

SOUTH PLACER MUNICIPAL UTILITY DISTRICT

Sewer System Management Plan (SSMP) Audit

FY 19/20 – FY 20/21

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Table of Contents

SECTION 1	Audit Objectives	3
SECTION 2	Agency Background / System Information	4
2.1	Review of Prior SSMP Audits	4
2.2	Review of FY19/20 and FY20/21	5
SECTION 3	SSO Trends.....	7
3.1	Historical SSO Data	7
3.2	Trends in the Number of SSOs	8
3.3	Trends in the Volume of SSOs	10
3.4	Trends in the Causes of SSOs.....	10
3.5	Anecdotal Trends in SSOs	12
3.6	SSO Reduction Goals	12
SECTION 4	Review of SSMP Compliance	16
SECTION 5	Review of SSMP Effectiveness	19
5.1	Organization Performance Indicators	20
5.2	Legal Authority Performance Indicators	21
5.3	Operation and Maintenance Program Performance Indicators (1 of 2)	22
5.4	Operation and Maintenance Program Performance Indicators (2 of 2)	23
5.5	Design and Performance Provisions Performance Indicators.....	24
5.6	Overflow Emergency Response Plan Performance Indicators	25
5.7	FOG Control Program Performance Indicators	26
5.8	System Evaluation and Capacity Assurance Plan Performance Indicators	27
5.9	Monitoring, Measurement, and Program Modifications Performance Indicators	28
SECTION 6	Audit Summary	29



List of Tables

Table 1. Overview of System Indicators	4
Table 2. Summary of SSMP Compliance Deficiencies from Previous SSMP Internal Audit.....	5
Table 3. CIWQS SSO Data and District SSO Data	8
Table 4. District SSO Goals.....	13
Table 5. SSO Reduction Goals.....	13
Table 6. Compliance with Requirements of SSS WDR Section D.13 and Review of Implementation	16
Table 7. Summary of SSMP Compliance Deficiencies.....	29
Table 8. Summary of Audit Recommendations.....	29

List of Figures

Figure 1: Number of SSOs per Fiscal Year	9
Figure 2: Number of SSOs per Fiscal Year (excluding Laterals)	9
Figure 3: SSO Volume per Fiscal Year	10
Figure 4. Leading Causes of SSOs in FY19/20 and FY20/21	11
Figure 5. Percentage of SSOs by Material Type.....	11
Figure 6. Percentage of SSOs by Age	11
Figure 7. Map of SSOs in FY19/20 and FY20/21	12

List of Abbreviations

FOG	Fats, Oils, and Grease
FY	Fiscal Year
MMM	Monitoring, Measurement, and Program Modifications
OERP	Overflow Emergency Response Plan
O&M	Operation and Maintenance
SECAP	System Evaluation and Capacity Assurance Plan
SOP	Standard Operating Procedure
SPMUD	South Placer Municipal Utility District
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SSS WDR	Statewide General Waste Discharge Requirements for Sanitary Sewer Systems



SECTION 1 Audit Objectives

This report summarizes the results of the required Sewer System Management Plan (SSMP) internal audit process for the FY 19/20 and FY 20/21 evaluation period. The purpose of the SSMP is to provide a written framework for sanitary sewer collection system management, operation, and maintenance programs executed by the South Placer Municipal Utility District (District or SPMUD) with the ultimate goal of minimizing sanitary sewer overflows (SSOs) and achieving compliance with California State Water Resources Control Board (SWRCB) Order No. 2006-0003-DWQ, the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (SSS WDR). The SSMP audit is based on a review of performance measures established to evaluate the District's success in achieving compliance with various requirements of the SSS WDRs and the effectiveness of implementing programs as stated in the SSMP. The SSMP audit process allows the SSMP document to evolve over time through the identification of potential enhancements in the management, operation, and maintenance of the sanitary sewer collection system, and the implementation of changes to the SSMP to address any deficiencies.

South Placer Municipal Utility District is committed to complete biennial audits of the SSMP consistent with the procedure outlined in Section X of the SSMP. To ensure that the audits are performed effectively, the District normally assigns this task to District staff selected from the Field Services and Technical Services Departments. These individuals have a working knowledge of the collection system and can gather the appropriate data to perform the audit. This audit will follow the same format. The following tasks will be performed as part of this internal audit:

1. Review records from previous internal audits, to ensure noted deficiencies have been addressed. (**this Section**)
2. Compare the records from the computerized maintenance management system (CMMS) of record, to the data reported to the California Integrated Water Quality System (CIWQS). (see **Section 3.1**)
3. Review preventative maintenance schedules, responses to SSOs, and mitigation of SSO causes. (see **Section 3.1**)
4. Review SSMP and identify improvements if needed. (see **SECTION 6**)
5. Record all findings during the audit process and keep the audit on file.



SECTION 2 Agency Background / System Information

South Placer Municipal Utility District is located in Placer County and is situated approximately 20 miles northeast of the city of Sacramento. The District covers approximately 31 square miles at the base of the foothills of the Sierra Nevada Mountains and provides sanitary sewer service to customers in the communities of Rocklin, Loomis, Penryn, Newcastle, and portions of Granite Bay. The elevations in SPMUD range from approximately 115 feet to 1000 feet above sea level with an average slope of 1.3% from northeast to southwest. Several streams flow through the District (e.g., Pleasant Grove Creek, Antelope Creek, Clover Valley Creek, and Secret Ravine).

The District was established in 1956 under the State of California Municipal Utility District Act and is one of five municipal utility districts in the state. Under the Public Utilities Code of the State of California, Division 6, municipal utility districts are allowed to provide any number of utility services (e.g., sewer, water, light, power, heat, transportation, refuse, and communications). However, the District was formed and currently focuses solely on the collection and conveyance of wastewater from the customers it serves. The District is responsible for operation and maintenance of an extensive sewer collection system. The District has seen periods of tremendous growth in the recent past. The U.S. Census Bureau records show that portions of the District grew by over 1000% from 1970 to 2010. The District’s sewer collection system has grown in step with the rapid population growth. The District currently provides service to over 34,000 equivalent dwelling units (EDUs). **Table 1** provides additional information about the District collection system over the last two SSMP audit periods.

Table 1. Overview of System Indicators

Audit	FY 17/18 – 18/19	FY 19/20 – 20/21
Miles of Mainline	277	285
Miles of laterals (lower)	108 ³	111 ³
Pump stations	13	13
Population served	~76,000	~77,000
Dedicated Sewer Maintenance Staff	16 ¹	16 ²
Annual Budget (FY1 / FY2)	25,809,497 / 18,417,822	21,365,300 / 28,035,600
Category 1 SSOs	6	4
Category 2 SSOs	0	0
Category 3 SSOs	40 ³	38 ³

¹ - Field Services Department employees (i.e., superintendent [x1], supervisor [x2], Lead Worker [x3], Maint Worker [x10])

² - Field Services Department employees (i.e., superintendent [x1], supervisor [x2], Lead Worker [x3], Maint Worker [x10])

³ - On March 1, 2017 the District, by Ordinance, assumed ownership of all lower laterals

The wastewater conveyed through the District collection system is discharged into the City of Roseville’s collection system and treated at two regional wastewater treatment plants (i.e., the Dry Creek and Pleasant Grove WWTPs).

2.1 Review of Prior SSMP Audits

The District reviewed the internal audits of the District SSMP for the 2019 audit (fiscal years 2017/2018 and 2018/2019.) Any identified actions outlined in the previous audit are summarized in **Table 2**. The table also indicates if the identified deficiencies have been resolved.



Table 2. Summary of SSMP Compliance Deficiencies from Previous SSMP Internal Audit

Element	Action Item	Completed
None	None	None

2.2 Review of FY19/20 and FY20/21

This section reviews the significant changes in the management, maintenance, and operation of the District sewer system related to the SSMP and reduction of SSOs.

2.2.1 SSO Reporting

The District takes pride in responding attentively to each SSO. A technical report is produced for every SSO that has occurred since 2012. The content and format of the technical reports has changed over the years. During this audit period the District made efforts to improve its documentation and reporting of SSO events. A Spill Event Summary Report is produced using a standardized template for each SSO and uploaded to CIWQS as an attachment to the SSO. The report documents what occurred, the efforts made to determine required reporting attributes (e.g., start time, volume), the efforts to mitigate impacts of the SSO, and what will be done to lessen the chance that a SSO occurs again at this location. Standard sets of photos are included to help describe the scene at arrival, during the response, and when leaving the site. Additionally, the District created its own “calculators” for SSO start time and SSO volume determination based on its methods of estimating to improve consistency and communication of results.

2.2.2 Foothill Trunk Project

The District initiated the study, design, and permitting of the Foothill Trunk Sewer Replacement Project in October of 2014. This section of trunk sewer represented a “bottleneck” in the collection system and the potential lack of capacity was predicted to eventually result in a SSO. The project consisted of the replacement of approximately 2,700 feet of 12-inch diameter trunk sewer with 24-inch diameter trunk sewer. The construction contract was awarded to Garney Pacific, Inc. in January 2020. Garney Pacific, Inc. substantially completed construction of the project in June 2021 and was accepted by the District.

2.2.3 Projects to Address Roots

Roots intrusion has been and continues to be the most frequent cause of blockages and SSOs in the District’s collection system. Root intrusion is most impactful to the effective flow of sewer in small diameter pipelines. This is especially true in laterals. The District addressed this issue during the audit period by completing a mainline and lateral lining project with cured-in-place pipe at the cost of approximately half a million dollars. The laterals that were lined were identified and prioritized during the District’s inspection efforts.

2.2.4 Standards Update

In May 2021, the District Board of Directors accepted the updated Standards Specifications and Improvement Standards for Sanitary Sewers (Standards) by resolution. The Standards were last updated in 2009. The Standards were updated to maintain relevancy with updated regulatory requirements, changes in the engineering and construction industries, and observations of District staff. The District circulated proposed revisions to the public



for review and comment during the update process. Comments were reviewed and responses generated. The updated Standards will help ensure that the District's collection system is designed and constructed in a manner that will lessen the chance of SSOs.

2.2.5 Standard Operating Procedures

The District has developed and used standards operating procedures (SOPs) for a long time. Although the content of the SOPs was good, there was room for improvement in the standardization and organization of the SOPs. During this audit period, the District made significant efforts to consolidate the various versions of SOPs that existed into a standard format, organized in a centralized location. SOPs now go through a defined review process so that they are created, vetted, and approved by subject matter experts and those with authority to implement them. The SOPs are widely available now through the intranet, the CMMS, and the District's IT network. In addition, a minimum training frequency is set for SOPs based on crew rotations so that employees review SOPs before performing related tasks.

2.2.6 Efforts related to Property Line Cleanouts (PLCOs)

When the District took ownership of the lower laterals, several efforts were identified, and actions were taken to allow the District to effectively operate and maintain these assets. The District has a goal to have a property line cleanout (PLCO) on every lateral so the District has access to the portion of the lateral it owns. Crews have installed many PLCOs to reach this goal.

Additionally, since obtaining ownership of the lower lateral, the District has made a big push to collect the location of each PLCO in the District with a high-accuracy GPS unit. This information is brought into the District's mapping system so the location of each PLCO is available to all employees of the District. This improves planning efforts and improves the ability for crews to better respond to callouts. The "first pass" of locating all of the PLCOs in the District was completed. There are many PLCOs that are buried or covered and could not be located for GPS collection. District staff have started making a "second pass" through the District to locate and/or raise the PLCOs to grade so that they can be accessed and GPS locations can be collected.

2.2.7 Create Sub-Maintenance Zones

The District has 47 Maintenance Zones within the District boundaries. The Maintenance Zones group the assets that make up the sewer collection system into drainage areas (i.e., sewer sheds). Preventative maintenance work (e.g., CCTV inspection, cleaning, root foaming) is planned and organized by Maintenance Zone. It was discovered that the Maintenance Zones assist in effectively planning out work for gravity mainlines, but are not as helpful in planning out work for sewer service laterals (i.e., lower laterals). There are three times more laterals than mainlines in the District. Maintenance Zones contain too many laterals to effectively plan or prioritize work. To address this issue, 253 Sub-Maintenance Zones (i.e., Alternate Zones) were created within each Maintenance Zone to support effective work planning efforts and ensure that work can be completed effectively and in a timely manner.

2.2.8 Audit of CalOSHA Training Requirements

With the assistance of DKF Solutions, the District completed an audit of its training program compared to CalOSHA requirements. The audit was helpful in confirming the compliance of the District's training program and helped



consolidate the various CalOSHA requirements that relate to the District into one place. This exercise also proved useful in evaluating and selecting future projects to improve the training program beyond the minimum requirements. This effort will help ensure that individuals working on District assets are appropriately trained to improve safety and lessen the chance of SSOs.

2.2.9 Outfitted Secondary Call-Out Truck

While reviewing the effectiveness of the Lower Lateral Program, the District identified an obstacle that was impeding the progress of the crew assigned to conduct routine assessments of lower laterals. The vehicle used by the Lower Lateral Crew contains the equipment needed to respond to issues related to laterals and was being assigned to respond to customer calls. Responding to multiple callouts in a day was proving very disruptive to the crew's productivity. To address this, the District reallocated and purchased equipment to outfit a light duty truck as another callout truck. This allows an available Lead Worker to respond to customer calls instead of disrupting the Lower Lateral Crew.

2.2.10 Significant Investments/Improvements to Technology

During the previous audit period the District retained a consultant to begin developing a SCADA Master Plan. The SCADA Master Plan was completed in 2021. This master plan assessed the current state of the District's SCADA system and presented options and recommendations for making updates to the system's hardware and software. These improvements will result in a SCADA system that will more reliably assist the District in monitoring and responding to its remote lift stations.

2.2.11 Intranet

During this audit period, the District developed and published an intranet site available only to District employees to disseminate information. The intranet is used to share SOPs, safety data sheets (SDSs), information about certification, information for commercial drivers, plans (e.g., SSMP, OERP, SECAP, Injury and Illness Prevention Plan, Emergency Action Plan, Silica Exposure Plan), and human resource information.

2.2.12 Commercial Account Tracking System

The District has to make continuous efforts to be part of the process whereby businesses are permitted by the municipalities the District serves. To assist in this effort, the District created an inventory of its commercial accounts. Using this inventory, staff inspects every commercial account annually to document changes in ownership, occupancy, and use. This effort helps the District stay current so there is an understanding of the dischargers to the collection system and so there is accurate information in the system if the District is called out to respond to a sewer emergency.

SECTION 3 SSO Trends

3.1 Historical SSO Data

One of the District-defined tasks of the internal audit is to compare the information submitted to the state CIWQS database against the information kept in the District's internal records regarding SSO events. **Table 3** organizes the data by source to show discrepancies, if any, between the data reported to CIWQS and the District's records.



Detailed information about each of the SSO events that occurred during the audit period can be found through the Interactive SSO Report ([link](#)) on the State Water Resources Control Board SSO Reduction Library webpage including Spill Event Summary Reports produced by the District attached to each reported SSO.

Table 3. CIWQS SSO Data and District SSO Data

SSO Historical Data since last SSMP Internal Audit	CIWQS Data FY 19/20 – 20/21	Internal Records FY 19/20 – 20/21
Total number of potential SSO service calls received	N/A	623 service calls
Total number of SSOs reported	42 SSOs	42 SSOs
Total volume of SSOs	25,268 gallons	25,268 gallons ¹

The District employs a Spill Response Audit Method that includes a progression of review from the On-Call Supervisor, to the Field Supervisors to the Superintendent, who develops the DRAFT internal spill report. The District Engineer, when requested by the Superintendent, reviews the Draft spill report for completeness, accuracy and to evaluate the report’s conclusions. The Final spill report is stored by the District for each SSO event to document the background, findings, calculations, corrective actions, and supporting information. This Spill Response Audit Method was established during the 2011 internal SSMP audit and has been modified over time to meet the intent of the process.

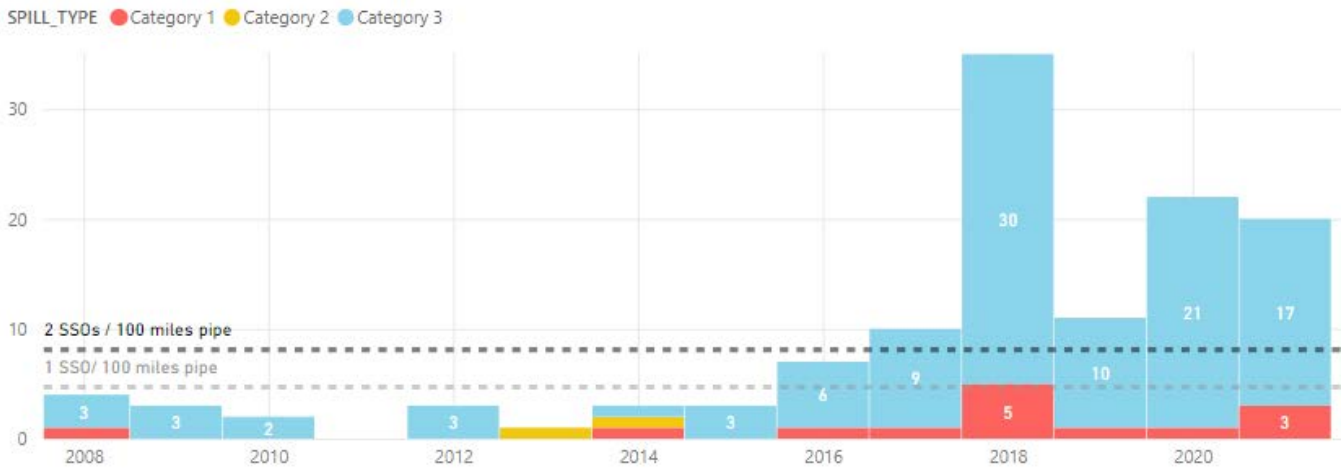
The District strives to maintain quality data regarding historical SSOs so that trends in the occurrences and potential causes of SSOs can be identified and investigated. The following discussion investigates the District’s historical SSO data to identify potential SSO trends so that future efforts can be targeted to reduce SSOs.

3.2 Trends in the Number of SSOs

Figure 1 shows the number of SSOs per year from FY07/08 (FY 2008) to FY20/21 (FY 2021). The number of SSOs increases starting in FY16/17. This is due in large part to the District’s action to take ownership of the lower lateral in March 2017. The number of SSOs in a fiscal year peaked in FY17/18 (FY 2018) with 35. However, after implementing the elements of the lower lateral program (e.g., creating a two-person lower lateral crew, conducting thousands of lower lateral video inspections, aggressively treating laterals known to have root problems), the number of SSOs dropped significantly in FY18/19 (FY 2019) to 11 and is continuing an overall downward trend.



Figure 1: Number of SSOs per Fiscal Year



Thirty-four (34) of the forty-two (42) SSOs during this audit period (i.e., 81%) occurred due to a failure in the publicly owned portion of the lower lateral. **Figure 2** shows the number of SSOs over the same period as Figure 1 but removes the SSOs caused by failures in the lower lateral. The District has performed consistently well in minimizing SSOs from sewer mainlines, manholes, lift stations, and other sewer infrastructure since the adoption of the SSS WDR.

Figure 2: Number of SSOs per Fiscal Year (excluding Laterals)



The number of SSOs per 100 miles of sewer pipe remains low compared to the average of other municipal agencies in the state and in this region per the Collection System Operational Performance Report posted by SWRCB CIWQS over the audit period.

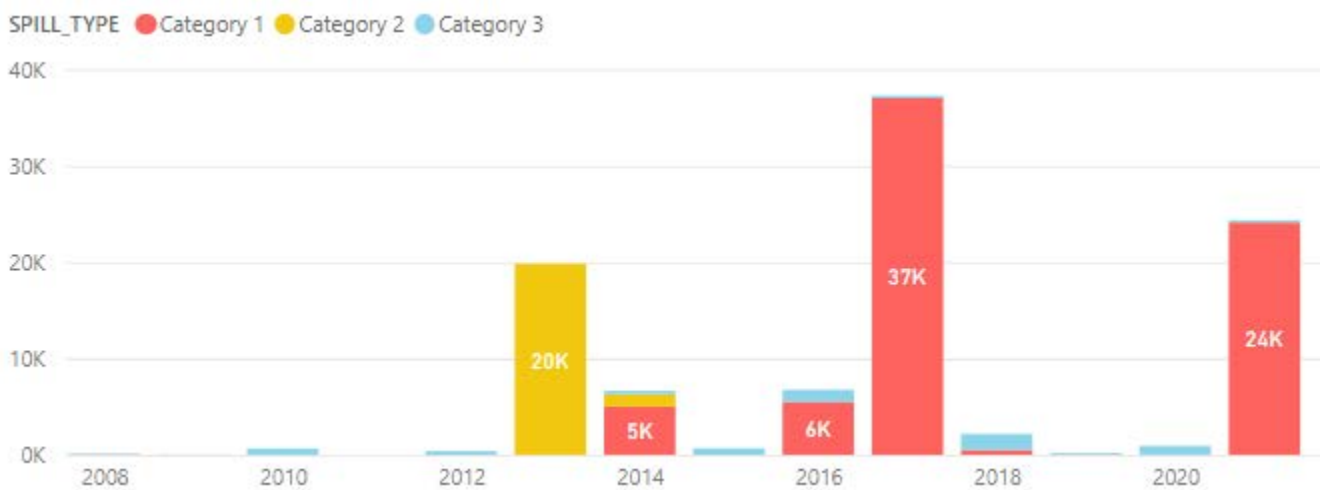


3.3 Trends in the Volume of SSOs

Figure 3 shows that the total volume of SSO per year has generally been very small since fiscal year 2007/2008 except for a few isolated events, which were discussed in previous audits. Another significant spill event in terms of SSO volume occurred during this audit period. This single event accounted for 93% of the total SSO volume for the audit period. Details of this SSO can be reviewed in the Spill Event Summary Report which was uploaded to the CIWQS database. In summary, the spill occurred from a lateral to a commercial complex. The spill was observed by tenants and customers but remained unreported for multiple days. The resulting SSO volume was large because the spill persisted for a long duration.

Except for the one large volume SSO discussed above, the volume of SSOs in FY19/20 (FY 2020) and FY20/21 (FY 2021) was relatively low compared to prior years (i.e., 922 and 805 gallons respectively). The smaller volume of SSOs is consistent and expected from the predominant type of SSO (i.e., lower lateral SSOs) that occurred during this audit period.

Figure 3: SSO Volume per Fiscal Year



3.4 Trends in the Causes of SSOs

The District’s SSO records were queried to identify the leading causes of SSOs. **Figure 4** shows the leading causes of SSOs in the District by 1) the percentage of total spill volume of SSOs, and 2) the percentage of the total number of SSOs.

Figure 4. Leading Causes of SSOs in FY19/20 and FY20/21

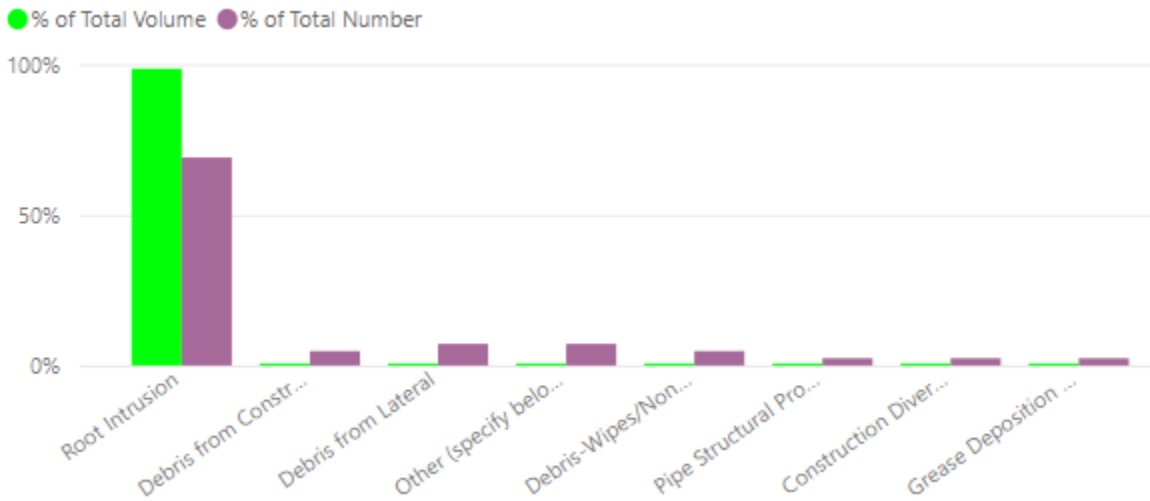


Figure 4 shows that roots in pipelines is the leading cause of an SSO both in number of SSOs and in the volume of SSOs. Roots have always been the leading cause of SSOs for the District’s collection system. This is likely due to the large quantity of vitrified clay pipe (VCP) and the relatively short joint length, providing roots many points at which to enter the system. **Figure 5** shows the breakdown of the number of SSOs by pipe material type and that SSOs at the District predominantly occur in VCP. This might lead one to think that SSOs are mostly occurring in older parts of the system constructed of VCP. However, the data indicates that SSOs are occurring in a fairly even distribution across pipes of all ages as shown in **Figure 6**. The actions planned as a result of this SSMP Audit will target the leading causes SSOs to attempt to most effectively reduce the number and spill volume of SSOs.

Figure 5. Percentage of SSOs by Material Type

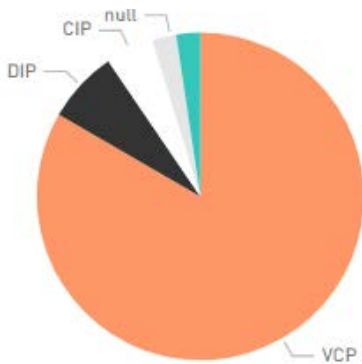
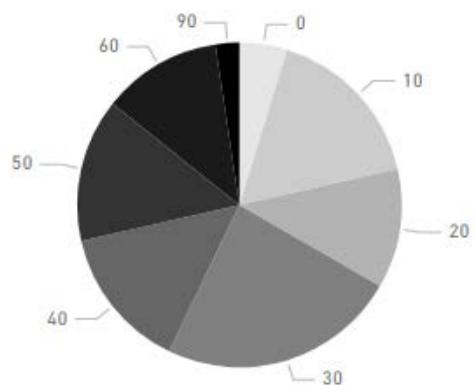


Figure 6. Percentage of SSOs by Age

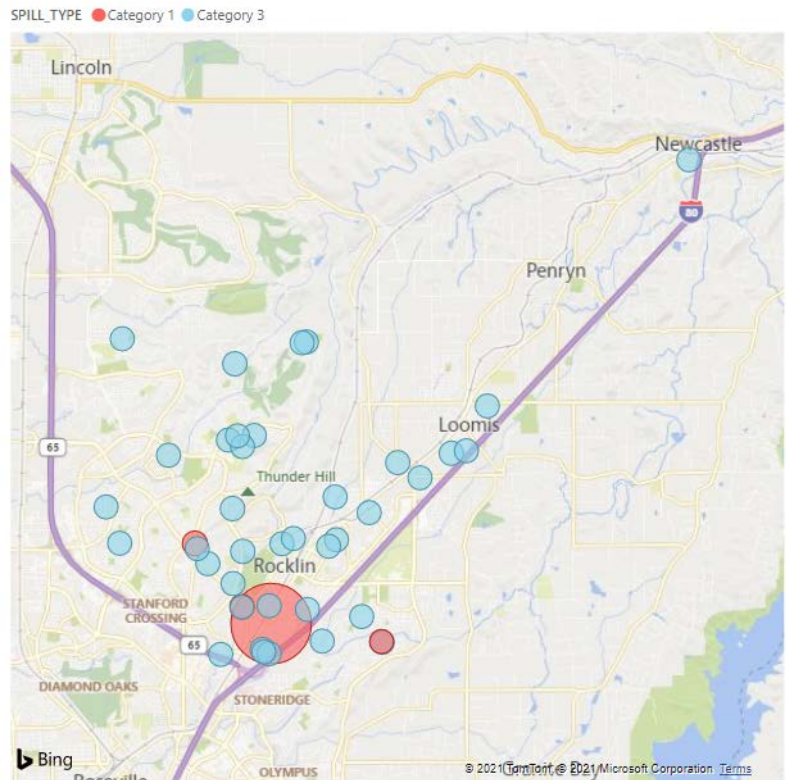


3.5 Anecdotal Trends in SSOs

District staff examined the geographical location/age of the points of failure in the collection system (see **Figure 7**). The SSOs during this audit period were fairly evenly dispersed throughout the District service area. This observation can be attributed to the fact that the majority of the District’s SSOs appear from lower laterals and due to the small pipe diameter and variability of discharges to the lower lateral, SSOs from lower laterals are difficult to prevent and can occur anywhere.

The audit process is an opportunity to review anecdotal factors that may present themselves as trends into the future. A trend noticed by maintenance crews in past audits and that has continued, is the buildup of toilet paper in the upstream stretches of the collection system. The implementation of low-flow fixtures within residences has resulted in less water entering the sewer collection system. Toilet paper tends to buildup in areas of the collection system where one residence connects to the sewer and there is not enough flow to move material downstream. The toilet paper hardens over time and creates a blockage. This is an interesting challenge for the District because it is a challenge with limited solutions. The District has placed mainlines and laterals on “high-frequency” cleaning schedules, placed mainlines and laterals on “high-frequency” inspection schedules, and replaced connections of the lateral to the main with varying levels of success. This may be an issue that increases over time with the increasing efforts for water conservation.

Figure 7. Map of SSOs in FY19/20 and FY20/21



3.6 SSO Reduction Goals

Currently, the District’s measures the number of SSOs and the volume of SSOs to evaluate its SSO reduction efforts. The District will strive for zero SSO events but realizes any goal must be realistic and achievable to be effective. **Table 4** below lists the District’s SSO goals for number of SSO events and the volume of SSOs. Note that the District assumed the ownership of lower laterals in March 2017.



Table 4. District SSO Goals

Performance Score	Total Number of Lower Lateral SSOs/year	Total Number of all other SSOs/year	Total Volume of SSOs/year
Excellent	< 13	0	< 250
Good	< 16	1	< 500
Above Goal	< 19	2	< 1000
Goal	19	3	1000
Below Goal	> 20	4+	> 1000

Table 5 compares the District SSO goals against the actual number of SSOs during the timeframe of the current SSMP internal audit.

Table 5. SSO Reduction Goals

	FY19/20			FY20/21		
	Goal	Actual	Performance	Goal	Actual	Performance
Total Number of Lateral SSOs	<=19	18	Above Goal	<= 19	16	Above Goal
Total Number of All Other SSOs	<= 3	4	Below Goal	<= 3	4	Below Goal
Total Volume of SSOs (gallons)	< 1000	922	Above Goal	< 1000	24,346	Below Goal

The number of “Other” SSOs exceeded the goal by one in each of the two fiscal years and is noted as “below goal”. Upon review of the eight (8) SSO events, half of them were caused by root intrusion, two were caused by excessive amounts of toilet paper, one was caused by construction debris introduced by others, and the last was caused by a defective inside drop.

The volume of SSOs is noted as “below goal” for FY20/21. A majority (i.e., 93%) of the total SSO volume for the audit period was due to a single event. In summary, the spill occurred from a lateral to a commercial complex. The spill was observed by tenants and customers but remained unreported for multiple days. The resulting SSO volume was large because the spill persisted for a long duration. Details of this SSO can be reviewed in the Spill Event Summary Report which was uploaded to the CIWQS database.

3.6.1 Planned Efforts to Reach Identified SSO Reduction Goals

The following section describes specific changes to be implemented based on the identified SSO trends to meet the target reduction goals in **Table 5**. The discussion of planned efforts is broken down into a number of potential categories (i.e., cleaning, tools, maintenance schedules, BMPs, staffing, funding, and training). It is recommended that these categories for potential changes be revisited with each subsequent SSMP internal audit to examine if they may apply to future conditions. Changes in each category may not be necessary in each audit, but addressing each category provides a holistic approach to SSO reduction.



Changes to be employed to sanitary sewer system cleaning

The District plans to continue to implement its approach to cleaning mainline pipes (i.e., high frequency cleaning and inspection-driven cleaning schedules) as described in the SSMP.

Changes to be employed to sanitary sewer system tools and/or technology

The District is committed to providing efficient and effective sanitary sewer service. One of the ways the District supports this commitment is by approving funds to purchase the vehicles and tools needed to perform vital operations efficiently and effectively. The District plans to purchase the following vehicles/equipment during the next audit period:

- Replace/upgrade the SCADA software and hardware in accordance with the recommendations of the SCADA Master Plan,
- Replace CCTV camera equipment on an existing CCTV truck to improve our ability to access all of the sewer system with camera equipment and to standardize the equipment used by the District,
- Replace one lateral camera, and
- Purchase a new flail mower to maintain easement access roads more effectively.

Changes to be employed to sanitary sewer system maintenance and repair schedules

The District is committed to providing efficient and effective sanitary sewer service. The District is improving the method of communicating and executing planned repairs to the collection system through the use of its CMMS. The CMMS will be used differently to communicate the priority and expected timelines for repairs to help ensure that needed improvements are addressed in a timely manner.

Changes to be employed to sanitary sewer system best management practices

The District will continue a public outreach effort towards its customers to improve notification response times. This effort will include updates to the District website, mailing out information through newsletters, and wrapping certain District vehicles with messaging to urge customers to call the District early with sewer problems.

Changes to be employed to sanitary sewer system staffing levels and organization

The District created and filled a Regulatory Compliance Technician position. This position assists in the creation of standard operating procedures (SOPs), facilitation of required training, and compliance with various regulatory requirements.

No changes to staffing levels are anticipated or suggested.

Changes to be employed to sanitary sewer system funding levels

The District's rates have proven effective in supporting an appropriate and high level of service for its customers.

No changes to rates are anticipated or suggested to meet the District's regulatory requirements.



Changes to be employed to sanitary sewer system training

The District created and filled a new regulatory compliance/safety position. This position is responsible for facilitating training to ensure that the District's training goals are met. This position is helping the District better utilize its training software platform to document training that occurs per its training schedule.

The District has started and plans to continue to train all crew members on the SOPs related to their assigned crew at the beginning of each crew rotation.

Measures to Assure No Repeat SSOs

The District employs various strategies to lessen the chance of repeat SSOs from the same location. The District completes a formal, written Spill Event Summary Report for every SSO that occurs to identify any potential for a repeat blockage and the measures needed to lessen the chance of that occurring.

The District is developing a document to outline the interconnections between the O&M work programs described in the SSMP to help ensure that each pipe identified as a potential concern for future blockage or SSO, ends up in the appropriate maintenance work program to lessen the chance of SSOs.



SECTION 4 Review of SSMP Compliance

Per SSS WDR Section D.13.x, the objective of this audit is to focus on evaluating the effectiveness of the SSMP and the District’s compliance with the SSMP requirements identified in the SSS WDR Order. This section describes the procedure used to assess the compliance of the District’s SSMP.

Table 6 below lists each of the mandatory elements of the SSMP as specified in Section D.13 of the SSS WDRs. The reader should refer to the SSS WDRs for the complete description of the requirements. The general compliance status of the associated element of the District’s SSMP with the SSS WDR Order is indicated with one of the following ratings.

Yes - in compliance,

No - not in compliance, or

N/A – not applicable. *In this case a written justification is included in the SSMP.*

Table 6 also lists any recommendations from the 2019 SSMP Audit related to an element of the SSMP along with a brief discussion of the follow-through actions taken since the 2019 Audit.

Table 6. Compliance with Requirements of SSS WDR Section D.13 and Review of Implementation

Sec.	With Order	2019 Audit Recommendation	Follow-Through of SSMP Implementation and 2019 Audit Recommendations
i	Yes	Continue to evaluate Strategic Plan goals for effectiveness as it relates to the SSMP.	Strategic Plan goals are revisited and evaluated periodically and, at a minimum, reported to the SPMUD Board of Directors annually.
ii(a)	Yes	-	-
ii(b)	Yes	-	-
ii(c)	Yes	-	-
iii(a)	Yes	-	-
iii(b)	Yes	The Standards should be reviewed and updated to align with current standards to limit the chance of SSOs.	The District Standard Specifications and Improvement Standards for Sanitary Sewers was updated and republished in May 2021 (see 2.2.4).
iii(c)	Yes	-	-
iii(d)	Yes	-	-
iii(e)	Yes	-	-
iv(a)	Yes	Continue to inquire about the availability and updates to surrounding jurisdiction’s storm drain maps so updates (when available) can be incorporated into the District’s GIS.	The District continues to ask for updated storm drain mapping from the jurisdictions that own and operate the storm drain systems in its boundary.
iv(b)	Yes	<ul style="list-style-type: none"> - Finalize SOPs currently in DRAFT form and continue to develop pertinent SOPs. - Consider using outside resources to complete this task or hire a regulatory compliance technician. 	<ul style="list-style-type: none"> - The Regulatory Compliance Technician (RCT) hired during this audit period assisted with finalizing SOPs for the District’s equipment and work tasks (see 2.2.5).



Sec.	With Order	2019 Audit Recommendation	Follow-Through of SSMP Implementation and 2019 Audit Recommendations
		- Continue to evaluate the Lower Lateral Program for effectiveness.	- Staff made two significant changes aimed to improve the effectiveness of the Lower Lateral Program. One was to outfit another vehicle to respond to callouts (see 2.2.9). The second was to create sub-maintenance zones to better prioritize lateral assessments (see 2.2.7).
iv(c)	Yes	Periodically evaluate the progress of 5-Year CIP and R&R Plans.	The District Engineer and Superintendent met annually to review the progress of 5-Year CIP and R&R plans.
iv(d)	Yes	<ul style="list-style-type: none"> - Develop a schedule for regular training on the specific equipment that the District owns. The scheduled equipment training should identify the frequency of training, the proposed instructors, appropriate referencing of SOPs and manuals, and the individuals required to take the training. - Use the SOPs (recommended in this audit) as a training tool for District staff. The SOPs should be developed so that 1) they provide a framework for the consistent delivery of required information, skills, and familiarity with equipment, and 2) they can be used to demonstrate competence of an individual in the particular subject. - The two above topics are carry-overs from previous audits. 	<ul style="list-style-type: none"> - The Regulatory Compliance Technician (RCT) hired during this audit period assisted with finalizing SOPs for the District’s equipment and work tasks (see 2.2.5). - At the beginning of every crew rotation, District staff are required to review all SOPs related to the equipment and tasks associated with that particular crew. SOPs are available for review at any time.
iv(e)	Yes	-	-
v(a)	Yes	Begin the process of updating the District Specifications and Improvement Standards.	The District Standard Specifications and Improvement Standards for Sanitary Sewers was updated and republished in May 2021 (see 2.2.4).
v(b)	Yes	-	-
vi(a)	Yes	-	-
vi(b)	Yes	-	-
vi(c)	Yes	-	-
vi(d)	Yes	-	-
vi(e)	Yes	-	-
vi(f)	Yes	-	-
vii(a)	Yes	-	-
vii(b)	Yes	-	-
vii(c)	Yes	-	-
vii(d)	Yes	-	-



Sec.	With Order	2019 Audit Recommendation	Follow-Through of SSMP Implementation and 2019 Audit Recommendations
vii(e)	Yes	-	-
vii(f)	Yes	Develop a SOP describing the process of how pipelines are added to the high frequency (hot spot) cleaning schedule, how the cleaning frequency (i.e., number of months) for each hot spot is initially set, and how the cleaning frequency for an individual hot spot may be adjusted over time.	This has not been finalized and will be carried over into the next audit period. The scope of this effort has increased and the interconnections between all work programs will be mapped out.
vii(g)	Yes	-	-
viii(a)	Yes	-	-
viii(b)	Yes	-	-
viii(c)	Yes	-	-
viii(d)	Yes	-	-
ix(a)	Yes	-	-
ix(b)	Yes	Identify metrics that correspond with specific elements of the SSMP and develop numerical goal ranges so the data currently collected and monitored by the District can be used as performance indicators (PIs) to quantitatively monitor SSMP effectiveness.	Performance indicators (PIs) were developed and used as part of this 2021 SSMP Audit.
ix(c)	Yes	Develop goals for metrics that track preventative maintenance activities and identify the person/position responsible for tracking data against those goals.	Goals, based on the District work programs for preventative maintenance activities were established. Performance against those goals was reported to the SPMUD Board of Directors monthly.
ix(d)	Yes	-	-
ix(e)	Yes	-	-
x	Yes	<ul style="list-style-type: none"> - Post this SSMP internal audit to the District website. - Schedule the next internal SSMP audit for July - August 2023. - Use the format of this audit for future internal audits. 	The 2019 SSMP Audit was posted to the District's public-facing website. The 2021 SSMP Audit was conducted. The general format of the audit was used with modifications as described in the audit itself.
xi(a)	Yes	-	-



SECTION 5 Review of SSMP Effectiveness

Per SSS WDR Section D.13.x, the objective of this audit is to focus on evaluating the effectiveness of the SSMP and the District's compliance with the SSMP requirements identified in the SSS WDR Order. This section describes the procedure used to assess the effectiveness of the District's SSMP. This section will not repeat the information and plans presented in each section of the SSMP. The focus of this section is to evaluate the effectiveness of each SSMP element. The reader should reference the District SSMP to obtain the information reviewed by this audit.

The District elected to modify the method used to evaluate the effectiveness of SSMP elements during this audit. As recommended in previous audits, the District developed performance indicators (PIs) to assess the effectiveness of the SSMP elements, where appropriate. The PIs are grouped by SSMP element and are intended to be used multiple times during the two-year audit period. The responsible person for each element collects the data associated with each PI, enters it on the form, adds comments about the District's performance in that area, assesses the effectiveness of the SSMP element, and makes recommendations for modifications as necessary. The following pages contain the performance indicators used during this audit period to assess the effectiveness of the SSMP.

SSMP Section:	D.13 (ii) - Organization				
Responsible Person:	Superintendent				
Performance Indicators:					
1	Success in Meeting CIWQS Reporting Requirements for SSOs Data Collection Method: <i>Review the data submitted to CIWQS and determine the percentage of SSO events reported on-time according to requirements in Monitoring and Reporting Program Order No. WQ 2013-0058-EXEC.</i>				
2	Success in Meeting Notification Requirements Data Collection Method: <i>Review the data submitted to CIWQS and determine the percentage of SSO events reported on-time according to requirements in Monitoring and Reporting Program Order No. WQ 2013-0058-EXEC.</i>				
3	Reserved for Future Use Data Collection Method: <i>text</i>				
Performance Indicators		Rating			
		Below Goal	Above Goal	Good	Excellent
1	CIWQS Reporting Goals Met	<95%	>95%	N/A	100%
2	Notification Requirements Met	<100%	N/A	N/A	100%
3	Reserved for Future Use				

Periodic Performance Tracking					
Date	Measured Value			Performance Assessment Comments	
	Goal	1	2	3	
6/30/20	Value	91%	100%	N/A	The LRO reported 2 of the 22 SSOs after the required date. SSO ID 862269 was reported seven days late. SSO ID 865881 was reported one day late. There were no Category 1 SSOs greater than 1000 gallons. No reporting to Cal OES was required.
6/30/21	Value	85%	100%	N/A	The LRO reported 3 of the 20 SSOs after the required date. SSO ID 868711 was late by one date due to misunderstanding of "30 days" versus "end of the month requirement". SSO ID 870137 was late by three days. SSO ID 871174 was late by 23 days due to confusion in assigning the appropriate SSO Category (i.e., Category 3 vs Category 1). One SSO was a Category 1 greater than 1000 gallons and was successfully reported to Cal OES.

Summary of Effectiveness of SSMP Elements / Recommendations for Updates

The results of this review were surprising and helpful. With one exception, SSOs were assumed to have been reported and certified on-time by the LRO. Changes have been made to the scheduling of reporting/certifying SSO events to CIWQS to ensure that reporting is completed within the required timelines (i.e., use of spreadsheets and calendars to calculate and track reporting deadlines).

Signature of Responsible Person: (sign when complete)	Date:

SSMP Section:	D.13 (iii) - Legal Authority					
Responsible Person:	District Engineer					
Performance Indicators:						
1	Review/Update District Sewer Code at least every 10 years Data Collection Method: <i>Average of the Lucity field "Response Time (min)" [WO_USER24] for the work orders with a "Main Task" of "221-CALL OUT SSO" and "Call Time Category" [WO_USER31] of "1-During Business Hours"</i> .					
2	Reserved for Future Use Data Collection Method: <i>text</i>					
3	Reserved for Future Use Data Collection Method: <i>text</i>					
Performance Indicators			Rating			
			Below Goal	Above Goal	Good	Excellent
1	Years since last Sewer Code update		>10	10	<10	<5
2						
3						

Periodic Performance Tracking					
Date	Measured Value				Performance Assessment Comments
	Goal	1	2	3	
6/30/21	Value	3	N/A	N/A	The Sewer Code was last updated in June 2018.
	Goal	1	2	3	
	Value				

Summary of Effectiveness of SSMP Elements / Recommendations for Updates

The Sewer Code has proven effective in making the laws of the District more accessible, readable, and understandable to the persons governed by such laws and by those persons administering such laws. The Sewer Code provides the District the legal authority necessary to meet the requirements of the SSS WDRs and to effectively operate and maintain the sewer collection system.

Signature of Responsible Person: (sign when complete)	Date:
<i>Carie Huff</i>	10/20/21

SSMP Section:	D.13 (iv) - Operations and Maintenance Program (1 of 2)				
Responsible Person:	Superintendent				
Performance Indicators:					
<p>1 Number of maintenance-related SSOs from laterals per year Data Collection Method: <i>Review the data submitted to CIWQS and determine the number of spills where "Where Failure Occur" is "Lower Lateral (Public)" and the "Spill Cause" is maintenance-related (e.g., root intrusion, debris, grease deposition, etc.)</i></p> <p>2 Number of maintenance-related SSOs from everything except laterals per year Data Collection Method: <i>Review the data submitted to CIWQS and determine the number of spills where "Where Failure Occur" is <u>not</u> "Lower Lateral (Public)" and the "Spill Cause" is maintenance-related (e.g., root intrusion, debris, grease deposition, etc.)</i></p> <p>3 Volume of maintenance-related SSOs per year Data Collection Method: <i>Review the data submitted to CIWQS and determine the volume of spills where the "Spill Cause" is maintenance-related (e.g., root intrusion, debris, grease deposition, etc.)</i></p>					
Performance Indicators		Rating			
		Below Goal	Above Goal	Good	Excellent
1	Number of maint. SSOs (laterals)	> 19	< 19	< 16	< 13
2	Number of maint. SSOs (all other)	3	2	1	0
3	Volume of maint. SSOs	> 1000	< 1000	< 500	< 250

Periodic Performance Tracking					
Date	Measured Value				Performance Assessment Comments
	Goal	1	2	3	
6/30/20	Goal				The number of lateral SSOs and the total volume of SSOs was better than our goals. The number of all other SSOs exceeded the goal by one. Two were caused by root intrusion. One was caused by construction debris. One was caused by a failed inside drop structure.
	Value	18	4	922	
6/30/21	Goal				The reduction of lateral SSOs was good. The number of all other SSOs exceeded the goal by one. Two were caused by excessive toilet paper and two were caused by root intrusion. One large volume spill occurred. The spill went unreported by tenants for multiple days, leading to the large volume.
	Value	14	4	24,340	

Summary of Effectiveness of SSMP Elements / Recommendations for Updates

Overall, the number and volume of SSOs is good compared to the average of other agencies based on the CIWQS Collection System Operational Report. However, there is room for improvement. Efforts will be focused on addressing root intrusion and continuing outreach efforts to encourage customers to call the District first when there is a sewer problem so that staff can respond quickly.

Signature of Responsible Person: (sign when complete)	Date:

SSMP Section:	D.13 (iv) - Operations and Maintenance Program (2 of 2)				
Responsible Person:	Superintendent				
Performance Indicators:					
1	Number of Mainline Segments Inspected with CCTV per year Data Collection Method: <i>The number of work orders with a main task of "CCTV Inspection" and a category of "Gravity Main" during the year.</i>				
2	Number of Lower Laterals Assessments per year Data Collection Method: <i>The number of work orders with a main task of "CCTV Inspection" and a category of "Service Lateral" during the year.</i>				
3	Number of Lower Laterals Chemically Treated for Roots per year Data Collection Method: <i>The number of work orders with a main task of "Chemical Root Treatment by SPMUD" and a category of "Service Lateral" during the year.</i>				
Performance Indicators		Rating			
		Below Goal	Above Goal	Good	Excellent
1	CCTV Inspection of Mainlines	<1644	>1644	>1800	>2000
2	Laterals Assessments	<2400	>2400	>2600	>2800
3	Lateral Chemical Root Treatment	<600	>600	>800	>1000

Periodic Performance Tracking					
Date	Measured Value				Performance Assessment Comments
6/30/20	Goal	1	2	3	Staff in the Field Services Department switched to alternating weeks for two months which impacted overall productivity.
	Value	1393	1693	494	
6/30/21	Goal	1	2	3	CCTV inspections were a priority and crews responded to the challenge. The productivity of the lateral crew was below goal. This was due in part to the effects of the pandemic on staff availability and the retirement/resignation of ~10% of the department. We also found that the lateral crew was frequently being called to respond to customer calls. This disrupted workflow and productivity. Lateral root foaming was below goal.
	Value	2309	1269	393	

Summary of Effectiveness of SSMP Elements / Recommendations for Updates

The work programs tracked on this PI form are critical to the operation of the collection system. The results of this work drive many of the other work programs. The CCTV program is seeing improvement. Additional focus (i.e., resources, planning) will be needed to improve the performance of the lateral assessment and root foaming programs. Another truck was outfitted with necessary equipment so that a Lead Worker could respond to calls, allowing the lateral crew to focus on assessments. Discussions are ongoing to reorganize and prioritize the work of the root foaming program.

Signature of Responsible Person: (sign when complete)	Date:

SSMP Section:	D.13 (v) - Design and Performance Provisions					
Responsible Person:	District Engineer					
Performance Indicators:						
1	Update District Standards at least every 10 years Data Collection Method: <i>Average of the Lucity field "Response Time (min)" [WO_USER24] for the work orders with a "Main Task" of "221-CALL OUT SSO" and "Call Time Category" [WO_USER31] of "1-During Business Hours".</i>					
2	Construction-Related SSOs per year Data Collection Method: <i>Review the data submitted to CIWQS and determine the count of the number of spills that have a "Spill Cause" of "Debris from Construction" or "Construction Diversion Failure".</i>					
3	Reserved for Future Use Data Collection Method: <i>text</i>					
Performance Indicators			Rating			
			Below Goal	Above Goal	Good	Excellent
1	Years since last Standards update		>10	10	<10	<5
2	Construction-related SSOs		>1	1	N/A	0
3						

Periodic Performance Tracking					
Date	Measured Value				Performance Assessment Comments
	Goal	1	2	3	
6/30/20	Value	11	1	N/A	The District Standards Specifications were last updated in 2009. The construction-related SSOs that occurred was due to a contractor/plumber dumping construction debris in the sewer system.
6/30/21	Value	1	2	N/A	The District Standards Specifications were last updated in May 2021. Two construction-related SSOs occurred. One was the result of nefarious acts by a paving contractor. The other occurred during a lining project when residents were requested to refrain from water use for a short time but elected to discharge wastewater anyway.

Summary of Effectiveness of SSMP Elements / Recommendations for Updates

The Standards continue to prove effective in directing the design and installation testing methods to help ensure a properly functioning sewer collection system.

The SSO events that were related to construction demonstrate the difficulty in preventing SSOs in this area. Construction-related SSOs often occur because of a single action by a third party. District inspectors make significant efforts to track and document construction activities. This documentation and the Standards help hold third parties accountable for their actions.

Signature of Responsible Person: (sign when complete)	Date:
<i>Carie Huff</i>	10/20/21

SSMP Section:	D.13 (vi) - Overflow Emergency Response Plan (OERP)					
Responsible Person:	Superintendent					
Performance Indicators:						
<p>1 Average SSO Response Time (During Business Hours) in the last year Data Collection Method: <i>Average of the Lucity field "Response Time (min)" [WO_USER24] for the work orders with a "Main Task" of "221-CALL OUT SSO" and "Call Time Category" [WO_USER31] of "1-During Business Hours" in the last year.</i></p> <p>2 Average SSO Response Time (During Non-Business Hours) in the last year Data Collection Method: <i>Average of the Lucity field "Response Time (min)" [WO_USER24] for the work orders with a "Main Task" of "221-CALL OUT SSO" and "Call Time Category" [WO_USER31] of "2-During Non-Business Hours" in the last year.</i></p> <p>3 Success in Meeting SSO Response Time Goals in the last year Data Collection Method: <i>The percentage of time that the SSO Response Time Goal (i.e., <=30 minutes during business hours and <=60 minutes during non-business hours) was met in the last year.</i></p>						
Performance Indicators			Rating			
			Below Goal	Above Goal	Good	Excellent
1	SSO Response Time (Business)		>30 min	<30 min	<25 min	<20 min
2	SSO Response Time (Non-Business)		>60 min	<60 min	<55 min	<45 min
3	SSO Response Time Goals Met		<95%	95%	>95%	100%

Periodic Performance Tracking					
Date	Measured Value				Performance Assessment Comments
	Goal	1	2	3	
6/30/20	Goal	1	2	3	The average response time during non-business hours is skewed by one event. The caller left a message per the District's notification process. Neither the person on standby or the standby supervisor received notification so the response was not made until the next day.
	Value	18	68	91%	
6/30/21	Goal	1	2	3	Performance improved.
	Value	18	48	96%	

Summary of Effectiveness of SSMP Elements / Recommendations for Updates

Two modifications were made following the review in 2020. First, the notification process was reviewed to determine the cause of the missing voicemail. The system appears to have failed to forward the message. The system was tested and the problem did not repeat itself. Also, the procedure was modified to require the standby supervisor to acknowledge receipt of the call. The person on standby has always been required to call the standby supervisor. This is the first level protection from missed calls. This was the first time that both missed the call. Now if both miss the call, others who monitor SSO calls know to follow up. Second, the department held a discussion on the urgency of responding to calls in a timely manner. Many times a response time goal was missed due to assumptions. The priority and urgency of meeting these goals was reiterated.

Performance in these areas improved the following year.

Signature of Responsible Person: (sign when complete)	Date:

SSMP Section:	D.13 (vii) - FOG Control Program					
Responsible Person:	District Engineer					
Performance Indicators:						
1	FOG-Related SSOs per year Data Collection Method: <i>Review the data submitted to CIWQS and determine the number of spills that have a "Spill Cause" of "Grease Deposition (FOG)".</i>					
2	Grease Control Devices (GCD) inspected per year Data Collection Method: <i>Review the data stored in SwiftComply and determine the number of inspections performed on grease control devices.</i>					
3	Reserved for Future Use Data Collection Method: <i>text</i>					
Performance Indicators			Rating			
			Below Goal	Above Goal	Good	Excellent
1	FOG-related SSOs		>1	1	N/A	0
2	Grease control device inspections		<60	>=60	>=70	>=80
3						

Periodic Performance Tracking					
Date	Measured Value				Performance Assessment Comments
	Goal	1	2	3	
6/30/20	Value	0	79	N/A	Performance was very good.
	Goal	1	2	3	
6/30/21	Value	1	110	N/A	The one FOF-related SSO was actually a combination of a sag in the line, grease, and over papering which makes it a spill that would be difficult to prevent through the efforts of the FOG Control Program alone.
	Goal	1	2	3	

Signature of Responsible Person: (sign when complete)	Date:
<i>Carie Huff</i>	10/20/21

SSMP Section:	D.13 (viii) - System Evaluation and Capacity Assurance Plan (SECAP)					
Responsible Person:	District Engineer					
Performance Indicators:						
1	Capacity-Related SSOs per year Data Collection Method: <i>Review the data submitted to CIWQS and determine the count of the number of spills that have a "Spill Cause" of "Flow Exceeded Capacity".</i>					
2	Update SECAP at least every 5 years Data Collection Method: <i>Calculate the number of years since the last SECAP update.</i>					
3	Reserved for Future Use Data Collection Method: <i>text</i>					
Performance Indicators			Rating			
			Below Goal	Above Goal	Good	Excellent
1	Capacity-related SSOs		>0	N/A	N/A	0
2	Years since last SECAP update		>5	5	N/A	<5
3	Reserved for Future Use					

Periodic Performance Tracking					
Date	Measured Value				Performance Assessment Comments
	Goal	1	2	3	
6/30/20	Value	0	0.5	N/A	Performance is excellent.
6/30/21	Goal	1	2	3	
	Value	0	1.5	N/A	Performance is excellent.

Summary of Effectiveness of SSMP Elements / Recommendations for Updates

The District is working hard to actively manage the capacity of the sewer collection system. The efforts to date appear to be proving effective to reduce/prevent capacity-related SSOs from occurring. It should be noted that two significant investments in District resources were devoted during the previous audit and this audit period toward completing two large capital improvement projects which addressed potential capacity deficiencies identified in the 2015 SECAP. These projects were the Loomis Diversion Line Project and Foothill Trunk Replacement Project.

Signature of Responsible Person: (sign when complete)	Date:
<i>Carie Huff</i>	10/20/21

SSMP Section:	D.13 (ix) - Monitor, Measure, and Modify					
Responsible Person:	Superintendent					
Performance Indicators:						
1	Update and Recertify SSMP at least every 5 years Data Collection Method: <i>Number of years since the last SSMP recertification by the SPMUD Board.</i>					
2	Reserved for Future Use Data Collection Method: <i>text</i>					
3	Reserved for Future Use Data Collection Method: <i>text</i>					
Performance Indicators			Rating			
			Below Goal	Above Goal	Good	Excellent
1	Years since last SSMP recertification		>5	5	N/A	<5
2	Reserved for Future Use					
3	Reserved for Future Use					

Periodic Performance Tracking					
Date	Measured Value				Performance Assessment Comments
	Goal	1	2	3	
6/30/20	Value	1	N/A	N/A	The District Board of Directors last certified the SSMP on September 5, 2019.
6/30/21	Goal	1	2	3	
	Value	2	N/A	N/A	The District Board of Directors last certified the SSMP on September 5, 2019.
Summary of Effectiveness of SSMP Elements / Recommendations for Updates					
<p>The SSMP has proven an effective means to manage the District's sewer collection system. However, staff intends to update the format and content of the SSMP to ensure that it matches with current practices and work programs and is easier to read, reference, and understand. The SSMP is planned to be recertified by the District Board of Directors on October 7, 2021.</p>					

Signature of Responsible Person: (sign when complete)	Date:



SECTION 6 Audit Summary

This section summarizes the level of compliance of the SSMP with the SSMP requirements identified in subsection D.13 and the identified deficiencies as described in **SECTION 4**. **Table 7** is a summary of the results of that evaluation.

Table 7. Summary of SSMP Compliance Deficiencies

SSMP Requirement	Compliance	Deficiencies
No compliance deficiencies identified during audit		

This section also summarizes the recommended enhancements made during the process of evaluating the effectiveness of each SSMP element as described in **SECTION 5**. **Table 8** is a summary of those recommendations.

Table 8. Summary of Audit Recommendations

SSMP Section	Recommendation	Timeline for Completion
-	Update the format and content of the SSMP to ensure that it matches with current practices and work programs and is easier to read, reference, and understand	Sep 2021
4.A	Continue to inquire about the availability and updates to surrounding jurisdiction's storm drain maps.	Annually
4.C	Periodically evaluate the progress of 5-Year CIP and R&R Plans. Adjust as necessary.	Annually
7.F	Develop a SOP describing the process of how pipelines are added to the high frequency (hot spot) cleaning schedule, how the cleaning frequency (i.e., number of months) for each hot spot is initially set, and how the cleaning frequency for an individual hot spot may be adjusted over time. Map out the interconnection between all District work programs (e.g., CCTV inspection, cleaning, root foaming, lateral lining) for all asset types (i.e., mainlines, laterals, force mains)	Jul 2022
10	Post this SSMP internal audit to the District website. Schedule the next internal SSMP audit for July - August 2023. Use the format of this audit for future internal audits.	Oct 2021