

Appendix 4

**Statewide Sanitary Sewer Overflow
Reduction Program
Annual Compliance Report**



**EXECUTIVE DIRECTOR'S REPORT
State Water Resources Control Board**

May 2009

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This report provides an update on the Statewide Sanitary Sewer Overflow Reduction Program (SSO Program). It updates information contained in the [May 2008 Executive Director's Report](#). The State Water Resources Control Board (State Water Board) requested the May 2008 Executive Director's Report and the update to address statewide compliance with the General Waste Discharge Requirements (WDRs) for Sanitary Sewer Systems ([Water Quality Order No. 2006-0003-DWQ](#), Sanitary Sewer Order). This updated report contains detailed information on SSO Program history, goals, requirements, implementation efforts, compliance, and enforcement actions.

1. BACKGROUND

A sanitary sewer overflow (SSO) is any overflow, spill, release, discharge, or diversion of untreated or partially treated wastewater from a sanitary sewer system. A sanitary sewer system is any system of pipes, pump stations, sewer lines, or other conveyances, which is owned or operated by a public entity, used to collect and convey wastewater to a treatment facility. SSOs do not include overflows from privately-owned service laterals when these overflows are caused by blockages or other problems within the privately-owned lateral. These overflows are known as private lateral sewage discharges (PLSDs). SSOs do include overflows from privately-owned laterals when the cause is a problem within the publicly-owned sanitary sewer system.

SSOs and PLSDs often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oil, and grease. SSOs and PLSDs can pollute surface and ground waters, threaten public health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters. SSOs and PLSDs also can result in closure of beaches and other recreational areas, inundate properties, and pollute rivers and streams.

In 1999, under a Presidential directive, the United States Environmental Protection Agency (U.S. EPA) began work on federal standards to regulate sanitary sewer systems. U.S. EPA released proposed regulations under the Capacity, Management, Operation, and Maintenance (CMOM) Program in 2001. The U.S. EPA did not finalize the CMOM Program or promulgate any of its rules. In 2004, the State Water Board adopted Resolution No. 2004-0080, which committed it to the development of a regulation that would reduce the numbers and volumes of SSOs by requiring the proper operation and maintenance of sanitary sewer systems. In May, 2006, the State Water Board adopted the Sanitary Sewer Order to address the issue of SSOs in a consistent and uniform manner statewide. The Sanitary Sewer Order incorporated a number of regulatory concepts underpinning the proposed CMOM program. Through the SSO Program (http://www.waterboards.ca.gov/water_issues/programs/ssol/), California became the first state in the nation to implement a comprehensive program focused on regulation of sanitary sewer systems.

The objective of the Sanitary Sewer Order is to reduce the number and volumes of SSOs across the state through the proper operation and maintenance of sanitary sewer systems. The Sanitary Sewer Order requires any publicly-owned agency with more than one mile of sanitary sewer lines connected to a publicly-owned treatment facility to enroll for coverage under the Sanitary Sewer Order, develop and implement a sewer system management plan (SSMP), and report all SSOs to a statewide SSO database. The order does not apply to spills of sewage downstream of the headworks of a publicly-owned treatment facility. Spills of this nature are reported under the terms of the individual National Pollutant Discharge Elimination System (NPDES) permit or WDRs.

The SSMP documents the actions an enrollee is taking to properly operate and maintain their sanitary sewer system(s). An SSMP must address elements of sanitary sewer system reliability, including operation and maintenance; sanitary sewer system evaluation and capacity assurance; emergency response; and fats, oils, and grease (FOG) control.

After enrolling in the Sanitary Sewer Order, an enrollee must complete a collection system questionnaire that provides a survey of their organization and its sanitary sewer system, and update the questionnaire annually. An enrollee is then required to report all SSOs from their sanitary sewer systems. PLSDs are not an enrollee's responsibility and PLSDs are not required to be reported, but enrollees may voluntarily do so. Finally, an enrollee must submit a "no spill certification" if its sanitary sewer system does not experience any SSOs for a given calendar month. Between SSO reporting and no spill certification submittal, the Sanitary Sewer Order requires an enrollee to submit information to the State Water Board at least monthly, a requirement that is tracked by staff. All information submitted in accordance with the Sanitary Sewer Order's Monitoring and Reporting Program is done electronically through the SSO database, which is a module within the California Integrated Water Quality System (CIWQS).

To provide adequate time for training on how to use the SSO database, the State Water Board phased in deadlines for SSO reporting, according to the time schedule shown in Table 1 below:

Regional Water Board	Date Began Reporting SSOs
Regions 4, 8, 9	January 2, 2007
Regions 1, 2, 3	May 2, 2007
Regions 5, 6, 7	September 2, 2007

Table 1 – Reporting phase-in schedule for Enrollees

To help implement the SSO Program, the State Water Board received authorization for three additional Personnel Years (PYs). Although subject to future review and possible revision, current staffing is as follows. One PY is dedicated to Information Technology (IT) support services for maintenance and enhancements of the SSO database. The other two PYs are within the Division of Water Quality (DWQ) and are tasked to perform Sanitary Sewer Order implementation activities, including statewide outreach and training, assistance with enrollment and reporting, assistance with database development and deployment, program reporting, and compliance and enforcement coordination. The Regional Water Quality Control Boards (Regional Water Boards), however, continue, as before adoption of the Sanitary Sewer Order, to be responsible for enforcement related to specific SSO events.

2. Regional Water Board SSO Program Requirements

Some Regional Water Boards have issued their own WDRs for sanitary sewer systems within their jurisdictions. The Statewide Sanitary Sewer Order establishes minimum requirements to prevent SSOs. Although it is the State Water Board's intent that the Sanitary Sewer Order be the primary regulatory mechanism for sanitary sewer systems statewide, Regional Water Boards may issue more stringent or more prescriptive WDRs for sanitary sewer systems. Table 2 below provides a summary of current applicable Regional Water Board WDRs now in effect that establish additional requirements above those required by the statewide Sanitary Sewer Order.

Regional Water Board	Requirements in Place Beyond Statewide Sanitary Sewer Order
Region 1	Order No. R1-2003-0047
Region 2	RB2 Sanitary Sewer Overflow Reduction Program
Region 3	none
Region 4	none
Region 5	none
Region 6	none
Region 7	none
Region 8	none
Region 9	RB9 Order No. 96-04

Table 2 – Regional Water Board SSO Requirements

3. STATEWIDE IMPLEMENTATION

Over the past year, staff has primarily focused its resources in the following areas to achieve successful statewide compliance with Sanitary Sewer Order requirements and provide information to the public:

- a. Conducting statewide outreach, including speaking engagements, to increase program participation and clarify SSO Program requirements.
- b. Maintaining and improving the SSO online database functions, features, and operation.
- c. Providing assistance to non-profit and trade associations for outside training and resource material development.
- d. Conducting Sanitary Sewer Order training classes to assist Regional Water Board permitting, compliance, and enforcement staff.
- e. Developing and deploying a GIS SSO incident mapping tool to address California Water Code (CWC) section 13193, which mandates making GIS SSO maps available where possible.
- f. Taking enforcement actions.

A. SSO Program Outreach

Over the past year, outreach played a key role in both increasing enrollee participation in the SSO Program and reaching other interested stakeholders such as environmental groups and the general public, who continue to express interest in the successful implementation of the SSO Program.

Specific outreach has been varied to provide information about the Sanitary Sewer Order to as many different audiences as possible, including:

- Giving external presentations: Staff has routinely delivered presentations at various industry forums, including those provided by trade and non-profit associations such as the California Water Environment Association (CWEA), Southern California Alliance of POTWs (SCAP), Bay Area Clean Water Association (BCWA), and Central Valley Clean Water Association (CVCWA).
- Providing CIWQS Help Line assistance: The CIWQS Help Center answers questions from enrollees on how to use the online SSO database.
- Assisting in the development of the SSO Public Reports Web site: The Web site has been recently expanded to provide more information, including detailed SSO and PLSD certified reports entered by enrollees:
https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportSSOServlet?reportAction=criteria&reportId=sso_overview
- Developing and maintaining the Sanitary Sewer Order website: Staff maintains a Web page that provides extensive information about the Sanitary Sewer Order and SSOs in general, available at the following link.
http://www.waterboards.ca.gov/water_issues/programs/sso/index.shtml
- Sending listserve messages: Staff sends out updates on a regular basis regarding the Sanitary Sewer Order by email listserve messaging.

B. SSO Database and External Users Group

Staff developed the SSO database and enrollees are using it to report SSOs and PLSDs. The SSO database is part of CIWQS, a computerized system used by the Water Boards to store information on permits, inspections, monitoring, violations, and enforcement activities. The SSO database allows online submittal of information by enrollees and makes this data available to the public through the use of public reports.

The SSO database was created in collaboration with an advisory group of enrollees with the goal of achieving accurate and consistent data collection. Staff continues to maintain and enhance, within available resources, the SSO database. Staff relies on input from an SSO database external users group comprised of enrollees. The group's recommended changes are tracked via an Excel-based issues list.

Staff also developed a number of tools to assist enrollees in the use of the SSO database. For example, a user's guide for enrollees that describes how to use the database can be found at http://www.swrcb.ca.gov/sso/docs/discharger_workbook.pdf. This guide provides step-by-step instructions on how to submit data to the SSO database. Additionally, staff operates a technical support phone line in the CIWQS Help Center that enrollees can call for assistance or to report problems with online reporting. The SSO database also contains online help within the application itself to provide assistance and additional information. Staff continues to enhance these tools to assist enrollees with using the SSO database.

C. Enrollee Training Resources

The State Water Board signed a Memorandum of Agreement (MOA) with CWEA to offer Sanitary Sewer Order training to enrollees. CWEA created, in cooperation with staff, a training course for both reporting to the SSO database and developing a SSMP. CWEA has offered the SSO database electronic reporting and SSMP development classes statewide and will continue

to do so under the terms of the MOA. Figures 1 through 4 below summarize the number of enrollees that have participated in the CWEA classes for electronic reporting, SSMP training, and media response.

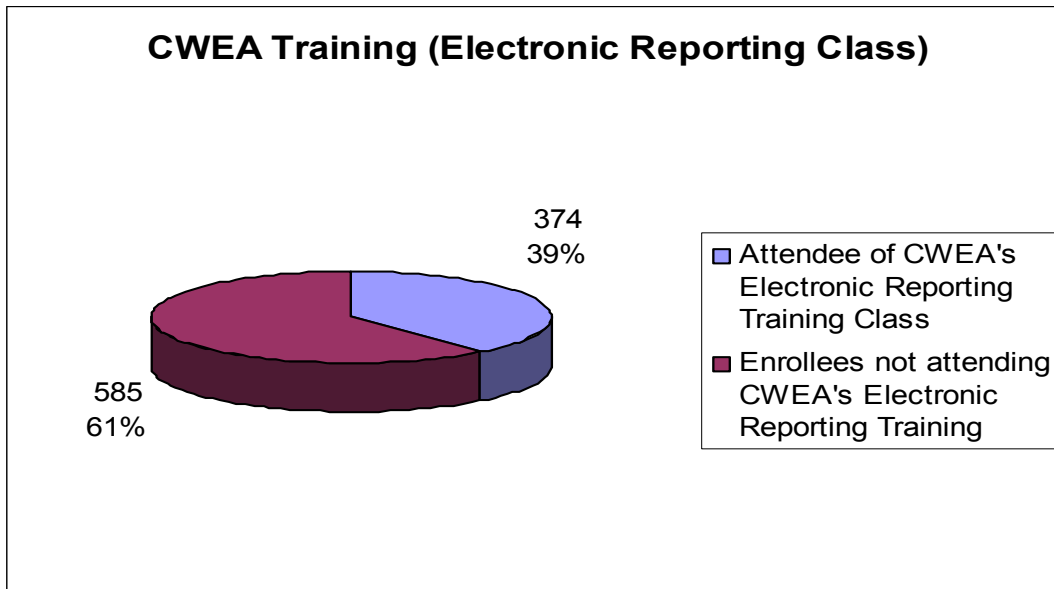


Figure 1 – CWEA Training (Electronic Reporting Class)

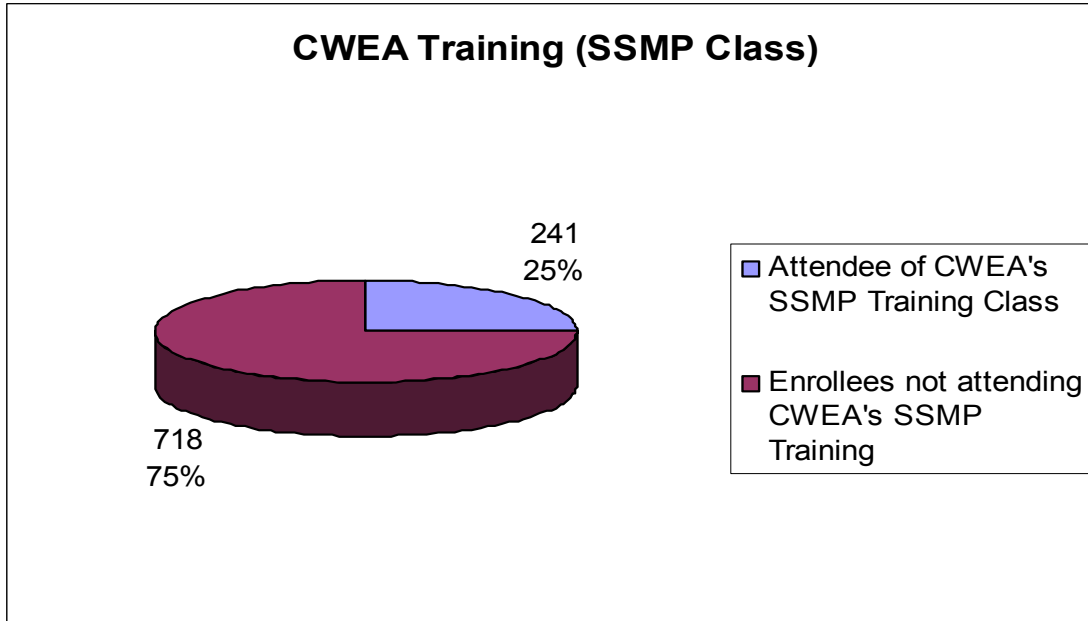


Figure 2 –CWEA Training (SSMP Training Class)

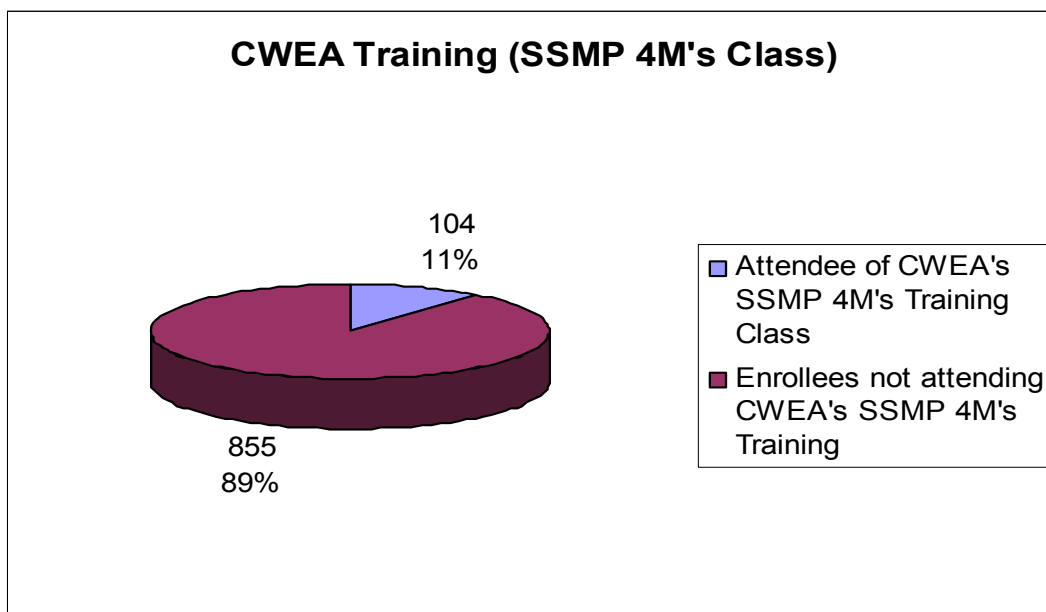


Figure 3 –CWEA Training (SSMP Map, Maintain, Measure & Modify (4M's) Training Class)

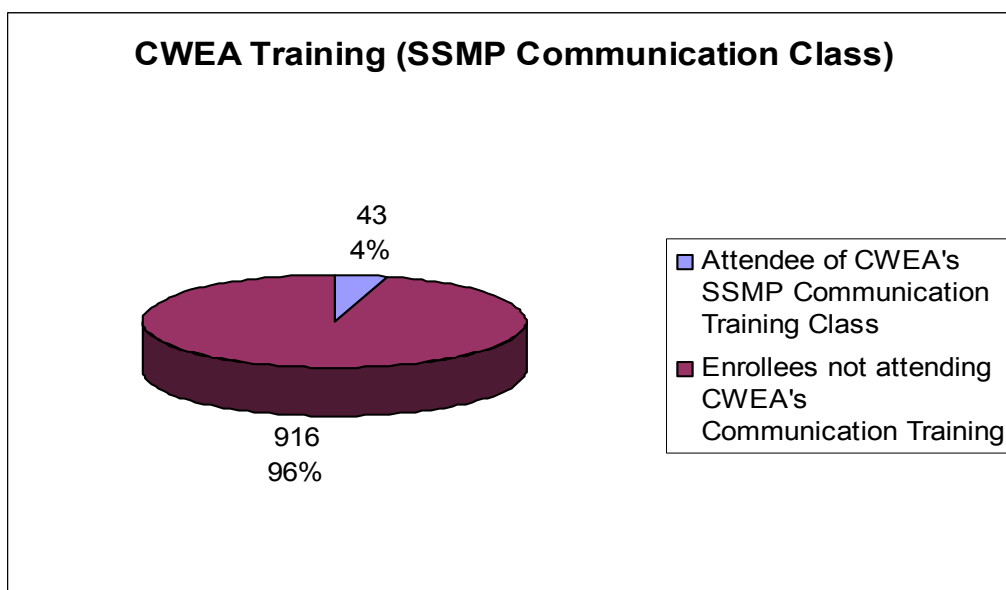


Figure 4 – CWEA Training (Media Spill Training Class)

One of the challenges with enrollee training is reaching small agencies that either cannot afford to pay for training or cannot attend the training because of limited staff size. A wastewater industry organization, California Rural Water Association (CRWA), is providing separate Sanitary Sewer Order training and outreach effort to address the needs of small sanitary sewer system agencies. CRWA's mission is to provide on-site technical assistance and specialized training for rural water and wastewater systems. A large portion of CRWA's membership is enrolled under the Sanitary Sewer Order, which means CRWA is well positioned to provide training to this group.

Staff continues to participate in a consultative role for the production of new, periodic review and updates of existing Sanitary Sewer Order classroom materials via the established MOA with CWEA, including participation in a regular monthly Training Task Force meeting and via oral communication with education and marketing staff at CWEA.

D. Regional Water Board SSO Training

State Water Board staff, with technical assistance from outside consultants, delivered customized training in northern and southern California for Regional Water Board staff covering sanitary sewer system operation and maintenance. The class curriculum included information on audits of sanitary sewer systems, the Sanitary Sewer Order, SSMPs, and procedures for responding to and investigating SSOs. The first two days provided a technical overview of sanitary system design, operation and maintenance, including a one-half day field trip to observe sanitary sewer system field crews performing maintenance tasks. The third day focused on the regulatory aspects of the Sanitary Sewer Order and sanitary sewer systems, including SSMP development, reporting requirements, compliance assurance, and enforcement. Additional advanced training classes on this subject matter are under development and will be presented to staff in late 2009.

E. SSO Incident Maps

The State Water Board has released a new interactive geographic information system (GIS) Web based display of sewer spill information to the public in May 2009 that depict SSO (http://www.waterboards.ca.gov/water_issues/programs/sso/sso_map/sso_pub.shtml) and PLSD (http://www.waterboards.ca.gov/water_issues/programs/sso/sso_map/sso_priv.shtml) incidents (sanitary sewer systems only, not from wastewater treatment plants) that have been reported to CIWQS by enrollees. This tool shows CIWQS certified spill data on Google maps and was developed in-house. It implements requirements in CWC section 13193, which requires the State Water Board to make reports available to the public, using GIS maps where possible, and supports the State Water Board's Strategic Plan goal of communicating public information regarding the state's waters in an easily understood form. The mapping tool incorporates numerous recommendations from the External Users Group, including the capability to search by date (default shows spills entered from past four months), spill size, and individual agencies enrolled in the Sanitary Sewer Order. Figure 5 below provides a view the incident map for SSOs for certified spill incidents in CIWQS provided by enrollees over the past four months.

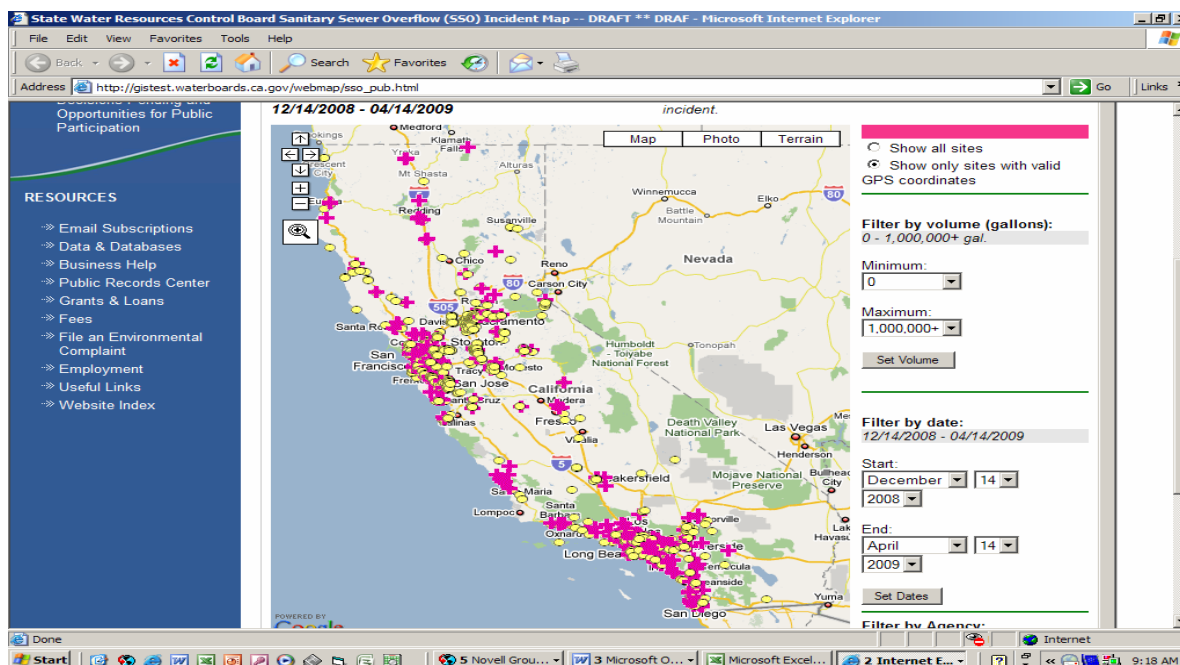


Figure 5 – SSO GIS Incident Map

F. Enforcement Actions

During fiscal year 2008-2009, CIWQS data shows a total of six formal enforcement actions have been taken by Regional Water Boards, resulting in more than \$2 million in assessed liabilities for SSOs throughout the state.

Staff are developing an SSO Compliance and Enforcement Plan that is intended to achieve statewide compliance in a fair and consistent manner. Staff plans to present the SSO Compliance and Enforcement Plan to the State Water Board in June 2009. This plan identifies the specific enforcement actions to be undertaken over the next year to comprehensively address noncompliance with the Sanitary Sewer Order's key requirements. Through utilization of fair, consistent and progressive compliance and enforcement actions, staff intends to achieve a high overall compliance rate, in harmony with the goals of the State Water Board's Enforcement Policy and Strategic Plan objectives.

4. STATEWIDE SANITARY SEWER ORDER COMPLIANCE AND ENFORCEMENT ACTIVITIES

The following section provides an update on enrollee compliance with requirements of the Sanitary Sewer Order, including enrollment for coverage, monthly reporting, SSMP certification, and completion of the collection system questionnaire. It also includes information on SSO events.

A. Enrollment for Coverage

The Sanitary Sewer Order requires any public entity that owns or operates a sanitary sewer system comprised of more than one mile of pipe or sewer lines that conveys wastewater to a publicly owned treatment facility to apply for coverage under the Sanitary Sewer Order.

In June 2006, staff mailed out Sanitary Sewer Order applications (or Notice of Intent forms) for coverage to 1,334 known potential enrollees statewide. By October 2007, staff had not received a response to this mailing from 215 of the original 1,334 known potential enrollees. At that time, staff mailed out a letter regarding noncompliance with the requirement to submit a Sanitary Sewer Order application to all 215 "non-responding" known potential enrollees. As a consequence of this letter and subsequent staff work, all known potential enrollees have now complied with the enrollment provisions of the Sanitary Sewer Order. Staff occasionally receives notifications from Regional Water Boards of sanitary sewer systems that were not on the original list and that are not enrolled. Staff follows up on these notifications to enroll these systems.

The overall enrollment trend for the Sanitary Sewer Order is shown in Figure 6 below. Currently, 1,100 enrollees are enrolled under the Sanitary Sewer Order. The total number of enrollments may decrease from time to time, due to cancellation of enrollment. Reasons for cancellations of enrollment include: (1) agency enrolled even though it did not meet application criteria (i.e., greater than one mile of sewer pipe and/or public entity); (2) duplicate enrollment, due to submittal of multiple applications; or (3) errors in data entry.

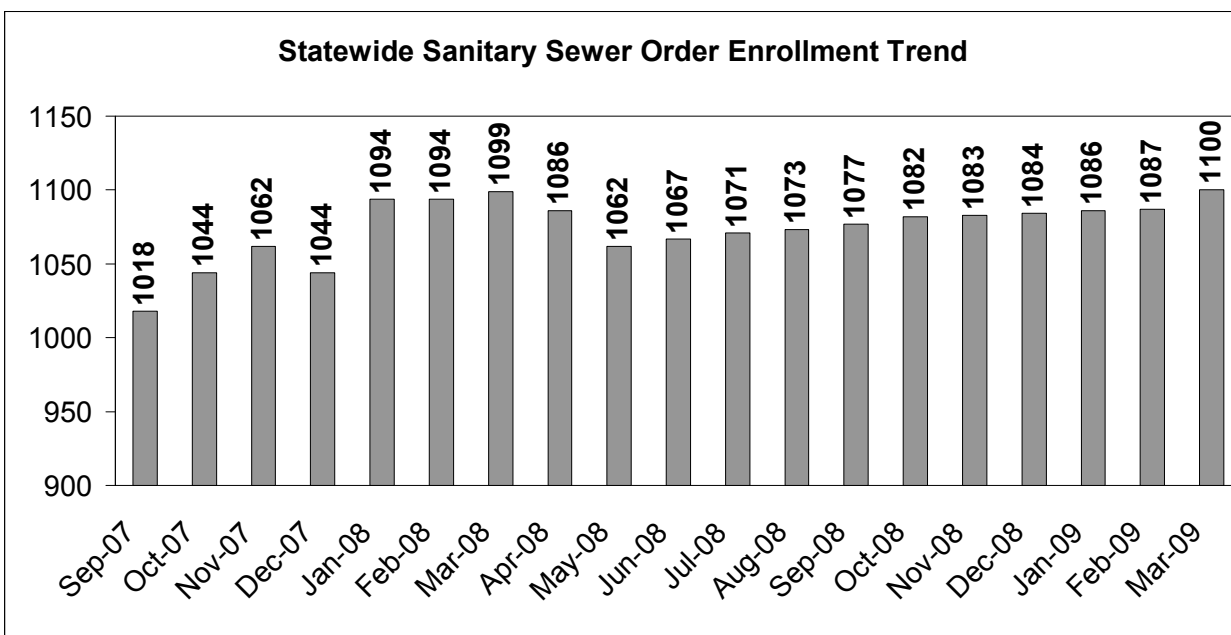


Figure 6 – Enrollment for coverage

B. Compliance with SSO Reporting Requirements

A monthly reporting compliance rate can be established by determining how many individual enrollees submitted either a SSO report or no spill certification for a given calendar month. Monthly reporting compliance rates are shown in Figure 7 below for the months of September 2007, when statewide reporting became mandatory in all Regions, to January 2009. The monthly reporting compliance rate during this period fluctuates from month to month and averages 61%.

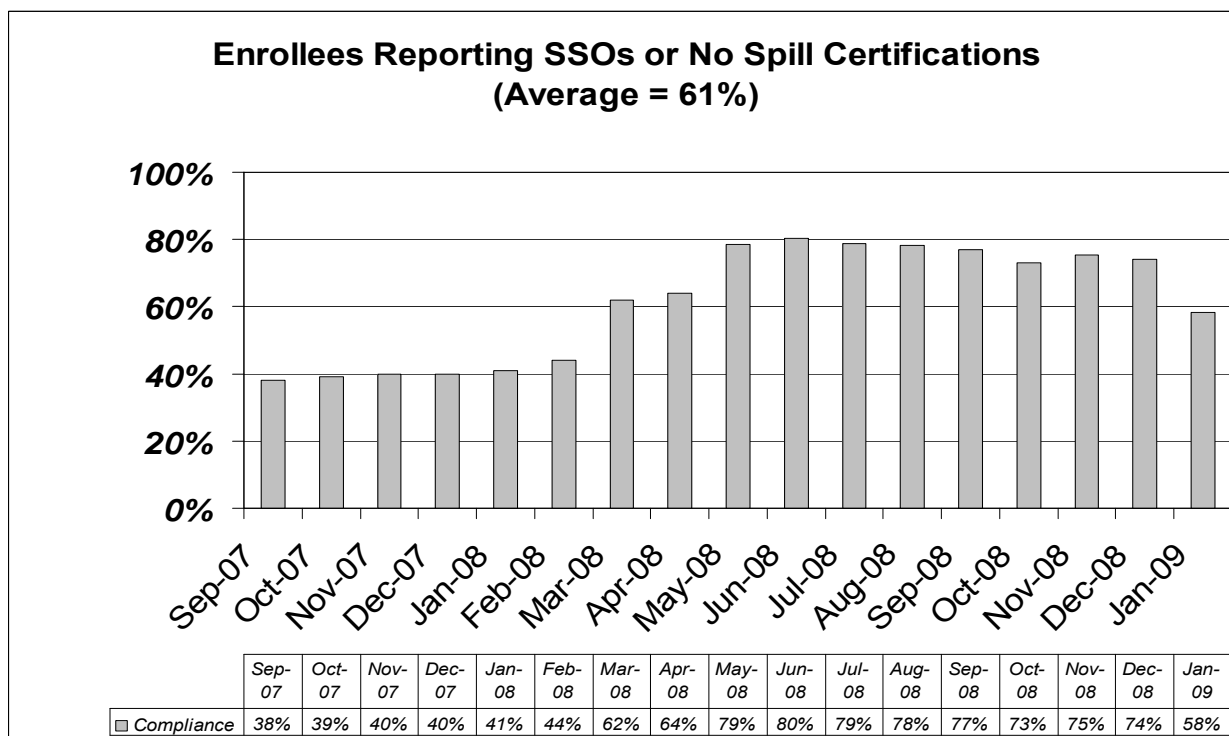


Figure 7 – Enrollee Month-to-Month Compliance with Spill and No-Spill Reporting

The average monthly reporting compliance rate of 61% is less than the target level of 100%. The reporting rate also dropped off in January 2009 to 58%. Earlier in the year, staff sent out emails to enrollees reminding them that they must report spills or submit no-spill certifications. This was effective in increasing compliance, but the effect appears to have been temporary. Staff is developing a more comprehensive strategy for dealing with this noncompliance.

C. SSMP CIWQS Certification

The Sanitary Sewer Order gives enrollees a reasonable amount of time to develop their SSMPs, with smaller communities having more time to complete their online CIWQS certification of required SSMP task elements than larger communities. Enrollees are required to certify, within specified time frames, that the final SSMPs are in compliance with the Sanitary Sewer Order. This certification is done electronically in the SSO database. Enrollees are required to obtain their governing board's approval at a public hearing for the plan for developing the SSMP and for the final SSMP certification. Enrollees do not send their SSMP to the State or Regional Water Boards for review or approval; however, they must make them available for review upon request.

The CIWQS online system for certifying the SSMP provides State and Regional Water Board staff with the ability to continuously monitor compliance of enrollees with SSMP development deadlines. Staff is currently evaluating SSMP certification data.

D. Collection System Questionnaire

The Sanitary Sewer Order requires enrollees to complete collection system questionnaires and update them every 12 months. The collection system questionnaire is a survey of an enrollee's organization and facilities and includes such information as operating and capital expenditure budgets, miles of pipe, number of employees, and population served by the enrollee. The purpose of this survey is to put the enrollee's SSMP and reported SSOs into context with organizational and facility characteristics. This is important because these characteristics have a significant impact on how an enrollee operates and maintains its sanitary sewer system. For example, "population served" represents the size of the rate paying base an enrollee has available from which to collect fees to operate and maintain the sanitary sewer system.

The number of enrollees who have completed the collection system questionnaire currently totals 936, as shown in Figure 8 below. When divided by the current total number of 1,100 enrollees, this results in an 85% reporting compliance rate for the collection system questionnaire.

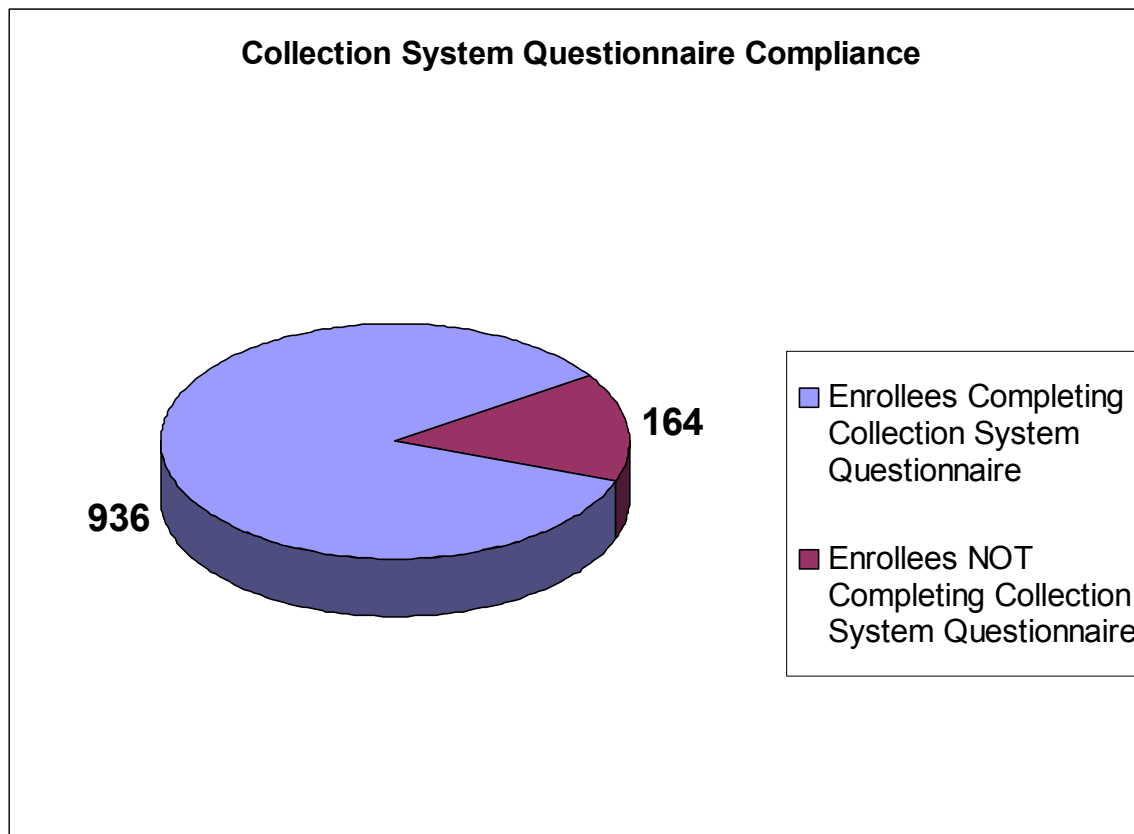


Figure 8 – Collection System Questionnaire Compliance

E. Reported SSOs and PLSDs

i. Statewide Reported Spill Data

A summary of statewide SSO and PLSD discharge data reported by participating enrollees since reporting requirements became effective on January 2, 2007 is presented in Table 3 below. The Sanitary Sewer Order does not prohibit all SSOs but does prohibit those that reach surface water or that cause a nuisance. To be considered a nuisance, an SSO would have to affect an entire community or neighborhood, as specified in CWC section 13050(m)(2).

State Water Board staff are actively conducting checks and taking necessary actions to ensure the accuracy of the data reported for the total of approximately 12,000 reported spills. Steps taken to ensure quality assurance and control include analysis of reported spills to identify erroneous data. When erroneous data are identified, the enrollee responsible for the data entry error is contacted and requested to correct it.

The data summaries presented below are from analyses of data that staff has checked and has a high degree of confidence in. Staff will examine additional metrics when ongoing data cleanup by enrollees is completed, efforts to increase reporting become effective, and additional data is collected.

SSO Reduction Program: Annual Compliance Report, May 2009

	# of SSOs	Total Volume of SSOs(gal)	Total Volume Recovered (gal)	Volume Reached Surface Water (gal)	Percent Recovered	Percent Reached Surface Water	Total Miles Pressure Sewer	Total Miles Gravity Sewer	Total miles of Laterals Enrollee Responsible For	# of SSOs per 100 Miles Sewer	Volume Reaching Surface Water per 100 Miles Sewer
SSOs	10,974	35,769,735	12,459,502	27,383,974	35	77	13,871	176,393	17,732	5.3	13,166

	Number of PLSDs	Total Volume of PLSDs(gal)	Total Volume Recovered (gal)	Volume Reached Surface Water (gal)	Percent Recovered	Percent Reached Surface Water	Total Miles Private Laterals	#Spills per 100 Miles of Private Laterals	Volume Reaching Surface Water per 100 Miles Private Laterals
PLSD	1,602	1,036,625	378,420	462,327	37	45	4,447,419	0.04	10

Table 3 – Overall Statewide SSO and PLSD Reports (from 1/2/07 to 4/6/09)

ii. SSOs and Private Lateral Sewage Discharge Spill Trends

The reported number of sewage spills that reached surface water is presented in Figure 9 below. Of 12,576 reported spills, 2,265 reached surface water. Of these, 1694 or 75% were less than 1,000 gallons.

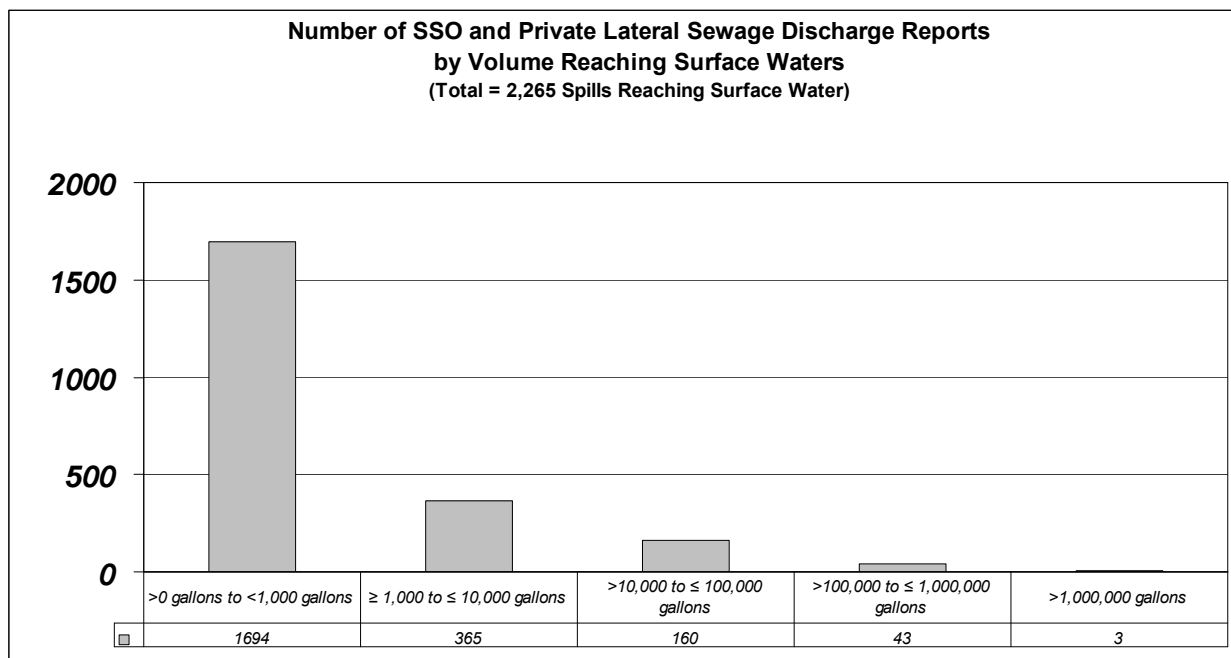


Figure 9 – Reported Number of Spills that Reached Surface Water

Examining the total number and volume of reported spills in the State by spill size class further illustrates the trends shown in Figure 9 for the spills reaching surface water. Ninety two percent of all spills in the State are less than 1,000 gallons as illustrated in Figure 10 below.

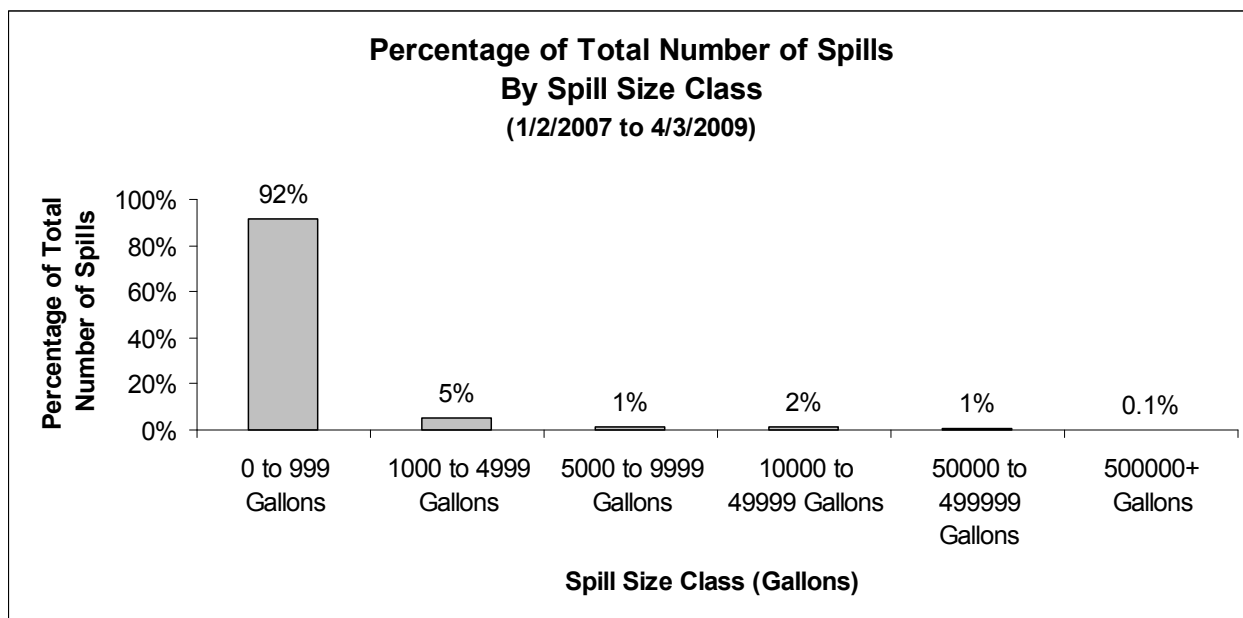


Figure 10 – Percentage of Total Number of Spills By Spill Size Class

Of the reported volume spilled in the State, 48% is caused by 0.1% of the spill events as illustrated in Figure 11 below. Further examination of Figures 10 and 11 shows that only 4% of the reported volume of sewage spilled in the State is caused by 92% of spill events while 48% of the volume spilled is caused by 0.1% of reported spill events.

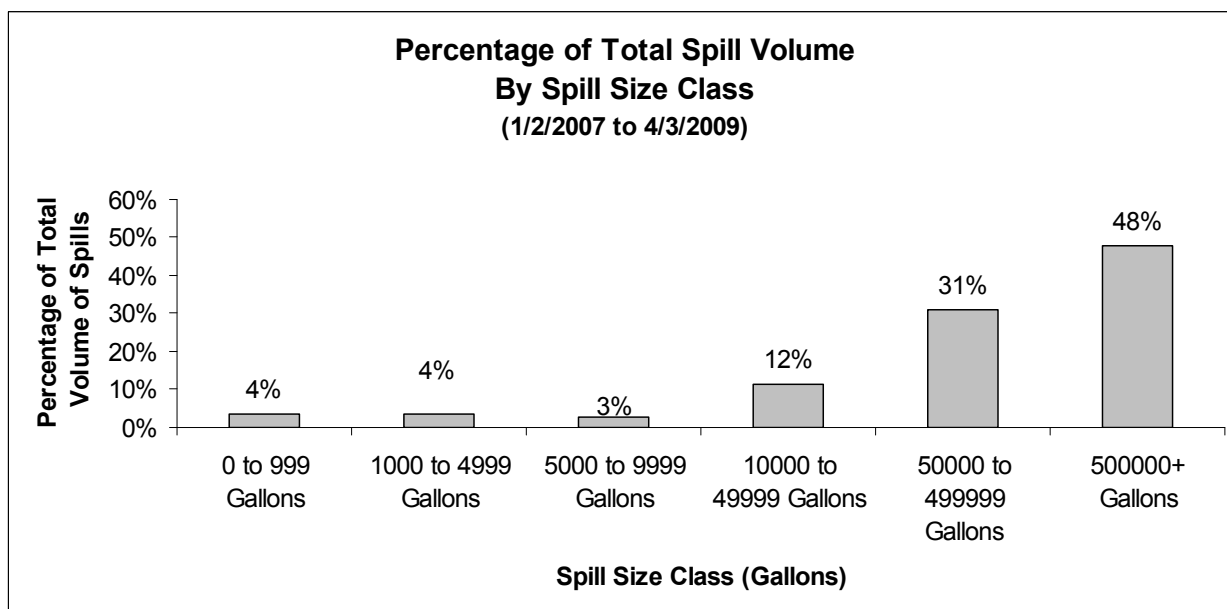


Figure 11 – Percentage of Total Volume of Spills By Spill Size Class

iii. Sewage Spills By Cause

The percentage of total SSO and PLSD spill reports by actual spill causes is presented in Figures 12 and 13 below. The data indicates that common and manageable causes (root

intrusion, grease deposition, debris) are responsible for 79% of all SSO spills and 64% of all PLSD spills.

The “misc.” category noted in the charts includes the following causes for SSO and PLSD spills:

- unknown cause,
- pump station failure,
- debris-rags,
- debris-construction material,
- rainfall exceeded design,
- vandalism,
- flow exceeded capacity,
- pipe failure during construction,
- maintenance,
- improper installation,
- operator error,
- valve failure,
- failure from diversion during construction,
- siphon failure,
- inappropriate discharge,
- non-collection system related, and
- other.

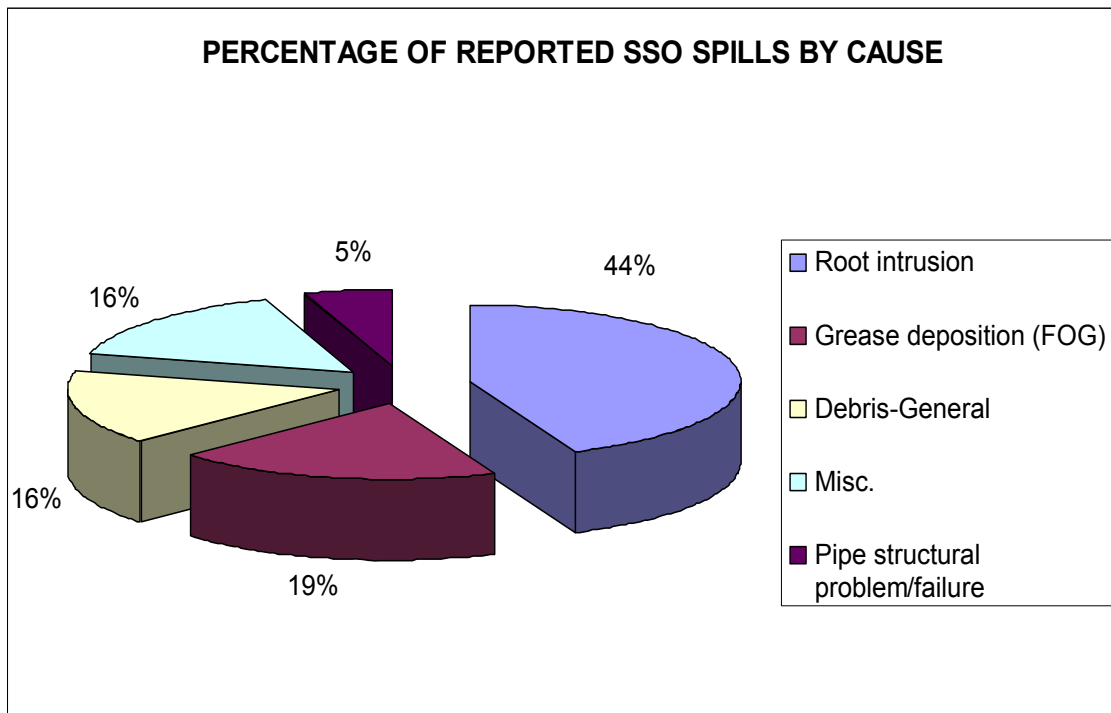


Figure 12 – Percentage of Reported SSOs by Cause

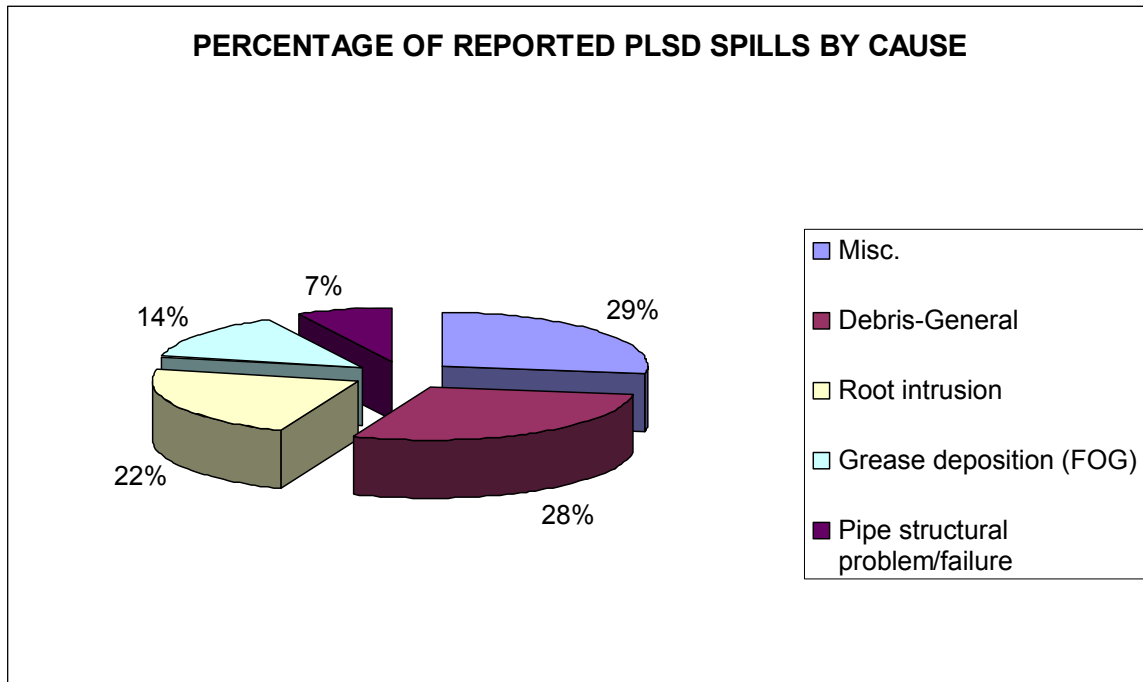


Figure 13 – Percentage of Reported PLSDs by Cause

iv. Sewage Spills By Pipe Characteristics

Sewer Pipe Diameter: The Sanitary Sewer Order does not require submittal of pipe characteristics. The SSO and PLSD spill report data indicates that: 1) since it is not required, many enrollees are not reporting the sewer diameter in their spill reports (67% for SSOs and 73% for PLSDs), and 2) that at least 30% of SSO spills and at least 27% of PLSD spills occur in pipe sizes of 1-8". In light of the common causes of spills noted above (i.e., root intrusion, grease deposition, and debris), it is expected that smaller diameter pipes would be affected by these factors to a higher degree.

Sewer Pipe Age: The percentage of the total volume of reported SSO and PLSD spills by sewer age is presented in Figure 14 below. The Sanitary Sewer Order does not require submittal of sewer age. The data indicates that: 1) since it is not required, many enrollees are not reporting the sewer age in their spill reports (84% of spills reported, 51% of reported volume spilled), and 2) at least 40% of the volume spilled occurs in pipes 11-45 years of age. In light of the common causes of spills noted above (i.e., root intrusion, grease deposition, and debris), it is expected that the volume spilled may not be closely correlated with pipe age versus if pipe failure where a leading cause.

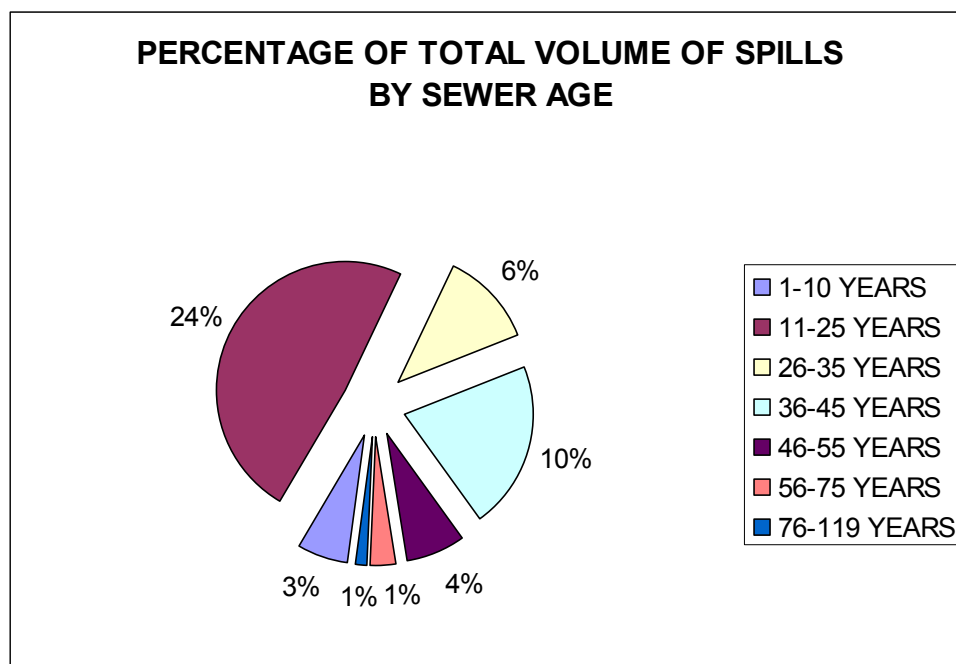


Figure 14 – Percentage of Total Reported Volume of SSOs and PLSDs by Sewer Age

Sewer Pipe Material: The Sanitary Sewer Order does not require submittal of pipe material. The reported SSO and PLSD spill data indicates that: 1) since it is not required, many enrollees are not reporting the pipe material in their spill reports (73% of spills reported), and 2) that at least 21% of the reported spills occur in vitrified clay pipes (VCP). This result is likely due to the prevalence of VCP that has been utilized for sanitary sewer system piping in the state. Increased thoroughness in reporting will help to clarify any trends related to pipe material and sewage spills.

v. Regional Trends of Sewage Spills

In order to make regional comparisons of the number and/or volumes of sewage spills, it is relevant to consider the variations among regions in population served, miles of pipe, and age of pipe, among other factors. At this time, the population served and number of spills reported by region can be assessed. When data cleanup efforts are completed, staff will examine other regional spill factors.

The reported population served by collection systems in each region is presented in Figure 15 below. The data indicates that most people served by collection systems are in Regions 2, 4, 5S, 8, and 9.

The percentage of reported SSOs and PLSDs by Regional Water Board is presented in Figure 16. The data indicates that: 1) Regions 2 and 5S account for 64% of reported spills in the state (R2=34% and R5S = 30%), and 2) 91% of the reported spills occur in Regions 2, 4, 5S, 8, and 9. This result is consistent with the population served by sanitary sewer systems in these regions.

The percentage of the total volume spilled in the State by Region is presented in Figure 17 below. The data indicates that Regions 2 and 9 account for approximately 74% of the reported volume of sewage spilled in the state.

Accordingly, increased compliance efforts in Water Board Regions 2, 4, 5S, 8, and 9 may yield the best results for reduction of the volume and number of sewage spills.

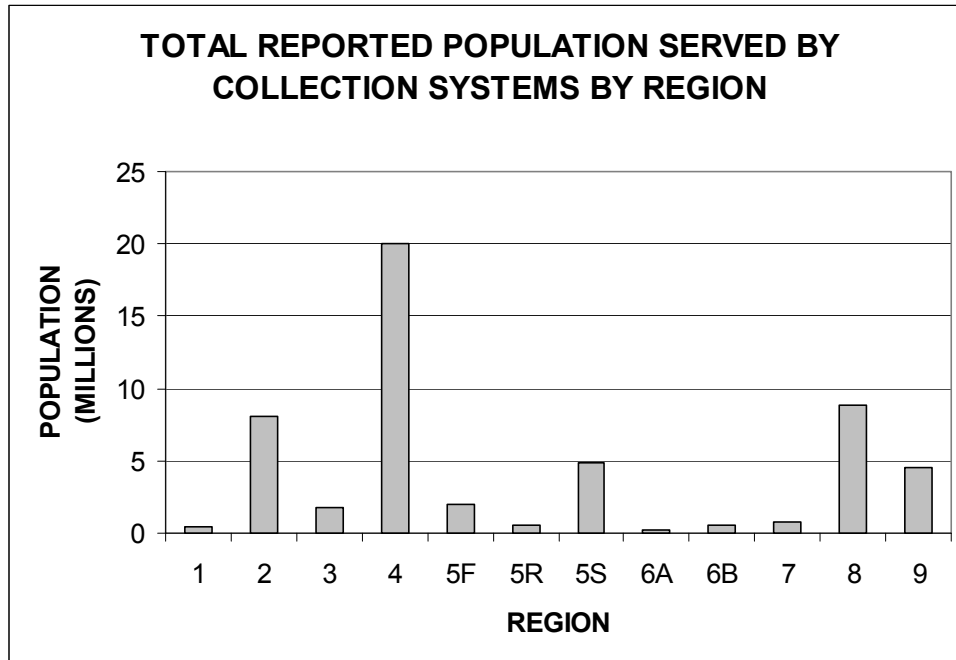


Figure 15 – Reported Population Served by Collection Systems by Region

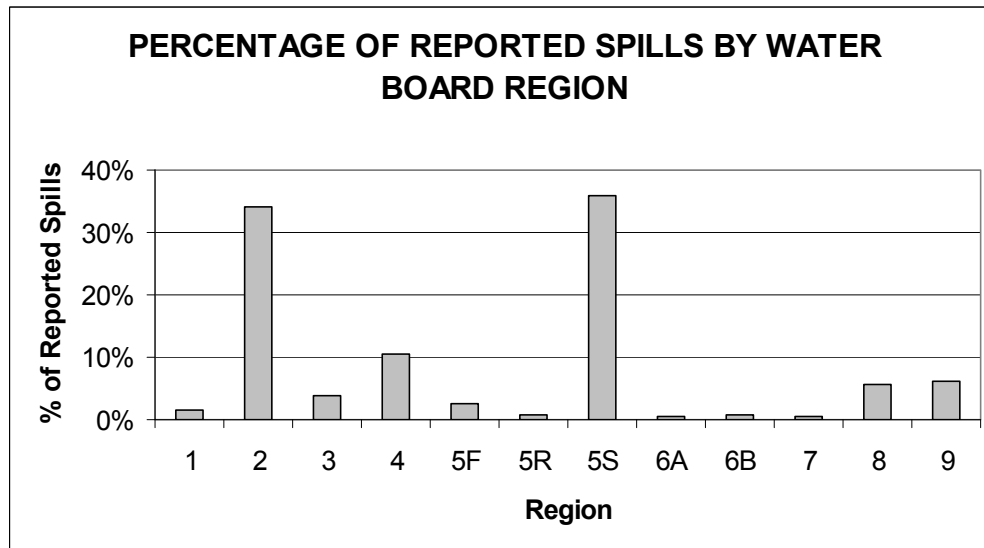


Figure 16 – Percentage of Reported SSOs and PLSDs by Region

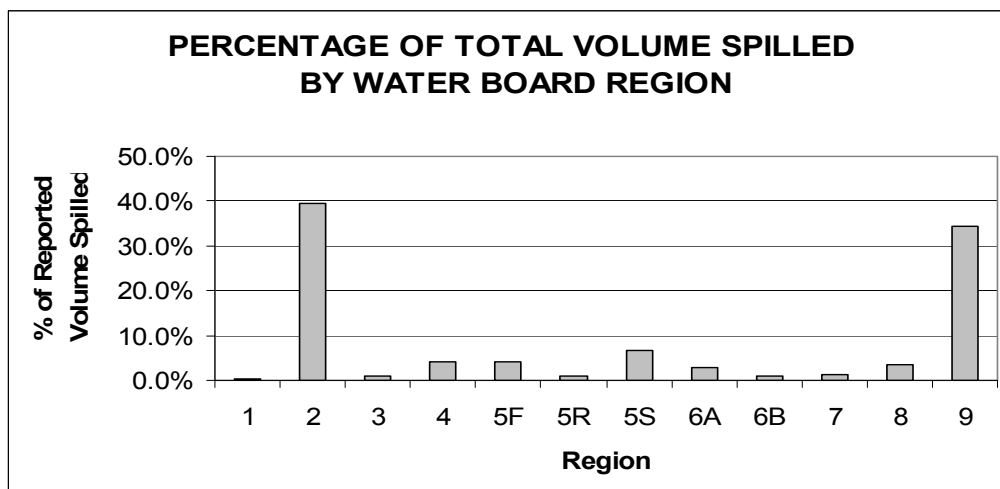


Figure 17 – Percentage of Total Volume Spilled by Region

vi. Summary of Reported Spill Data

Spill data collected to date indicates that 79% of the volume of sewage spilled in the State has occurred from only 52 out of 1,100 collection systems enrolled in the Sanitary Sewer Order. In addition, 98 spill locations are responsible for 79% of the volume spilled in the State since reporting was required indicating that of the 52 responsible, enrolled collection systems, many have had multiple spill locations. A summary of the top 20 collection systems ranked from highest volume of sewage spilled to lowest volume of sewage spilled in the State since reporting was required is presented in Table 4 below.

Table 4 – Top Twenty Enrolled Collection Systems Ranked by Volume of Sewage Spilled

Region	Collection System	# of Events	Rank*
9	Carlsbad MWD CS	1	1
2	San Mateo CS	17	2
2	Town Of Hillsborough CS	8	3
2	Richmond City CS	7	4
2	San Bruno City CS	4	5
6A	Susanville CSD CS	1	6
9	Santa Margarita Water District CS	2	7
9	Rainbow Municipal Water Dist CS	1	8
9	City Of Laguna Beach CS	2	9
5S	County Sanitation District 1 CS	1	10
2	Mt. View SD CS	1	11
5F	City Of Visalia CS	1	12
5S	Dry Creek, Zone 173 CS	1	13
2	Sonoma Valley County S.D. CS	5	14
5F	City Of Bakersfield CS	1	15
9	San Diego City CS	2	16
9	City Of Vista CS	1	17
7	Coachella Valley Water District CS	2	18
2	Novato And Ignacio CS	3	19
9	Santa Rosa WRF-Recycled Wtr CS	2	20

* Rank 1 = highest volume spilled, Rank 20 = lowest volume spilled

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In terms of the best performing collection systems in the State, 254 systems have complied with the monthly spill/no-spill reporting requirements and had no SSOs during the 12 month period from March 2008 to February 2009. A list of these collection systems by Region is presented in Table 5.

Table 5 – Collection Systems In Compliance With Reporting Requirements and Having No SSOs

REGION	COLLECTION SYSTEM	REGION	COLLECTION SYSTEM
1	Calpella CA WD CS	5F	Corcoran CS
1	College Of The Redwoods, CS	5F	Corcoran State Prison CS
1	Etna CS	5F	CSA 71.3 CS
1	Forestville Water District CS	5F	Delft Colony CS
1	Garberville CS	5F	Delhi CWD CS
1	Happy Camp SD CS	5F	East Niles Community Services CS
1	Loleta CS	5F	El Rancho CS
1	Miranda CS	5F	Farmersville WWTP CS
1	Pelican Bay Prison CS	5F	Franklin CWD CS
1	Redway CS	5F	FRESNO CO #30-EL PORVENIR CS
1	Salt Point State Park CS	5F	FRESNO CO #32-CANTUA CREEK CS
1	Scwa Airport CS	5F	FRESNO CO #34-MILLERTON NEW TOWN CS
1	Scwa Geyserville Csd CS	5F	FRESNO CO #38-SKY HARBOUR CS
1	Scwa Occidental Csd CS	5F	FRESNO CO #44A-MILLERTON LAKE MHV CS
1	Scwa Oceanic Prop. Central Pla CS	5F	Fresno Co #44-D MONTE VERDE ESTATES CS
2	Almontesd CS	5F	FRESNO CO #47-QUAIL LAKE CS
2	Anthony Chabot Regional Park CS	5F	Ivanhoe PUD CS
2	Bolinas Community PUD CS	5F	Juvenile Justice Campus CS
2	Contra Costa County SD 6 CS	5F	Kerman CS
2	Coyote Hills Regional Park CS	5F	Kern Valley State Prison CS
2	CSU East Bay CS	5F	Laborde Ranch- CSA 71.2 CS
2	Ebmud CS	5F	Lamont PUD CS
2	Foster City CS	5F	Lewis Ranch CSA 71.1 CS
2	Garin Regional Park CS	5F	London WWTP CS
2	Lawrence Berkeley National Laboratory CS	5F	Malaga Cwd CS
2	Marin Csd 5 Paradise Cove CS	5F	Mi-Wuk Village CS
2	Sonoma County Water - Penngrove CS	5F	Moccasin Powerhouse CS
2	The California Veterans Home CS	5F	North Kern State Prison CS
3	Bear Creek Estates CS	5F	PIXLEY CS
3	Buellton CS	5F	Planada Csd CS
3	Cachuma Lake Recreation Area CS	5F	Pleasant Valley State Prison CS
3	California Mens Colony CS	5F	Reeder Tract WWf, Csa #398 CS

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REGION	COLLECTION SYSTEM	REGION	COLLECTION SYSTEM
3	Cambria Csd CS	5F	San Joaquin CS
3	Castroville Water District CS	5F	Sequoia Fields/Bob Wiley CS
3	County Service Area 12 CS	5F	Sommerville Almond Tree Owners Association CS
3	CSU Cal Poly Slo CS	5F	Stallion Springs Csd CS
3	Cuesta College CS	5F	Tipton CSD CS
3	Domestic Wastewater CS	5F	Tonyville CS
3	Estrella Correctional Facility CS	5F	Tooleville CS
3	Heritage Ranch CS	5F	Traver CS
3	Lompoc Regional Water Reclamat CS	5F	Twain Harte Csd CS
3	Los Alamos CS	5F	UC Kearney Research and Extension Center CS
3	Meadowbrook CS	5F	Wells Tract Zone of Benefit (ZOB) CS
3	Monterey Csa - Chualar CS	5F	Winton Water and Sanitary District CS
3	Mrwpca Reg Trtmt & Outfall Sys CS	5R	Adin CS
3	Nipomo Csd Black Lake CS	5R	Anderson CS
3	San Juan Bautista CS	5R	Butte Csa #21 CS
3	Santa Ynez C.S.D. CS	5R	City Of Loyalton CS
3	South San Luis Obispo Sd CS	5R	City Of Wilows CS
3	Tertiary CS	5R	Corning Indust/Domestic CS
3	Watsonville CS	5R	Crocker Mountain Estates CS
4	Aneta Zone CS	5R	East Quincy Services District CS
4	Artesia City CS	5R	Gerber CS
4	Bell City CS	5R	Gold Mountain CS
4	Bellflower City CS	5R	Greenville CS
4	Bradbury City CS	5R	Loafter Creek Campground CS
4	Camarillo Utility Enterprise-Camarillo Airport CS	5R	Mineral CS
4	Camarillo Water Reclam. Plant CS	5R	Oroville CS
4	Cerritos City CS	5R	Palo Cedro CS
4	County Sanitation District No. 1 CS	5R	Plumas Eureka Estates CS
4	County Sanitation District No. 14 CS	5R	Richvale CS
4	County Sanitation District No. 15 CS	5R	Rio Alto Water District CS
4	County Sanitation District No. 16 CS	5S	6-Mile Village CS
4	County Sanitation District No. 17 CS	5S	Amador City CS
4	County Sanitation District No. 2 CS	5S	Applegate, Zone 24 CS
4	County Sanitation District No. 21 CS	5S	Arbuckle CS

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REGION	COLLECTION SYSTEM	REGION	COLLECTION SYSTEM
4	County Sanitation District No. 28 CS	5S	Auburn Lk Trls Onsite WW Disp CS
4	County Sanitation District No. 29 CS	5S	California State Prison, Solano CS
4	County Sanitation District No. 3 CS	5S	California State University, Sacramento CS
4	County Sanitation District No. 4 CS	5S	Camanche North Shore CS
4	County Sanitation District No. 8 CS	5S	Cascade Shores CS
4	County Service Area No. 30-Nyelnd Acres CS	5S	City Of Live Oak CS
4	CSU Northridge CS	5S	Copper Cove CS
4	El Monte City CS	5S	Csa 3-Lake Camanche CS
4	Hidden Hills CS	5S	Ddjc, Tracy CS
4	La Habra Heights City CS	5S	Denair CSD CS
4	Lynwood City CS	5S	Diablo Grande CS
4	Malibu Mesa CS	5S	Dixon CS
4	Pasadena City CS	5S	Dos Palos City CS
4	San Gabriel City CS	5S	Douglas Flat/Vallecito CS
4	Santa Clarita Valley Sanitation District of Los Angeles County CS	5S	Dry Creek, Zone 173 CS
4	Santa Fe Springs City CS	5S	Eagles Nest Leachfield CS
4	Saticoy S.D. CS	5S	Escalon Treatment Plant CS
4	South El Monte City CS	5S	Forest Meadows CS
4	Vernon City CS	5S	Gayla Manor CS
4	West La Community College CS	5S	Gold Ridge Forest Unit 3 CS
4	Westlake Village CS	5S	Hamilton City Csd CS
5	FRESNO CO #40-SHAVER SPRINGS CS	5S	Hughson CS
7	Blythe Airport Stf CS	5S	Indian Rock Vineyards CS
7	Brawley WWTP-Npdes CS	5S	Lake Berryessa Resort CS
7	Desert Water Agency CS	5S	Lake Co Sanitation Dist AD9-1 & AD9-3 CS
8	BBARWWA CS	5S	Lake Wildwood CS
8	Big Bear City CSD CS	5S	Linda Co Wtr Dist CS
8	California Rehabilitation Center CS	5S	Linden Co Water Dist CS
8	Crafton Hills College CS	5S	Livoti, Zone 55
8	Edgemont CSD CS	5S	Maxwell PUD CS
8	Herman G. Stark Youth Correctional Facility CS	5S	Mill Woods CS
8	Idyllwild Water District CS	5S	Mountain House -1 CS
8	Inland Empire Utilities Agency CS	5S	Mountain Lakes Estates CS
8	IRWD - OCSD Regional 1 CS	5S	Mule Creek State Prison CS
8	La Palma City CS	5S	North San Juan CS
8	Montclair City CS	5S	Oakwood Lake Water District CS
8	Running Springs CS	5S	Pardee Recreation Area CS

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REGION	COLLECTION SYSTEM	REGION	COLLECTION SYSTEM
8	San Bernardino County, CSA-53B CS	5S	Penn Valley CS
8	San Bernardino Valley College CS	5S	Rio Ramaza CS
8	Santa Ana City CS	5S	Rio Vista Waste Trt Facility CS
8	STP,Clay Canyon CS	5S	Robbins CS
8	STP,Mhp-Butterfield Estates CS	5S	Sacramento Executive Airport CS
8	Sunset Beach Sanitary Dist CS	5S	Sacramento Regional CS
8	Western MWD CS	5S	Salida CS
8	WRCRWA Reclamation Plt CS	5S	Santa Nella CWD CS
8	Yorba Linda City CS	5S	Sheridan, Zone 6 CS
9	4-S Ranch CS	5S	SMD No. 2 CS
9	California State Univeristy, San Marcos CS	5S	SMD No. 3 CS
9	City Of Encinitas CS	5S	Southworth Ranch Estates CS
9	City Of San Juan Capistrano CS	5S	Sunset Whitney, Zone 2A3 CS
9	Descanso Detention Facility CS	5S	Tuolumne CS
9	Emerald Bay Service District CS	5S	UC Davis Health System CS
9	Fairbanks Ranch CS	5S	West Point CS
9	Heise Park Campground CS	5S	Winters CS
9	IRWD - El Toro CS	5S	Woodbridge Sd CS
9	Pauma Valley Treatment Plant CS	6A	High Desert State Prison CS
9	Pine Valley Sd CS	6A	Leavitt Lake Sew Trt Ponds CS
9	Rainbow Municipal Water Dist CS	6A	Markleeville Wstwtr Trtmnt Sys CS
9	Rancho Del Campo CS	6A	Placer County Eastern Regional Landfill CS
9	San Diego State University CS	6A	Squaw Valley Public Svc Dist CS
9	San Vicente Treatment Plant CS	6A	Stones-Bengard Sewage Trt Pnds CS
9	Santa Maria CS	6A	Tahoe Truckee Sanitation Agen CS
9	Santa Rosa WRF-Recycled Wtr CS	6B	Arrowbear Park CWD CS
9	Whispering Palms CS	6B	Barstow/Daggett Airport CS
5F	Armona CS	6B	Big Pine CS
5F	Avenal State Prison CS	6B	Bishop CS
5F	Buena Vista Aquatic Rec Area CS	6B	CSA 42 CS
5F	California State University, Fresno CS	6B	CSA 64 CS
5F	CARUTHERS CS	6B	CSA 70 SP2 CS
5F	Central California Women's Facility CS	6B	Lone Pine CS
5F	City of Avenal CS	6B	Mojave CS
5F	City of Parlier CS	6B	Yermo Domestic CS

REGION	COLLECTION SYSTEM	REGION	COLLECTION SYSTEM
5F	City Of Woodlake CS		

Ongoing data quality control, cleanup, and collection efforts by staff will improve the quality of spill data reported in the SSO online reporting system and allow additional trend analyses to be conducted with the data. These efforts will assist staff and enrollees in understanding the causes of sewage spills and identify system management and regulatory efforts that will yield the greatest reductions in sewage spills.