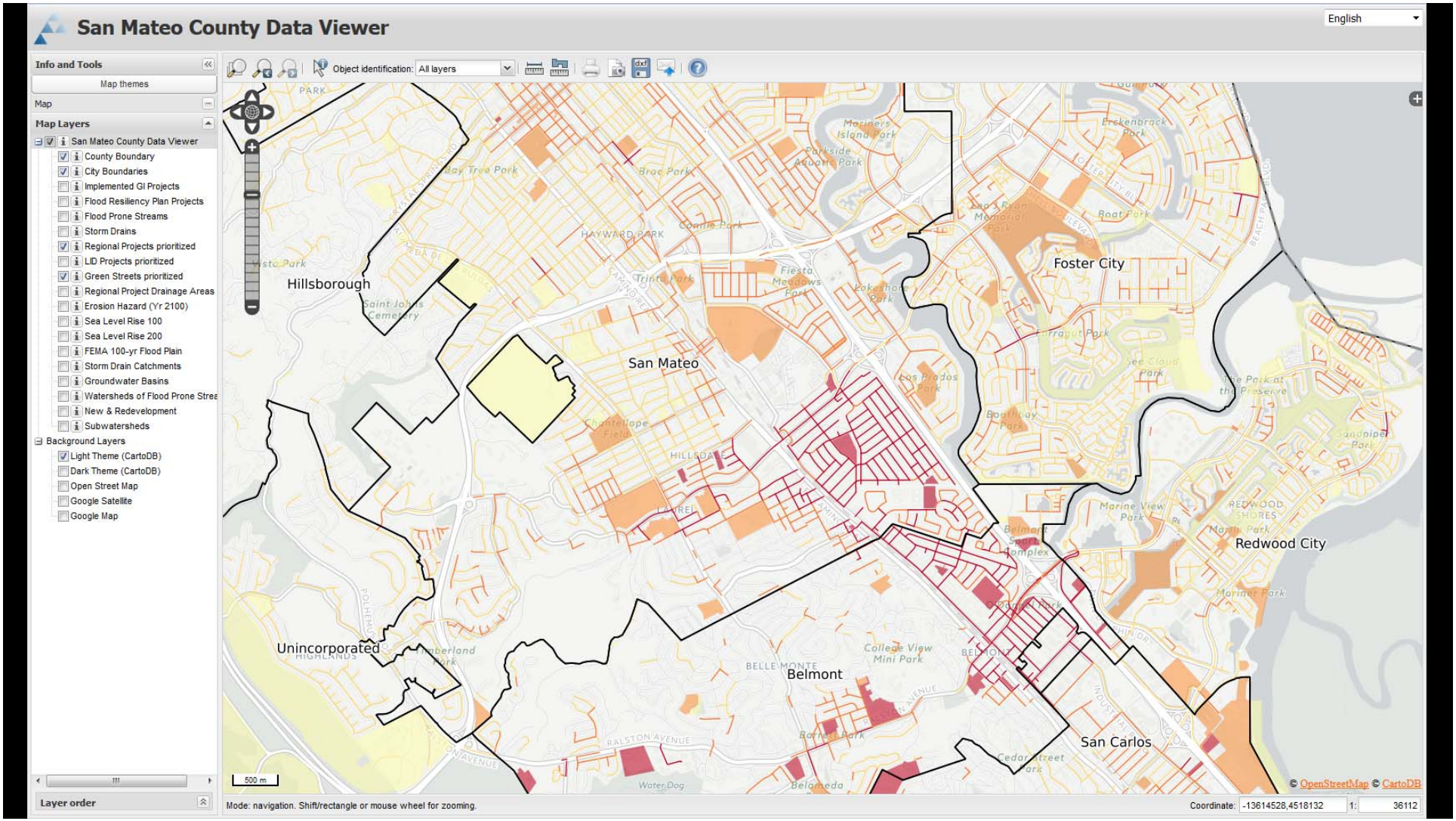


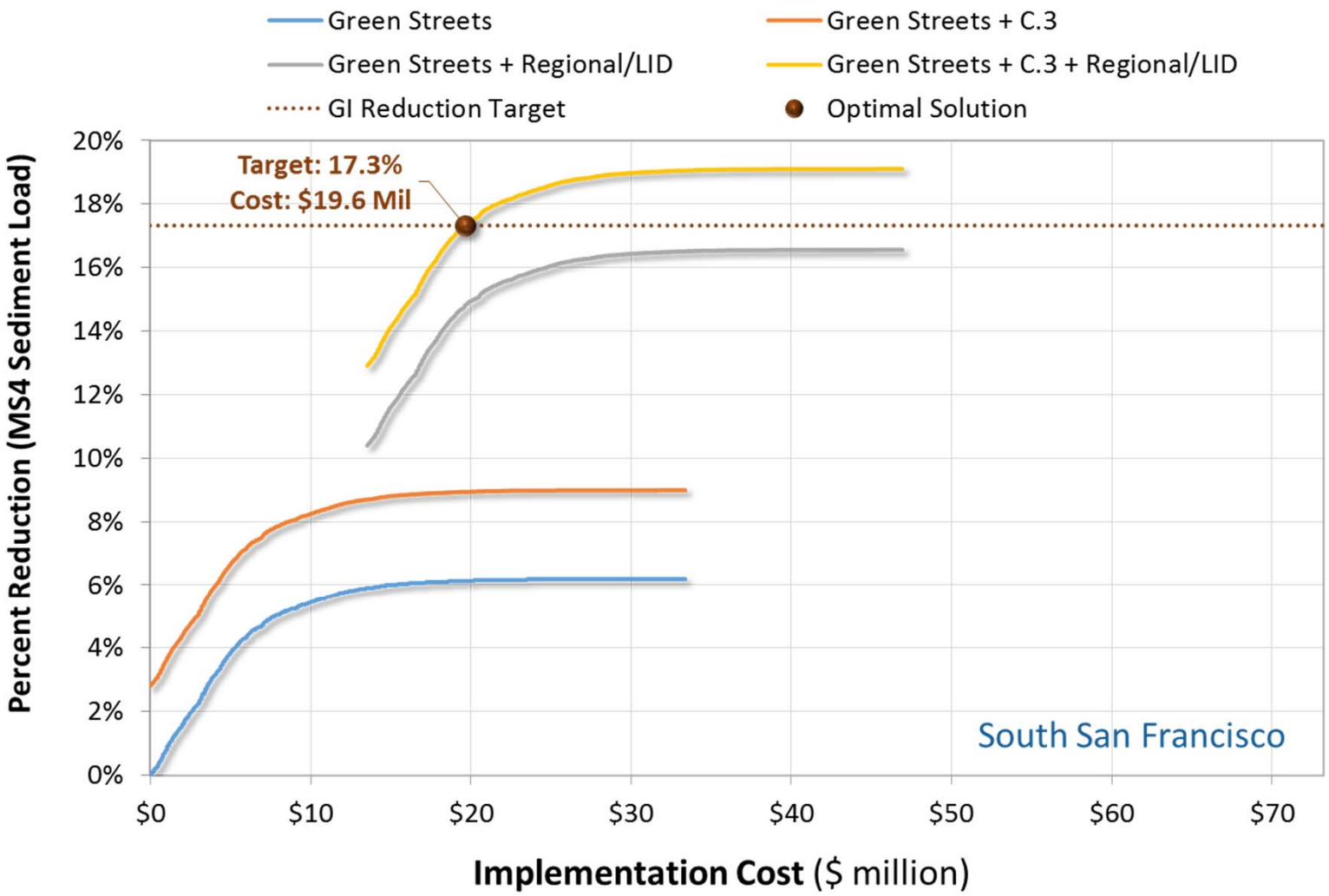
Calibration Metrics (10/01/1981 - 09/30/1987)	Relative Mean Error	Recommended Error Criteria			
		Very Good	Good	Fair	Poor
Total Annual Volume	-3.1%	≤ 5%	5 - 10%	10 - 15%	>15%
Highest 10% of Flows	-0.7%	≤ 10%	10 - 15%	15 - 25%	>25%
Lowest 50% of Flows	6.0%	≤ 10%	10 - 15%	15 - 25%	>25%
Annual Storm Volume	0.6%	≤ 10%	10 - 15%	15 - 25%	>25%








San Mateo County Data Viewer
English
Info and Tools
Map themes
Map
Map Layers
San Mateo County Data Viewer
County Boundary
City Boundaries
Implemented GI Projects
Flood Resiliency Plan Projects
Flood Prone Streams
Storm Drains
Regional Projects prioritized
LID Projects prioritized
Green Streets prioritized
Regional Project Drainage Areas
Erosion Hazard (Yr 2100)
Sea Level Rise 100
Sea Level Rise 200
FEMA 100-yr Flood Plain
Storm Drain Catchments
Groundwater Basins
Watersheds of Flood Prone Strea
New & Redevelopment
Subwatersheds
Background Layers
Light Theme (CartoDB)
Dark Theme (CartoDB)
Open Street Map
Google Satellite
Google Map
Layer order
Object identification:
All layers
Hillsborough
San Mateo
Foster City
Redwood City
Belmont
San Carlos
Unincorporated
500 m
© OpenStreetMap © CartoDB
Mode: navigation. Shift/rectangle or mouse wheel for zooming.
Coordinate:
-13614528,4518132
1:
36112


Green Streets
Green Streets + C.3
Green Streets + Regional/LID
Green Streets + C.3 + Regional/LID
GI Reduction Target
Optimal Solution
Target: 17.3%
Cost: $19.6 Mil
Percent Reduction (MS4 Sediment Load)
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
$0
$10
$20
$30
$40
$50
$60
$70
Implementation Cost ($ million)
South San Francisco

Mercury & PCBs

- On-track to meet 2018 interim load reduction requirements for PCBs/mercury
- **Uncertainty about meeting 2020 reductions**
- Agencies must adopt building demo program
- Continue looking for contaminated properties
- Ongoing development includes GI
- Long-term: How do we fund GI Plans?

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Looking Forward

- Unfunded mandate test claims
  - Hearing in 2018
- September 2018
  - Interim PCBs/mercury load reductions
- July 2019
  - 80% trash load reduction
  - PCBs/Building Demo Program adopted by cities
- September 2019
  - Local agencies adopt Green Infrastructure Plans
- September 2020
  - Plan for long-term load reductions

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Questions?

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