STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

STAFF SUMMARY REPORT (Claudia Villacorta)
MEETING DATE: July 9, 2014

ITEM: **7**

SUBJECT: **Sanitary Sewer Improvement Program** – Status Report

CHRONOLOGY: October 2003 – Resolution in Support of Efforts to Reduce Sewer Overflows
October 2005 – Resolution in Support of Private Sewer Lateral Programs
November 2008 – Sanitary Sewer Overflow Reduction Program Status Report
January 2013 - Sanitary Sewer Overflow Reduction Program Status Report

DISCUSSSION: This report describes a continued improving trend in the reduction of sanitary sewer overflows (SSOs) and highlights adjustments to our strategy to effect improvements to sanitary sewer systems in the Region since the 2013 status report.

The goal of the program is to ensure that the owners and operators of sanitary sewer systems adequately operate, maintain, repair, and upgrade their sanitary sewer infrastructure. These efforts will lead to fewer SSOs and less leaky systems that spill over in the wet season. In the long term, the efforts will also lower spikes in wet weather flows going to wastewater treatment facilities.

Background

Sewer systems within the State are regulated under the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (or Sanitary Sewer Order). The Sanitary Sewer Order requires notification and reporting of SSOs and sewer system management with the goal of reducing both the number and the volume of SSOs in the State. Currently within our Region, there are 132 sewer systems enrolled under the Sanitary Sewer Order. The agencies responsible for these systems manage about 17,900 miles of main sewer pipelines and approximately 1,850 miles of lateral pipelines.

The Sanitary Sewer Order requires self-reporting of all SSOs to a statewide database. This status report presents an analysis of data from the 132 sewer system agencies in our Region for the years 2008 to 2013 and corrects one point presented in our 2013 status report.

Decrease in Sanitary Sewer Overflows

The data show a continued decline in the number of SSOs in the Region. The Region's SSO volumes fluctuate from year to year but show a general decline. This decline may be partially due to the current drought because SSO volumes are largely wet-weather related and caused by inflow and infiltration (I&I).

Our detailed data observations are presented below:

General

- Essentially all sewage from the Bay Area's 7.1 million residents continues to be treated. The total SSO volume not recovered is quite small compared to the total treated wastewater discharged from the Region's wastewater treatment plants. For example, in 2012, less than 0.01 percent of the 183 billion gallons of sewage generated did not receive treatment.

Number of SSOs

- The Region's median SSO rate continues to decrease at a slightly faster rate than the statewide rate, though it remains above the statewide median (see **Figure 1**). The SSO rate is the total number of spills per 100-miles of sewer pipeline per year[1]. The statewide median SSO rate is 4.5; the Region's median is 9.3 (based on 2013 data). In our 2013 status report, we incorrectly reported that our Region's SSO rates were comparable to the State's rates, when in fact our Region's rates are higher. This is because we unknowingly used higher State rates that had excluded those agencies reporting no SSOs. The analysis presented in this report corrects the error.
- Overall, small sewer systems continue to have a higher SSO rate than larger systems. The median SSO rate for small systems (systems with less than 100 miles of sewer pipeline) is 14.8; the median SSO rate for large systems (systems with 100 or more miles of sewer pipeline) is 4.5 (based on 2013 data).
- The Region's higher SSO rate is likely due in part to the age of the systems' sewer pipelines. Older pipes tend to have more defects per mile. Small systems in our Region have a median pipeline age that is four years older than the statewide median age for small systems (i.e., 43.6 versus 39.8 years). Large systems in our Region have a median pipeline age that is six years older than the statewide median (i.e., 49.6 versus 43.8 years).
- The Region's median SSO rate for systems that include sewer laterals continues to decrease but is still above the statewide median. The Region's median is 10; the statewide median is 8.2 (based on 2013 data). Sewer laterals are the pipelines that connect buildings to the main sewer pipelines that typically run down the middle of streets. Some sewer system agencies have responsibility for the "lower lateral," which is the portion of the sewer lateral between a building's cleanout and the main pipeline.

SSO Volume

- **Figures 2 and 3** show median and average SSO volumes, and there appears to be a slight downward trend though this trend is not consistent. This volume metric can be informative but only over a much longer time frame than five years. While volume decreases can indicate improvements in response to SSOs and in infrastructure rehabilitation, because SSO volumes are largely driven by wet-weather related SSOs, any short term trend down or up could be simply due

[1] The number of SSOs per 100 miles of pipe per year metric is used to compare the relative performance of sanitary sewer systems. This metric is a common indicator of overall sanitary sewer system performance and can provide insight on each agency's management, operations, and maintenance practices. A well-managed and maintained system with adequate capacity tends to have a lower spill rate than a poorly managed system or a system with inadequate capacity.

to a drought or a pattern of more spotty intense storms. Also, the reported volumes are all based on estimates, which can be inaccurate.

SSO Causes

- The majority of SSOs continues to occur as a result of root, debris, and "fats, oils, and grease" (FOG) blockages of sewer pipelines (75 percent over the past six years, see **Figure 4**).
- SSOs caused by I&I and insufficient capacity in wet weather continue to account for most of the SSO volume (71 percent of total SSO volume since 2008). I&I occurs from defects in sewer pipelines and illicit connections from storm drains. These occur both in publicly-owned pipelines and in private sewer laterals. The percentage from wet weather SSOs will fluctuate from year to year depending upon rainfall and, in the long term, from sewer system rehabilitation. With 2013 being a particularly dry year, the SSO volume from I&I resulted in less than 1 percent of the total SSO volume. **Figure 5** provides a breakdown of the total SSO volume by various causes since 2008.

Funding to Address SSOs

On average, our Region's sewer system agencies continue to budget more on capital improvements and operation and maintenance (O&M) than the rest of the State:

- Our Region's agencies that operate large sewer systems currently budget a median of $4 million per year on capital improvements, which is twice the statewide median for similar size systems. Large systems budget a median of $4.3 million per year on O&M, which is also close to twice the statewide median for similar size systems.
- Operators of small sewer systems in the Region budget a median of $400,000 per year on capital improvements, which is eight times the statewide median for similar size systems. Small systems budget a median of $880,500 per year on O&M, which is four times the statewide median for similar size systems.
- The total annual budget by the Region's agencies for capital expenditures is $301.4 million; for O&M, the total is $343.3 million. This is about 18 percent of the total statewide annual capital and O&M budget.

SSO Reporting Compliance Rate

- Our Region's reporting compliance rate is less than the State's rate. Our Region's average monthly reporting compliance rate during fiscal year, 2012-2013, is 82 percent; the State's average is 92 percent. Monthly SSO reporting compliance rates are calculated by tallying how many individual agencies submitted either an SSO report or a no-spill certification for a given calendar month.

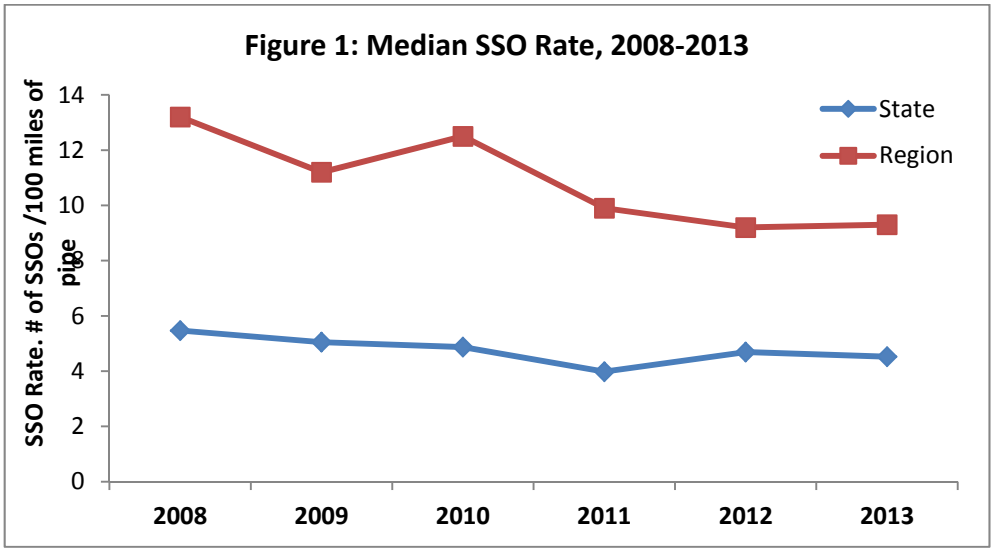


Figure 1: Median SSO Rate, 2008-2013
SSO Rate. # of SSOs /100 miles of pipe
14
12
10
8
6
4
2
0
2008
2009
2010
2011
2012
2013
State
Region

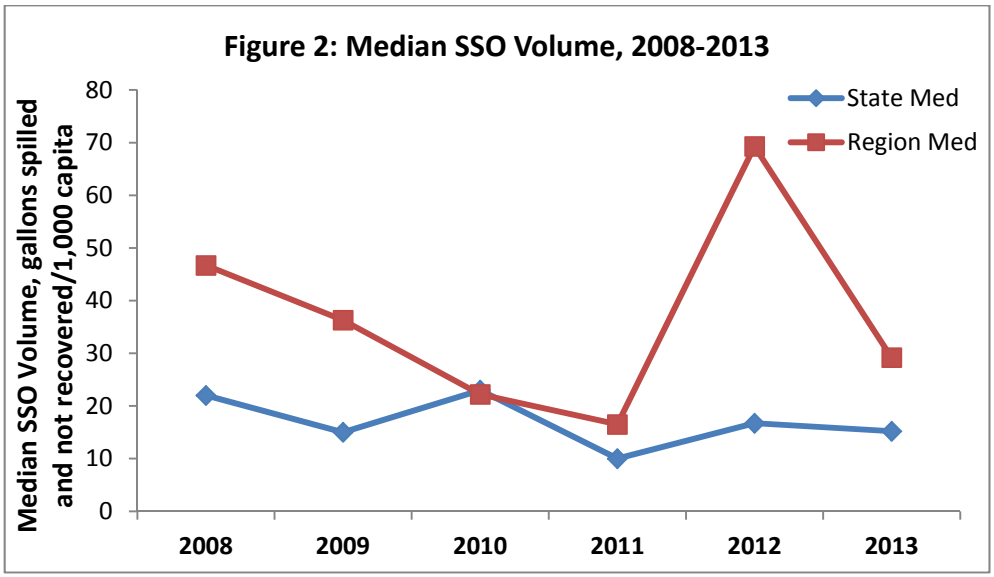


Figure 2: Median SSO Volume, 2008-2013
Median SSO Volume, gallons spilled and not recovered/1,000 capita
80
70
60
50
40
30
20
10
0
2008
2009
2010
2011
2012
2013
State Med
Region Med

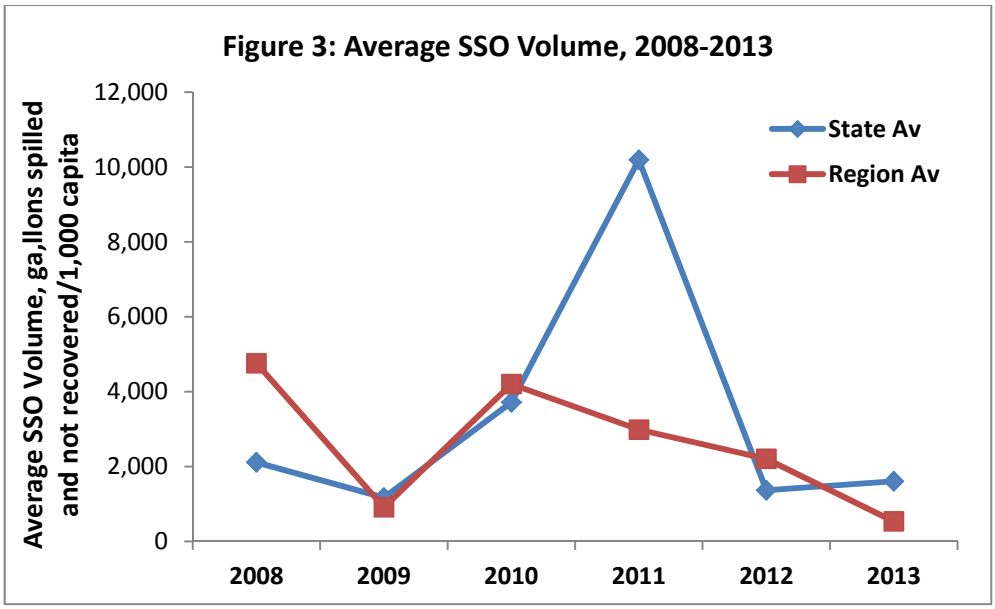
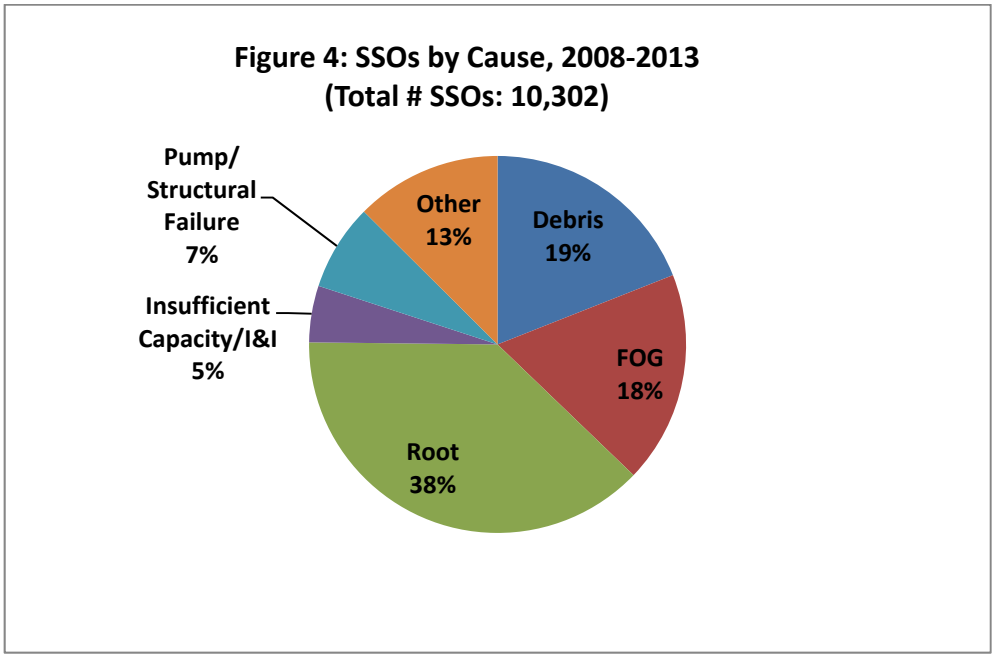
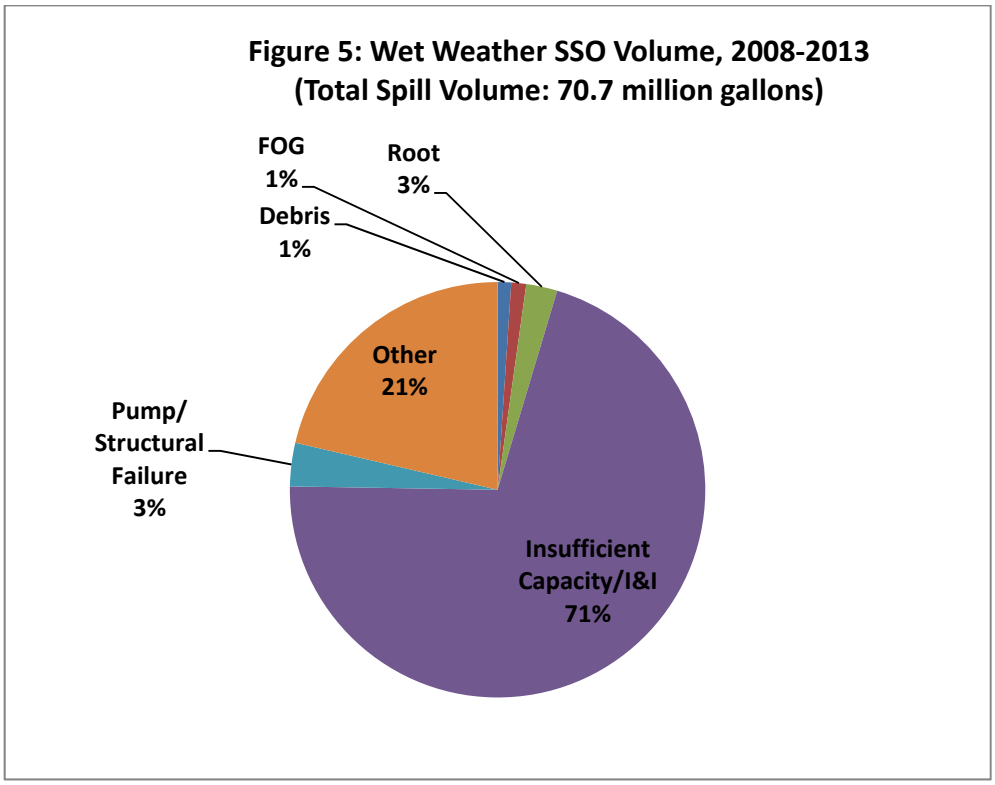


Figure 3: Average SSO Volume, 2008-2013
Average SSO Volume, ga,llons spilled and not recovered/1,000 capita
12,000
10,000
8,000
6,000
4,000
2,000
0
2008
2009
2010
2011
2012
2013
State Av
Region Av





Strategy to Improve Sanitary Sewer Systems

Our strategy to reduce SSOs and improve sewer systems in the Region will continue to span from outreach to formal Board enforcement. Additional staff resources have been carved out from other oversight efforts and directed to the program this fiscal year. This will allow for an increase in formal enforcement actions than in recent years when resources were reduced. We will also continue to audit sewer system agencies to

assess the adequacy of responses to SSOs and the completeness of sanitary sewer management plans. We plan to expand our audits to assess the adequacy of capital improvement and rehabilitation programs considering the age and condition of the agencies' systems.

The following provides a summary of our efforts thus far:

- Since 1987, the Board has issued cease and desist orders against seven sewer system agencies and assessed over $11.5 million against those and 19 other agencies (see Table 1). Many of these actions were targeted against agencies with high SSO volumes and rates. Additionally, the Board has entered into court-sanctioned stipulated orders with U.S. EPA against seven other sewer system agencies. In total, these systems encompass about 30 percent of the sewer system miles in the Region.

- The Board has approved 25 supplemental environmental projects (SEPs) totaling $6 million from its enforcement actions. Seven of these SEPs, totaling $3.6 million, are targeted at incentivizing the replacement of defective private sewer laterals.

- For collection systems with high I&I, the Board has also included requirements in agency permits to evaluate I&I reduction including adoption of private sewer lateral rehabilitation ordinances. Together with cease and desist order requirements and agencies acting under their own initiative, at least 39 sewer system agencies now have such ordinances in place.

- In the past two years, staff has audited 22 sewer system agencies and has issued 11 notices of violation calling for corrective actions to reduce SSOs and to improve response actions, reporting, and sanitary sewer management plans.

RECOM-
MENDATION: This item is a status report; no action is necessary.

Table 1. SF Bay Regional Water Board's Past Enforcement Actions and Supplemental Environmental Projects (SEPs)

Year	Discharger	Violation Description	Penalty	SEP Dollar Amount	Completion Date	SEP Description
1987	East Bay Municipal Utilities District	SSO(s) totaling 8M gallons discharged into waters of the State.	$100,000	$0	n/a	n/a
1987	San Francisco Public Utilities Commission	SSO(s) totaling 6M gallons discharged into waters of the State.	$100,000	$0	n/a	n/a
1989	Central Marin Sanitation Agency	SSO(s) totaling 2.4M gallons discharged into waters of the State.	$60,000	$0	n/a	n/a
1990	City of Oakland	SSO(s) totaling 400,000 gallons discharged into waters of the State.	$25,000	$0	n/a	n/a
1991	City of Mill Valley	SSO(s) totaling 280,000 gallons discharged into waters of the State.	$26,700	$0	n/a	n/a
1992	City of Mill Valley	SSO(s) totaling 17,500 gallons discharged into waters of the State.	$12,274	$0	n/a	n/a
1993	City of Pittsburg	SSO(s) totaling 29,300 gallons discharged into waters of the State.	$23,000	$0	n/a	n/a
1995	Sausalito-Marin City Sanitary District	SSO(s) totaling 3.7M gallons discharged into waters of the State.	$55,900	$0	n/a	n/a
1995	City of Hayward	SSO(s) totaling 6M gallons discharged into waters of the State.	$10,000	$0	n/a	n/a
1997	San Francisco Public Utilities Commission	SSOs totaling 95.3M gallons combined with stormwater discharged into waters of the State.	$300,000	$264,000	n/a	Crissy Field Dune Restoration Project and Development of NPDES Electronic Reporting System

Year	Discharger	Violation Description	Penalty Amount	SEP Dollar Amount	Completion Date	SEP Description
1998	Central Contra Costa Sanitary District	SSO discharged 1M gallons to San Pablo Creek.	$55,700	$45,900	4/2/2001	San Ramon Creek Restoration Project
2003	Sonoma County Water Agency (Sonoma County Water - Penngrove Collection System)	SSO totaling 400,000 gallons to tributary of the Petaluma River.	$38,000	$34,000	1/30/2004	Nathanson Creek Restoration Project
2003	City of Pacifica	SSO totaling 1.8M gallons discharged into waters of the State.	$125,033	$0	n/a	n/a
2004	Central Contra Costa Sanitary District	28 SSOs totaling 271,000 gallons discharged to waters of the State.	$165,000	$155,000	10/6/2009	Environmental Education Programs and Alhambra Creek study
2004	San Francisco City & Co. Sheriff's Dept.	SSO totaling 99,000 gallons from a private sewer lateral serving the San Bruno Jail.	$118,000	$110,000	2/1/2007	Property acquisition and San Bruno Jail garden project
2006	City of South San Francisco	SSOs from May 1, 2003, through March 1, 2006 including 1.8 MG SSO on December 27, 2004	$516,000	$484,000	12/23/2008	Private Sewer Lateral Replacement Program
2006	Ross Valley Sanitary District	SSO totaling 472,600 gallons on December 31, 2005	$78,000	$62,000	2/1/2008	Creek restoration projects in Corte Madera Creek watershed.
2006	East Bay Municipal Utility District	10,600,000 gallon SSO on December 18, 2005	$314,000	$0	n/a	n/a

Year	Discharger	Violation Description	Penalty Amount	SEP Dollar Amount	Completion Date	SEP Description
2007	San Francisco Public Utilities Commission	Unauthorized discharge and poor cleanup of 475,000 gallons of raw sewage onto the Great Highway and Ocean Beach on November 13, 2006	$626,000	$582,000	8/31/2010	San Francisco Unified School District Schoolyard Greening Projects
2007	City of Pacifica	SSO totaling 253,000 gallons on December 3, 2005	$190,000	$0	n/a	n/a
2008	City of San Mateo	87 SSOs totaling 3.5 million gallons between 2004-2008	$950,000 with CDO	$760,000	7/1/2014	Private Sewer Lateral Replacement Project
2008	Town of Hillsborough	89 SSOs between 2004-2008	$405,000 with CDO	$225,000	7/1/2014	Private Sewer Lateral Inspection and Replacement Project
2008	Crystal Springs County Sanitation District	22 SSOs between 2004-2008	$23,375 with CDO	$0	n/a	n/a
2008	CalTrans	Dry weather SSO to Guadalupe River during emergency repair to Interstate 880 and off ramp Route 82	$150,000	Memorandum of Understanding (MOU)	n/a	The MOU is to improve existing project planning procedures, spill identification, and response procedures.
2009	Sewerage Agency of Southern Marin	Bypass of 3.4 MG of partially treated sewage from the wastewater treatment plant to surface waters and other sewage discharges from January 1, 2001 to September 30, 2008.	$1,600,000	$800,000	7/1/2014	Richardson Bay Audubon Sanctuary's Aramburu Island Clean Up, Restoration, and Enhancement Project ($200,000) and Private Sewer Lateral Replacement Program ($600,000)

Year	Discharger	Violation Description	Penalty Amount	SEP Dollar Amount	Completion Date	SEP Description
2009	Mount View Sanitary District	586,000-gallon SSO from the District's Pump Station No. 4.	$270,000	$125,000	5/1/2015	Peyton Slough Hydraulic Relief Project
2009	Sausalito-Marin City Sanitary District	Wastewater treatment plant spills totaling 632,700 gallons and a 9,000-gallon SSO.	$258,000	$119,000	11/2010	Marine Mammal Center Rehabilitation Project
2009	East Bay Regional Park District	22,260-gallon SSO to Arroyo Del Valle Creek.	$3,900	$0	n/a	n/a
2009	City of Pacifica	Numerous sanitary sewer overflows (412,951 gallons) and a bypass of (6.9 million gallons) partially treated wastewater in January 2008 to Calera Creek and the Pacific Ocean.	$1,700,000 with CDO	$820,000	1/1/2016	Private Sewer Lateral Replacement Project
2010	City of Oakland	15 SSOs discharged to waters of the State and related reporting and notification violations.	$155,000 with CDO	$0	n/a	n/a
2010	City of Sausalito	SSOs that occurred in July 2008 at Woodward Avenue in Sausalito.	$75,342	$0	n/a	n/a

Year	Discharger	Violation Description	Penalty Amount	SEP Dollar Amount	Completion Date	SEP Description
2010	City of San Bruno	148 sanitary sewer overflows between December 1, 2004, and December 31, 2009. Total volume discharged and not recovered was 1,953,225 gallons. Discharges ultimately reached ground or surface waters.	$621,100 with CDO	$295,550	6/1/2016	Private Sewer Lateral Grant Program ($199,622) and Marine Mammal Center Rehabilitation Project ($95,928)
2010	Sonoma Valley County Sanitation District	37 sanitary sewer overflows for the period of January 31, 2007, through January 31, 2010	$383,000	$183,250	1/31/2014	The Fryer Creek Habitat Enhancement Project
2010	Novato Sanitary District	Sanitary sewer overflows, unauthorized discharges of sludge and chlorinated effluent, and discharge above effluent limits for total suspended solids.	$354,240.72	$140,138	8/31/2016	Bahia Tidal Pond Enhancement and Marsh Monitoring Project and Simmons Slough Wetland Enhancement Project
2011	City of Redwood City	A 94,900 gal SSO of which 57,107 gal discharged to surface water.	$95,600	$0	n/a	n/a
2012 and 2013	Ross Valley Sanitary District	36 SSOs and failure to meet notification and reporting requirements.	$1,539,100 with CDO	$721,750	11/1/2016	Southeastern Creekside Marsh Habitat Enhancement Project ($249,370) and Private Sewer Lateral Replacement Grant Program ($482,380)