

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

STAFF SUMMARY REPORT (Claudia Villacorta)  
MEETING DATE: January 9, 2013

ITEM: 8

SUBJECT: **Sanitary Sewer Overflow Reduction 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

DISCUSSION: This report describes an improving trend in the reduction of sanitary sewer overflows (SSOs) since the last status report to the Board in 2008 and our strategy to continue to effect reduced SSOs in the Region. The goal of the reduction program is to ensure that the owners and operators of sanitary sewer collection 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.

***Background***

SSOs contain untreated wastewater that includes high levels of organic wastes, pathogenic organisms, toxic pollutants, nutrients, and oil and grease. Once an SSO occurs, it is difficult to contain and recover much of the spilled wastewater or directly mitigate for the spill. Thus, SSOs can pollute surface water and groundwater, threaten public health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters. SSOs can also inundate properties and result in the closure of beaches and other recreational areas.

In 2003, the Board adopted a resolution supporting collaboration with the Bay Area Clean Water Agencies (BACWA) to reduce sewage spills. As part of this collaboration, the Board recognized the need for consistent and uniform sewage spill reporting to allow comprehensive assessment of the problem and to prioritize preventative actions. In 2005, we, together with BACWA experts, completed written guidance for sewer system management plans (SSMP) and required collection system agencies to develop SSMPs specific to their agencies.

In 2006, the State Water Board adopted waste discharge requirements for publically- owned sanitary sewer collection system agencies (Sanitary Sewer Order). The Sanitary Sewer Order put in place statewide many of the elements already started in this Region. Two of the most important elements are development and implementation of a SSMP and self-reporting of all SSOs to a statewide SSO database.

The State Water Board is scheduled to consider amendments to the Sanitary Sewer Order in early 2013. If adopted, the amendments would require photographs of SSOs, documentation of how volumes discharged and recovered are estimated, and water quality monitoring and impact assessment for SSOs greater than 50,000 gallons.

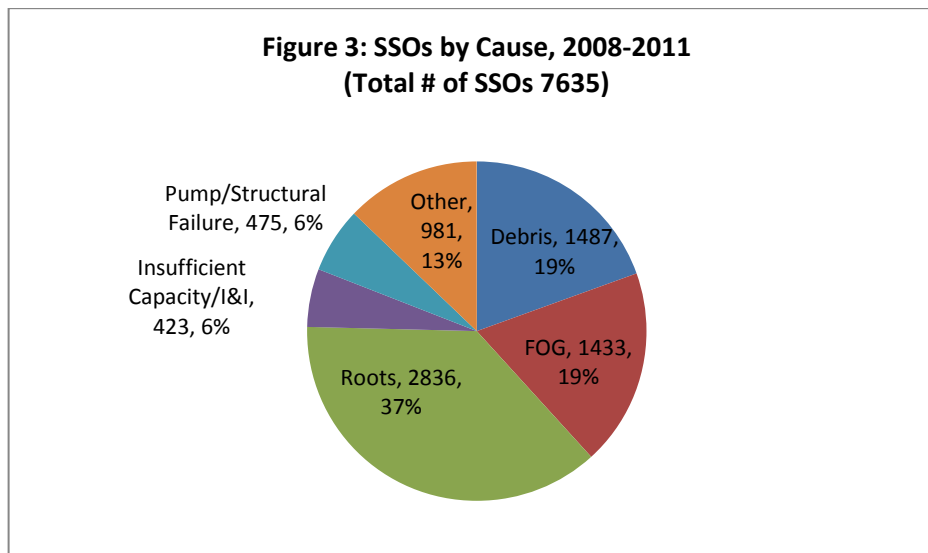
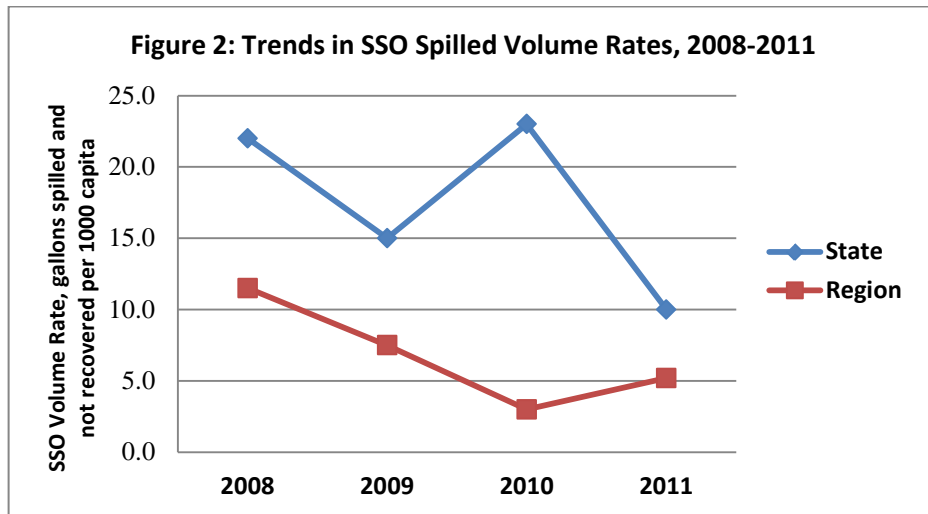
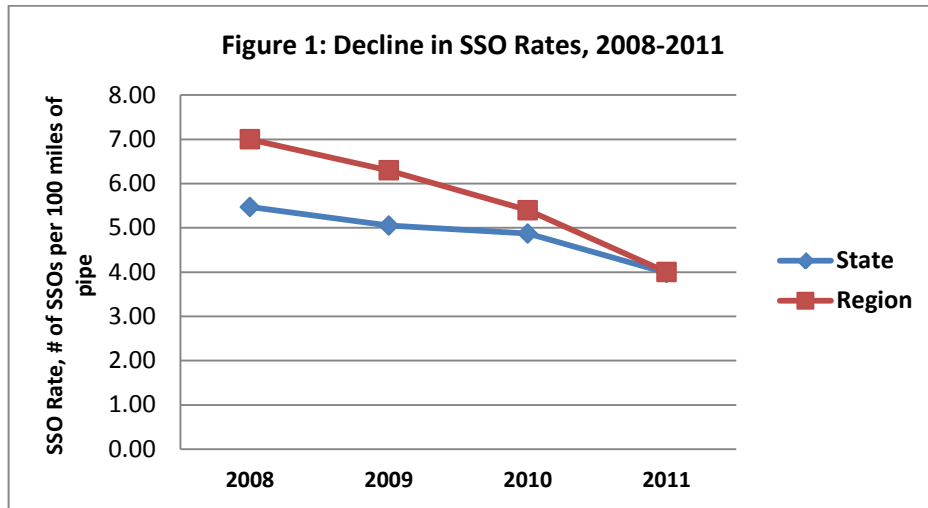
### *Sanitary Sewer Overflow Metrics*

Currently within our region there are 131 collection systems enrolled under the Sanitary Sewer Order. The agencies responsible for these systems operate and manage of over 18,000 miles of mainline sewer pipelines and close to 2,000 miles of lateral pipelines.

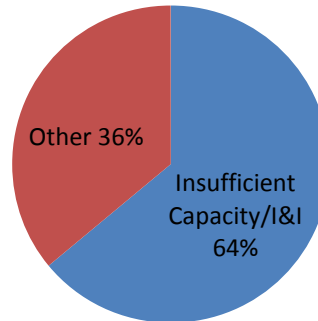
Based on our analysis of self-reported SSO data from these 131 collection system agencies for the years 2008 to 2011, we can make the following observations:

- Essentially all sewage from the 7.1 million Bay Area residents is treated. The Region's total SSO volume spilled and not recovered is quite small compared to the total discharge of treated wastewater from the Bay Area's wastewater treatment plants. For example, in 2011, less than 0.01 percent of the 183 billion gallons of sewage generated did not receive treatment.
- The Region's median SSO rate has decreased over the past four years to a rate equal to the statewide median (see Figure 1). The SSO rate is the total number of spills per 100-miles of sewer pipeline per year.
- Overall, large and small collection systems have similar SSO rates. However, our Region's SSO rate for large systems is higher than the statewide SSO rate. The higher SSO rate is likely due in part to our aging infrastructure. Older pipes tend to have more frequent breaks per mile. Large systems in our Region have a median pipeline age that is eight years older than the statewide median. A large system is one with 100 or more miles of sewer pipeline. The Region's median SSO rate for large systems is 6.2; the statewide median is about 2. The Region's median SSO rate for small systems is 5.8, close to the statewide median of about 6 (based on 2008-2011 data).
- The Region's average sewer pipeline age is 46.5 years and the statewide average is 38.8 years.
- The Region's median SSO rate for systems that include laterals has decreased over the past four years to a rate less than the statewide median. Laterals are the pipelines that connect all residential and commercial buildings to the mainline sewer pipelines that typically run down the middle of streets. Some collection system agencies have responsibility for the "lower lateral," which is the portion of the lateral between a building's cleanout and the mainline pipeline. The statewide median is 6.8; this Region's median is 4.2 (based on 2011 data).
- The Region's median SSO spilled volume rate has decreased over the past four years (see Figure 2). The SSO spilled volume rate is the total volume spilled that was not recovered per 1,000 people served by that agency per year. Spill volume rates can vary both with rainfall and the completion of improvements in operation and rehabilitation of systems. Also, some reported volumes are based on uncertain estimation procedures that can lead to imprecise estimates.
- The majority of SSOs (75 percent) occur as a result of root, debris, and "fats, oils, and grease" (FOG) blockages of sewer pipelines (see Figure 3).
- SSOs caused by inflow and infiltration (or "I&I") into collection systems and insufficient capacity in wet weather, though smaller in terms of total number of spills (less than 6 percent), result in larger spill volumes (64 percent of total volume spilled). The percentage of the total volume spilled will fluctuate from year to year due to rainfall and collection system improvements. Figure 4 provides a summary of the total number of SSOs and volume spilled due to I&I and insufficient wet weather capacity.
- Our Region's agencies that operate large collection systems currently budget a median of \$3.6 million per year on capital improvements and a median of \$4.9 million per year on operation and maintenance (O&M). This is twice the statewide median budget for similar size systems. The total annual budget by the Region's agencies for capital expenditures is

\$322.4 million; for O&M, the total is \$347.6 million. This is about 20 percent of the total statewide annual capital and O&M budget.



**Figure 4: Wet Weather SSO Volume, 2008-2011  
(Total Spill Volume 55.6 million gallons)**



### ***Strategy to Reduce Sanitary Sewer Overflows***

Our strategy to reduce SSOs continues to span the range from outreach to formal Board enforcement with shifts in emphasis over the years. The emphasis started initially with outreach to collection system agencies in collaboration with BACWA in 2003-2005. The emphasis then shifted to the other end of the spectrum with Board enforcement actions against agencies with very high volume SSOs. In total, since 2003, the Board has issued cease and desist orders against five collection system agencies and assessed over \$10 million against those and nine other agencies. Additionally, the Board has entered into court-sanctioned stipulated orders with U.S. EPA against six other collection system agencies. In total, these systems encompass over 15 percent of the sewer system miles in the Region.

In general, these efforts aim to improve system O&M and infrastructure upgrades by problem agencies. SSO rates can and have been reduced in the short-term, as shown in Figure 1, with improved O&M. However, lasting reductions in SSO volumes will take time since much of the volume is wet weather-related. Solutions to wet weather SSOs need a multi-year horizon for planning, funding, and construction. These solutions also must involve private property owners who are responsible for their laterals. The number of miles of private laterals is about as much as for publically-owned sewer pipelines. Fifty percent or more of I&I in some communities comes from old and neglected private laterals. For collection systems with high I&I, the Board has included in its permits and orders requirements for the systems' governing body to consider adoption of private lateral rehabilitation ordinances. Thus far, at least nine agencies have such ordinances in place. Also, the Board has approved 10 supplemental environmental projects, totaling \$3.9 million, targeted at incentivizing the replacement of defective private laterals. Most of these projects are ongoing.

Our current strategy focuses on using field audits to assess collection system agencies' O&M with an emphasis on assessing adequate SSMP implementation. We follow the audit with a report to the agency and, as appropriate, notices of violation calling for corrective actions. The intent of the field audit is to identify, and require be fixed, critical system deficiencies not always apparent through the comparative performance metrics presented above.

Collection system agencies are audited based on where they fall in the performance metrics presented above, whether they are in compliance with existing orders, and information from a third party such as a complaint. To date, we have audited eight collection system agencies and have issued eight notices of violation calling for corrective actions. The top violations include the following:

- Failure to develop a complete and adequate SSMP; many of the required elements omit information, contain out-of-date information, or are not representative of the audited collection system agency's activities.
- Failure to keep adequate records to substantiate the volume spilled and recovered.
- Failure to monitor and measure the effectiveness of SSMP activities (i.e., establish performance targets and conduct performance evaluations to assess the success of SSMP activities).

With the exception of one system, agencies audited to date are generally on track with the implementation of identified sewer rehabilitation and capital improvement projects that will provide adequate hydraulic capacity of key system elements for dry and wet weather conditions. All of the agencies audited and issued a notice of violation have either corrected or are implementing corrective actions. Additionally, collection system agencies under an existing enforcement order are on track with the completion of required corrective actions, and we continue to work with U.S. EPA to review the plans submitted by those agencies under their stipulated orders.

Board staff will continue to monitor and audit collection system agencies to ensure compliance with the Sanitary Sewer Order and other orders. As appropriate, we will bring enforcement actions to the Board for its consideration for those agencies that fail to timely and adequately comply with these various requirements.

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