

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

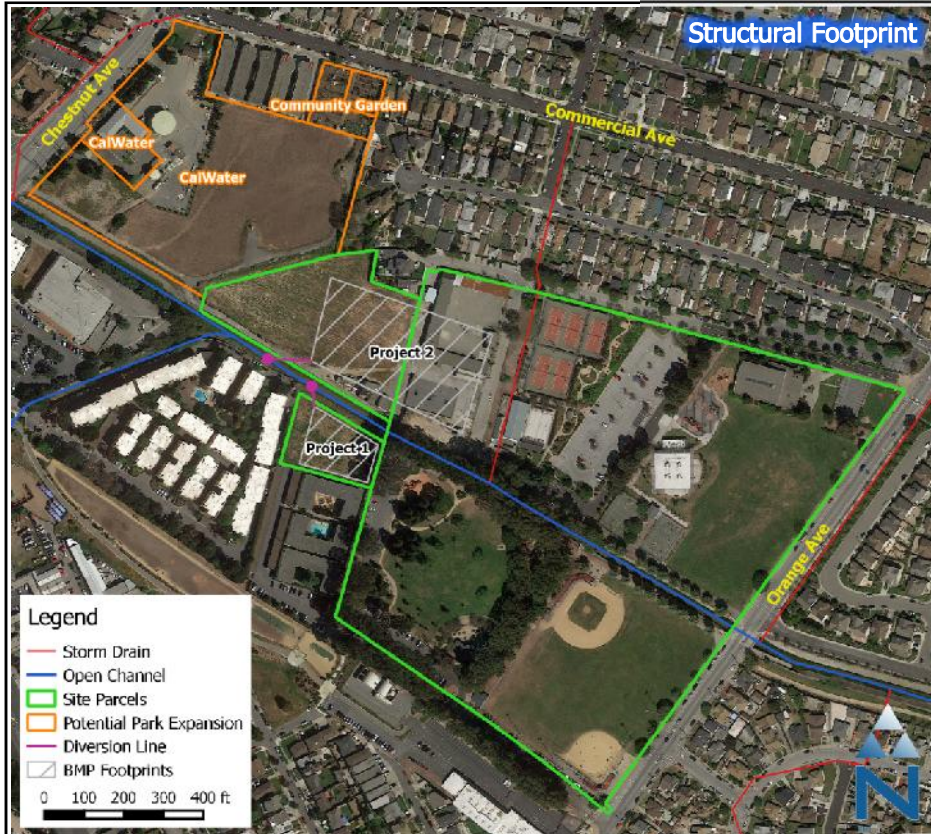


Site Information

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)





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, 85 th percentile, 24-hr storm (in)	0.83
Colma Creek Runoff Volume, 85 th percentile, 24-hr storm (ac-ft)	142.4
Colma Creek Peak Discharge, 85 th 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

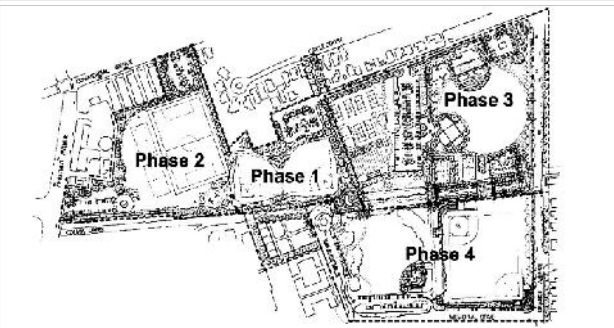
Concept for a Multi-jurisdictional Regional Stormwater Capture Project
 Site: Orange Memorial Park (City of South San Francisco)





Project Implementation:

The figure to the left depicts the layout for the two subsurface infiltration chambers in relation to the planned improvements in the Orange Memorial Park Master Plan 2007. The figure below depicts the phased implementation of various areas of the park according to the Master Plan. The proposed infiltration chambers would coincide with Phase 1. Adding a stormwater component to the first phase of park improvements would likely garner enthusiasm for park enhancements and open avenues for funding. Phase 1 of the Master Plan can be further split into two sub-phases. The first sub-phase of park improvements would include Project 1 in the location of the future community gardens. The second sub-phase would include Project 2 at the little league baseball fields.



Cost Estimate for Infiltration Chamber south of Colma Creek (Project 1)				
DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Excavation/Removal	12,100	CY	\$50.00	\$605,000
Rubber Dam System	1	LS	\$80,000.00	\$80,000
Diversion Structure	1	LS	\$100,000.00	\$80,000
Hydrodynamic Separator Device	1	LS	\$90,000.00	\$100,000
Pump Structure	1	LS	\$1,000,000.00	\$1,000,000
Diversion Pipe (24" RCP)	100	LF	\$200.00	\$20,000
Infiltration Structure	9,680	CY	\$300.00	\$2,904,000
Restoration	21,780	SF	\$2.00	\$44,000
CONSTRUCTION SUBTOTAL				\$4,833,000
Mobilization (10% construction)				\$483,300
Contingency (25% construction)				\$1,208,000
Design (10% total)				\$652,000
TOTAL COST				\$7,176,000

Cost Estimate for Infiltration Chamber north of Colma Creek (Project 2)				
DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Excavation/Removal	55,660	CY	\$50.00	\$2,783,000
Rubber Dam System (dam from Project 1 can be utilized by both projects)				N/A
Diversion Structure	1	LS	\$150,000.00	\$150,000
Hydrodynamic Separator	1	LS	\$150,000.00	\$150,000
Pump Structure	1	LS	\$1,750,000.00	\$1,750,000
Diversion Pipe (24" RCP)	150	LF	\$200.00	\$30,000
Infiltration Structure	44,528	CY	\$300.00	\$13,358,000
Restoration	100,188	SF	\$2.00	\$200,000
CONSTRUCTION SUBTOTAL				\$18,421,000
Mobilization (10% construction)				\$1,842,000
Contingency (25% construction)				\$4,605,000
Design (10% total)				\$2,487,000
TOTAL COST				\$27,355,000