

SOUTH PLACER MUNICIPAL UTILITY DISTRICT

Sewer System Management Plan (SSMP)

Biennial Audit for FY 15/16 – FY 16/17

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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
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 15/16 and FY 16/17 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 10 and Appendix B 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 have the ability to 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 Emergency Response Plan (ERP) for SSOs and identify improvements if needed. (see **Section 5.6**)
5. Record all findings during the audit process and keep the audit on file. (see **Section 5.10**)



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 30 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 32,000 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 13/14 – 14/15	FY 15/16 – 16/17
Miles of Mainline	263	274
Miles of laterals (lower)	3.1	106 ³
Pump stations	13	13
Population served	75,000	75,000
Dedicated Sewer Maintenance Staff	14 ¹	14 ²
Annual Budget (FY1 – FY2)	14,518,016 / 14,239,424	14,366,349 / 16,793,935
Category 1 SSOs	1	2
Category 2 SSOs	1	0
Category 3 SSOs	4	15 ³

¹ - Field Services Department employees (i.e., superintendent [x1], supervisor [x2], Lead Worker [x3] Maint Worker [x8])

² - Field Services Department employees (i.e., superintendent [x1], supervisor [x2], Lead Worker [x3], Maint Worker [x8])

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 2015 audit (fiscal years 2013/2014 and 2014/2015.) The identified Actions outlined in this audit is 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
iv(c) – R&R Plan (2015 Audit)	Develop long-term planning of capital improvement project (CIPs) and associated funding requirements, to address identified deficiencies.	Yes
ix(b) – Measure Effectiveness of SSMP (2015 Audit)	Develop a list of performance indicators related to the elements of the SSMP.	In progress ⁽¹⁾

⁽¹⁾ Goals and performance indicators for each element of the SSMP were established beginning July 1, 2015. However, many of the performance indicators are difficult to measure and are in the process of being modified to improve their usefulness in demonstrating the effectiveness of District efforts.

All of these actions items will be carried forward in this SSMP internal audit and included as recommendations to be completed. The unresolved action items may be modified to match the current needs of the District, but they are all recommended to be completed as a result of this audit.

2.2 Review of FY15/16 and FY16/17

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 Launched New Computerized Maintenance Management System

In January 2017, the District finished the implementation and launched Lucity software, replacing its legacy computerized maintenance management software (CMMS). The legacy CMMS was a custom software over 20 years old. It served the District well over that time, but the software was at risk of losing technical support and the industry standard for CMMS was changing so quickly (e.g., GIS mapping, mobile deployment) that the legacy software was at risk of falling behind. Lucity is now the system of record for planning, tracking, and documenting maintenance of the sewer system.

2.2.2 Implemented the Updated CCTV Program

Beginning July 1, 2014, the District changed its approach and created a schedule to CCTV inspect every sewer mainline once every four years. This schedule continued through this audit period. Each year of this audit period the District met the goal of CCTV inspecting one quarter (approximately 70 miles) of the gravity sewer system. This program collects the information that drives the District’s cleaning program and condition assessment/asset management program.

2.2.3 Updated the Mainline Cleaning Program

Beginning July 1, 2015, the District changed its approach and began using CCTV inspection results to drive the scheduling of cleaning. Every month, the CCTV inspections from the prior month are reviewed. Part of that review includes an evaluation to determine the need to clean the mainline before the next scheduled CCTV inspection. Only the mainlines that exhibit observations that warrant cleaning are placed on a work order to be cleaned the following month. Cleaning before CCTV inspection often removes evidence of the observations (e.g., grease,



debris, roots) that drive cleaning frequencies. This approach provides data of the in-situ conditions of the sewer facilities and helps ensure that established cleaning frequencies are appropriate. This approach also helps avoid cleaning lines that do not need to be cleaned, saving staff time, saving District resources, and conserving water.

2.2.4 Implemented the Lower Lateral Program

Beginning March 1, 2017, the District took over the ownership of lower laterals. Lower laterals are defined by District ordinance as that part of the building sewer within the public right-of-way, extending from the property line or District easement to the public sewer by gravity flow. The District Board of Directors (Board) took this action because the sewer facilities in the public right-of-way can be more effectively managed by the District, both in terms of costs and reduction of SSOs. This action by the Board increased the length of public lower laterals from three (3) miles to 106 miles. Ownership of this much additional lower lateral necessitated the creation of a Lower Lateral Program for proactive maintenance of these assets and the hiring of two additional maintenance workers (scheduled for July 1, 2017) to complete this work.

2.2.5 Staffing Changes

In July 2016, the District funded a new source control/FOG inspector position in the organization and hired an additional inspector to bring the total number of inspectors from two to three. Having a source control/FOG inspector allows the District to direct efforts and resources to permit and inspect food service establishments. This provides more direct control to effectively enforce District standards and ordinances to reduce the likelihood of SSOs caused by FOG.

In January 2017, the District created a new maintenance worker/inspector position and reclassified one of its existing employees to this position. This was done to provide better service to customers needing inspection by having an employee who is trained and can substitute for one of our three regular inspectors when they are unavailable. This position also met the objectives of the District's succession planning because it provides additional opportunities for staff to gain experience and training for potential, future positions.

2.2.6 Reduced the Response Time for SSOs

The average SSO response time (i.e., from the SSO start time to the time District crews arrive on site) during the 2015 SSMP Audit period (FY13/14 to 14/15) was an average of 1.59 days. The District's average response time (i.e., from notification to arrival on site) during the same period was 29 minutes, which meets the desired response time outlined in the District's OERP.

When reviewing the data from the last audit period it became evident that the SSOs with a long SSO response time (i.e., from the SSO start time to the time District crews arrive on site) were known by the public but not communicated to the District for multiple hours or days. During this audit period the District made efforts to improve the SSO response time by improving our outreach to educate our customers on the importance and process of prompt notification. The District enhanced messages through newsletters and wrapped select vehicles with messaging related to notification. The average SSO response time dropped from 1.59 days during the last audit period to 0.63 days during this audit period.



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 keep in the District 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. Appendix 7.2 lists detailed information about each of the SSO events that occurred during the audit period.

Table 3. CIWQS and District SSO Historic Data

SSO Historical Data since last SSMP Internal Audit	CIWQS Data FY 15/16 – 16/17	Internal Records FY 15/16 – 16/17
Total number of potential SSO service calls received	~	340 service calls
Total number of SSOs reported	17 SSOs	17 SSOs
Total volume of SSOs	44,009gallons	44,004 gallons ¹
Total volume of SSOs that reached waters of the state	41,724gallons	41,724 gallons
Percent volume of SSOs recovered	2 %	2 % ²
Average SSO response time (SSO start time to arrival)	0.63 days	0.63 Days
Average agency response time (notification to arrival)	22 minutes	22 minutes
Average SSO duration time	0.65 days	0.67 days ³

Minor discrepancies were found between CIWQS and District records that did not change the outcome in a significant way

¹ 4840 Grove Street – nothing in file indicating Spill Volume Estimation. It was possibly lost or misfiled

² Two discrepancies totaling 4 gallons – SPMUD 991 gallons Retrieved and CIWQS 987 gallons Retrieved

³ 4480 Grove Street – no indication in file that spill had ended at 08:05 hours as indicated in CIWQS

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 reviews the Draft spill report for completeness, accuracy and to evaluate the report’s conclusions when requested by the Superintendent. 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.

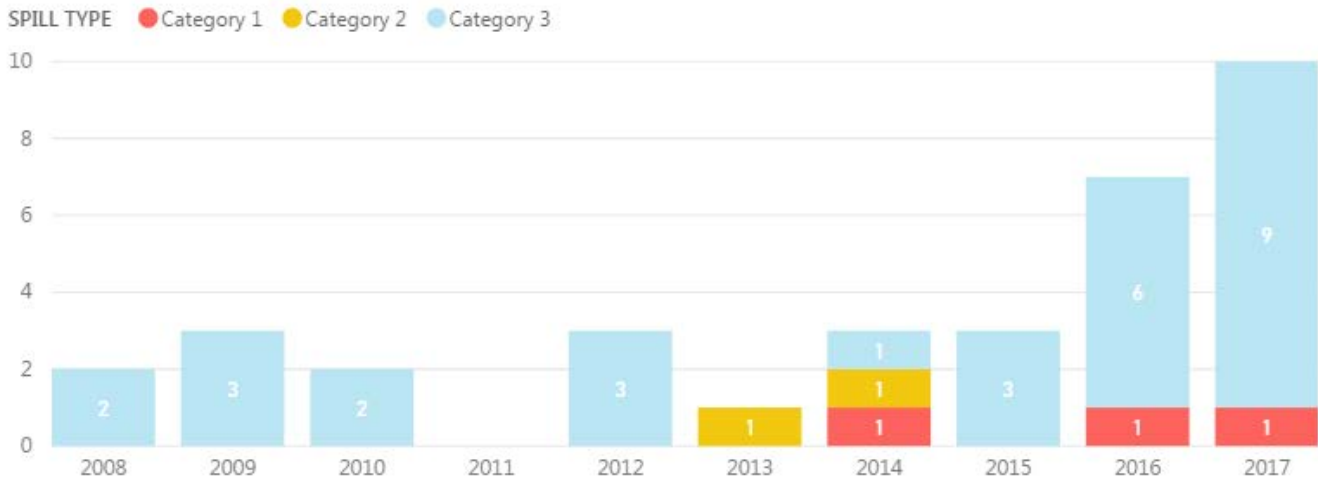
3.2 Trends in the Number of SSOs

Figure 1 shows that the number of SSOs per year from FY07/08 (2008) to FY14/15 (2015) remains relatively small. The number of SSOs per 100 miles of sewer pipe within the District is low compared to the average of other municipal agencies in the state and region per the Collection System Operational Performance Report posted by SWRCB CIWQS over that time period. The number of SSOs increased in FY15/16 and FY16/17 compared to prior



years. Seven of the SSOs in FY16/17 occurred in the publicly owned portion of the lower lateral after the District took over ownership of the lower lateral in March 2017. This results in a skew of the data as shown in Figure 1. Although the number of SSOs increased during this audit period, the number of SSOs per 100 miles of sewer pipe remained 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 time period.

Figure 1: Number of SSOs per Fiscal Year

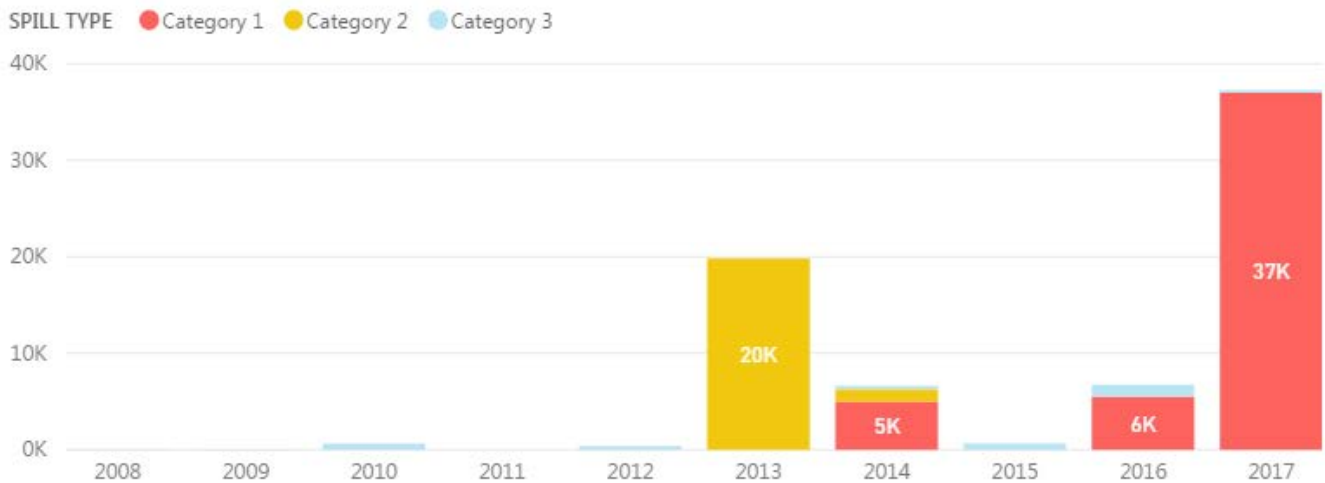


3.3 Trends in the Volume of SSOs

Figure 2 shows that the total volume of SSO per year has remained very small since fiscal year 2007/2008 except for fiscal year 2012/2013, which was discussed in a previous audit. The volume in gallons of SSOs increased in FY15/16 and FY16/17. The large volume was a result of two SSOs; one in each fiscal year.



Figure 2: SSO Volume per Fiscal Year



In March of 2016 a plumber contracted by a fast food service establishment caused a piece of broken pipe from the private lateral to enter the District’s publicly owned sewer main. This sewer main is cleaned monthly by the District and had been cleaned three days prior to the SSO. The piece of broken pipe created a blockage in the line that caused the SSO. The SSO was not reported immediately to the District, so the duration of the SSO contributed to the large volume.

In February of 2017 a large, prolonged storm event occurred. A portion of the District’s sewer system is near or at capacity. Several preemptive actions have been taken to address this capacity issue including the installation of cured-in-place liners to reduce inflow and infiltration, installed a SmartCover on the trunk sewer to continuously monitor depth of flow, prohibited additional or new connections to this trunk sewer, and the design and construction of a diversion sewer line to divert flow away from this portion of the sewer system. The construction of the diversion sewer line will be completed in 2018. However, this storm event produced more rainfall-dependent inflow and infiltration than this portion of the sewer system could convey resulting in a significant SSO.

These two SSO events accounted for 97% of the total volume of SSOs during the audit period.

3.4 Trends in the Causes of SSOs

The District’s SSO records were queried to identify the leading causes of SSOs. **Figure 3** shows the leading causes of SSOs in the District by 1) the percentage of the total number of SSOs, and 2) the percentage of total spill volume of SSOs.

Figure 3. Leading Causes of SSOs in FY15/16 and FY16/17

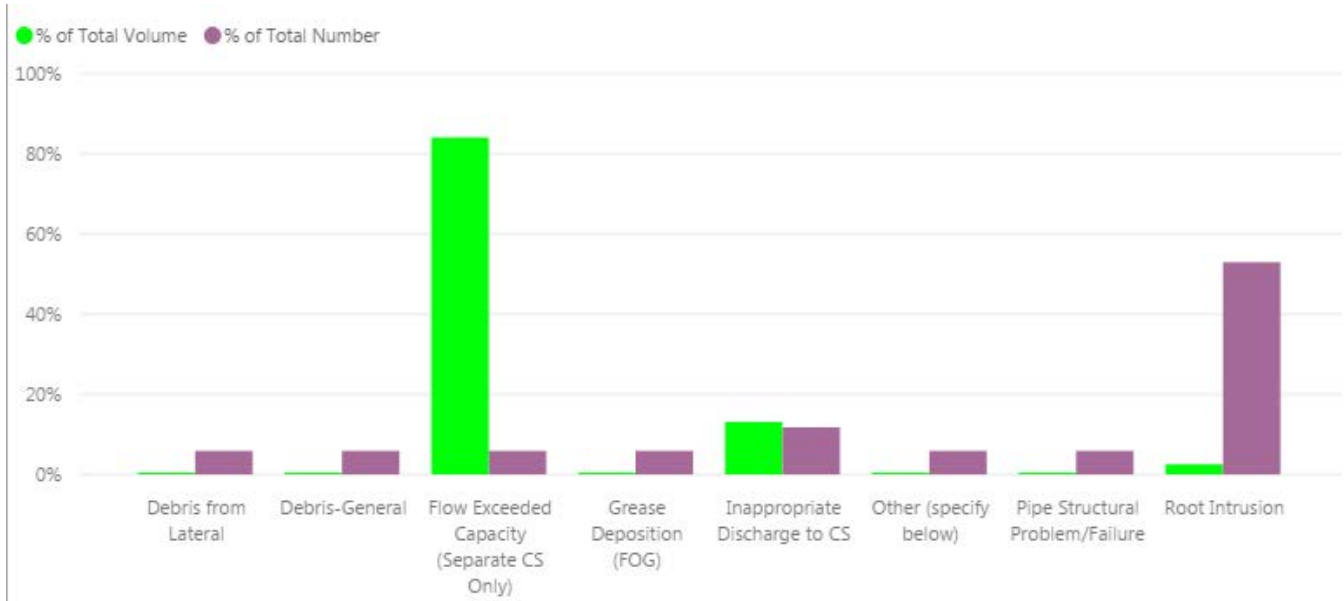


Figure 3 shows that roots in pipelines is the leading cause of a SSO occurrence and that insufficient capacity is the leading cause of large-volume SSOs. The actions planned as a result of this SSMP audit will target the leading causes to most effectively reduce the number and spill volume of SSOs.

3.5 SSO Reduction Goals

Currently, the District’s two goals related to SSO reduction measure the number of SSOs and the volume of SSOs. The SSO reduction goals for the number and volume of SSOs in a given year is determined by the average of the respective data over the previous five years. Over the past ten years the District has consistently had a small number of low-volume SSOs. SSO reduction goals based on five-year averages have served the District well in maintaining a small number and volume of SSOs and provide a realistic goal based on past performance. During the last SSMP Audit the District established different goals to lessen the effect that anomalies have on the goals for subsequent years.

The District will strive for zero SSO events but realizes any goal must be realistic and achievable to be effective. Table 5 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. Goals that incorporate lower lateral SSOs will be addressed in the next audit when data is available for analysis.



Table 5. District SSO Goals

Performance Score	Total Number of SSOs/year	Total Volume of SSOs/year
Excellent	0	0
Good	1 or fewer	< 250
Above Average	2 or fewer	< 500
Goal	3 or fewer	< 1000
Needs Improvement	4+	> 1000

Table 6 compares the District SSO goals against the actual number of SSOs during the timeframe of the current SSMP internal audit.

Table 4. SSO Reduction Goals

	FY15/16			FY16/17		
	Goal	Actual	Performance	Goal	Actual	Performance
Total Number of SSOs	<= 3	7	Needs Improvement	<= 3	10	Needs Improvement
Total Volume of SSOs	< 1000	6742	Needs Improvement	< 1000	37,262	Needs Improvement

3.5.1 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 6**. 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

Beginning in July 2015, the District made a significant change in its approach to cleaning mainline pipes. The High Priority Line cleaning program remains the same. These pipe segments have been identified as requiring more frequent cleaning than the typical line segment and have established cleaning intervals ranging from one month to 36 months. The change: In the past, lines were cleaned on a common interval – the goal being five (5) years. This is a somewhat arbitrary interval based on staff comfort levels and experience. The hydro-cleaning team did not have much information about the pipe condition and often didn't know the proper nozzle type for a particular line segment. The District now uses observed conditions during pipeline inspections (i.e., CCTV inspect a pipeline before cleaning) to drive the frequency of cleaning for each pipeline. Two CCTV crews systematically inspect a maintenance zone, when completed the data is reviewed and line segments that need cleaning are cleaned. The goal is to have more targeted cleaning efforts throughout the system. All District mainline pipe will be CCTV inspected every four (4) years.



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

The District developed an in-house chemical root treatment program to control root intrusion into pipes. It was used for only a short period before the program was discontinued due to regulatory compliance issues – it became no longer cost-effective to continue the program. The District will return to contracted services for this application. The District's method of determining which line segments need to be chemically treated and when they need to be treated will not change.

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 efficiently and effectively perform vital operations. The District purchased the following vehicles/equipment during this audit period:

- Two new high velocity vacuum cleaning trucks,
- A truck specifically outfitted for the lower lateral crew,
- A trailer-mounted jet rodder for small diameter pipes and lower laterals, and

New portable flow monitors. The new computerized maintenance management system (Lucity), which was introduced/discussed in the previous SSMP audit was launched during this audit period (January 2017). The District purchased tablets for the supervisors, inspectors, and crews so that the information in Lucity is available in the field and work orders can be completed as the work is happening. The launch of Lucity will allow for more efficient planning, executing, and tracking of maintenance activities, increasing the probability that maintenance issues will be discovered and addressed before they might lead to a SSO.

The District has invested significant resources to purchase hardware and configure systems and databases to make information about the sewer system available through GIS mapping software. The District is in the process of decreasing its reliance on paper maps by using webmaps through Lucity and ESRI products, which are available on office computers, tablets, and phones. This change improves the quality and amount of data available to all employees within the District and shortens the timeline for correcting and redistributing updated information when errors are discovered.

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

The District is committed to providing efficient and effective sanitary sewer service. This is best accomplished by having District forces focusing on its core functions (e.g., cleaning, inspecting, repairing sewer). The District plans to outsource work which is not a core function (e.g., vehicle maintenance, landscape maintenance, managing onsite fueling).

The District plans to develop a prioritized assessment schedule for the newly acquired lower laterals to establish a proactive approach to the maintenance of those facilities. Property owners previously had the responsibility to maintain their own lower laterals. As a result, the District does not have a maintenance history for those assets. The District will prioritize this assessment schedule to focus on the older lower laterals first to build a maintenance history and to decrease the likelihood of SSOs from lower laterals.



The District plans to significantly increase the number of sewer pipelines to be root foamed. The number of sewer mainlines to be root foamed will be doubled. Lower laterals will also be added to the root foaming program now that the District has taken responsibility for them.

The District developed a capital improvement projects (CIP) program which will be implemented over the next five years. The five-year CIP program will be reflected with the District's rate study. These efforts set a schedule for planned repairs and generate the funding necessary to complete them.

Changes to be employed to sanitary sewer system best management practices

The District identified a recurring issue with the SSOs it experienced during this audit period. The time between the start of an SSO and the time at which the District is notified is often significant. This results in SSO durations and SSO volumes that are larger than they could be. 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

In addition to the recent staffing changes (i.e., FOG inspector and maintenance worker/inspector position), the District plans on two additional hires in the next fiscal year. The District will hire two additional maintenance workers in July 2017 to allow the formation of a lower lateral crew to execute the lower lateral program. By accepting responsibility for the lower laterals, the District accepted the additional work required to maintain those assets. This additional work requires additional staff. The District believes that by accepting the lower laterals, it will be able to more effectively reduce SSOs than if the maintenance and repair of lower laterals was left to the property owners.

Changes to be employed to sanitary sewer system funding levels

The District plans to complete a rate study and propose new sewer rates during the next SSMP audit period. These rates will provide funding for the hiring of two additional maintenance workers, the needed vehicles and equipment, the five-year CIP program, liners for lower laterals, repairs in accordance with the Newcastle Master Plan, in addition to the typically budgeted items.

Changes to be employed to sanitary sewer system training

As mentioned earlier, the District plans to formalize its standard operating procedures (SOPs). As part of this process the District will incorporate a formal training program in conjunction with the developed SOPs to improve training efforts and provide a level of assurance in the competencies of staff regarding these procedures. This will be implemented and evaluated once the (new) SOP type/method is completed.

The District will also continue to provide training on the revised OERP, which reflects the changes to the MRP (see **Section 5.6**) to effectively meet the SSO reduction goals.



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 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.

One of the objectives of the District R&R and CIP Programs is to correct deficiencies (i.e., condition or capacity related deficiencies) so that portions of the system that present a high risk of stoppages or SSOs are addressed. Addressing the high-risk assets in the collection system decreases the areas of the system that have an increased probability of a SSO. In 2015 the District identified and categorized its High Risk Facilities and is developing an approach to eliminate and/or mitigate SSO's. This is a carry-over from the previous SSMP audit.

Additionally, the District plans to implement a merit program to recognize outstanding performance by staff. One of the performance metrics of the merit program tracks repeat SSOs. The compensation to employees is negatively affected if a repeat SSO occurs.



SECTION 4 Audit Procedure

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 accomplish this objective.

4.1 Review of SSMP Compliance

An assessment of South Placer Municipal Utility District's SSMP was conducted as part of the audit against the requirements outlined in the SSS WDR. The subsections of **SECTION 5** below are organized by SSMP element. Each subsection contains a table which lists the requirements of section D.13 of the SSS WDR and indicates the level of compliance of the SSMP against that requirement. The compliance status of the District's SSMP is indicated with one of the following ratings; **Yes** - *in compliance*, **No** - *not in compliance*, or **N/A** – *not applicable with a written justification in the SSMP*. If there are deficiencies with regards to compliance, an explanation of the deficiency is given. Each deficiency will have associated SSMP enhancements which may include action items, SSMP adjustments, and/or timelines of planned completion.

4.2 Review of SSMP Effectiveness

Subsequent to the indication of the level of compliance of the SSMP in relation to the requirements of the SSS WDR, an evaluation of the effectiveness of the SSMP elements will be conducted to comply with the requirements for SSMP audits per subsection D.13.x of the SSS WDR. The discussion reviews if the plan outlined for each section is being followed, and how effective the plan is at reaching the desired objectives. Where appropriate, recommendations will be made based on the results of this audit to identify tasks to improve the effectiveness of SSMP activities. Wherever possible, performance metrics will be used to measure the effectiveness of SSMP elements.

This section will not repeat the information and plans presented in each section of the SSMP. The focus of these sections is to evaluate the effectiveness of the stated plans for each SSMP element. The reader should reference the District SSMP to obtain the information reviewed by this audit.

A summary of the recommended modifications made throughout this SSMP internal program audit is included in **SECTION 6** – Audit Summary.



SECTION 5 Audit of SSMP Elements

This chapter evaluates all elements of the District’s SSMP. Each section of this chapter is associated with one of the eleven elements of the SSMP required by SSS WDR section D.13. Each element is evaluated for compliance and effectiveness using the procedure described above in **Sections 4.1** and **4.2**, respectively.

5.1 Goals

5.1.1 Compliance

Table 5. Compliance with SSS WDR D.13.i - Goals

SSMP Requirement	Compliance	Deficiencies
i Properly manage, operate, and maintain all portions of the District’s wastewater collection system.	Yes	<ul style="list-style-type: none"> • Pipe Repair Goal 175 repairs was not achieved • PLCO installation Goal of 75 installations was not achieved

5.1.2 Effectiveness of SSMP Elements and Recommended Modifications

Goals (SSMP Section 1)

- Level of Effectiveness: The District currently has eight general goals identified in the SSMP. The SSMP references the District’s 2013 – 2017 Strategic Plan as the source of the goals. The goals that South Placer Municipal Utility District recorded in the SSMP and Strategic Plan have been effective in guiding the activities of the District to properly manage, operate, and maintain all parts of the sanitary sewer system.
- Key Performance Indicators:
 - Review of bi-annual Strategic Plan Report Card

The final year of the 2013 Strategic Plan was completed in June of 2017. The Final report card indicated all items included in the plan were completed, with exception of the following, some of which were altered due to a change in management and shifting priorities. Of Note:

- Goal 4.1, A – Hydro clean 100% of the system. Change: In 2015, the cleaning program was changed to clean only lines that require cleaning. This was termed CCTV Driven Cleaning. Each month the CCTV defect records are reviewed and only the line segments that require cleaning, are cleaned. The number of lines cleaned is no longer relevant.
- Goal 4.1, B – CCTV Inspect 400 miles of pipe. Change: CCTV inspect the entire system once every 4 years.
- Goal 4.1, C – perform 175 on District Owned Pipes. Change: As of July 2015, only 11 repairs had been performed. The goal was deemed unattainable.
- Goal 4.3, A - Eliminate 100% of high-risk Double Wyes. Change: Assess and ensure all have a cleanout to access the lower lateral; mitigate and repair all defects.
- Goal 4.3, B – Ensure 100% of lower laterals have accessible cleanouts. Only two cleanouts were installed in through March 2015. Change: Install 75 Property Line Cleanouts.



- Recommendations:
 - The District began the 2017 Strategic Plan, with adjusted goals, beginning July 2017. Continue to evaluate Strategic Plan goals for effectiveness as it relates to the SSMP.

5.2 Organization

5.2.1 Compliance

Table 6. Compliance with SSS WDR D.13.ii - Organization

SSMP Requirement	Compliance	Deficiencies
ii(a) Identify Legally Responsible Official (LRO)	Yes	-
ii(b) SSMP responsibility and organization chart	Yes	-
ii(c) Chain of communication for reporting SSOs	Yes	-

5.2.2 Effectiveness of SSMP Elements and Recommended Modifications

Identify Legally Responsible Official (LRO) (SSMP Section 2.A)

- Level of Effectiveness: The General Manager is the District’s authorized representative in all wastewater collection system matters. The SSMP designates the Superintendent as the District’s legally responsible official (LRO). The SSMP lists the District Engineer as LRO in the Superintendent’s absence. The position of Field Supervisor is designated as Data Submitters. The current organization of LROs and Data Submitters has proven effective in appropriately reporting SSOs to meet the requirements of the Monitoring and Reporting Program.
- Recommendations:
 - No recommended modifications at this time.

SSMP Responsibility Organization Chart (SSMP Section 2.B)

- Level of Effectiveness: A chart in this section provides the title, name, phone number, and a short description of each individual’s job responsibilities. Additionally, Table 2.1 of the SSMP lists the elements of the SSMP and the responsible party. The SSMP also includes an organization chart to identify lines of authority. The combination of the two tables in the SSMP effectively outline individuals responsible for implementing the SSMP, their names and contact information, and the specific elements of the SSMP for which they are responsible.
- Recommendations:
 - No recommended modifications at this time.

Chain of Communication Reporting Chart (SSMP 2.C)

- Level of Effectiveness: The SSMP outlines the chain of communication for reporting SSOs from the receipt of complaint to CIWQS reporting. The District trains individuals in the positions of Maintenance Worker/Inspector, Lead Worker and Field Supervisor to act as On-Call Supervisors to assure that required reporting information is properly collected during the response to a SSO. All field personnel are trained



as On-Call Responders. The District’s chain of communication for SSO reporting appears to be effective based on responses to service calls and the completeness and thoroughness of the information documented in the District’s internal Spill Reports and on the CIWQS database.

- Recommendations:
 - No recommended modifications at this time.

5.3 Legal Authority

5.3.1 Compliance

Table 7. Compliance with SSS WDR D.13.iii – Legal Authority

SSMP Requirement	Compliance	Deficiencies
iii(a) Prevent illicit discharges	Yes	-
iii(b) Properly designed and constructed sewers	Yes	-
iii(c) Ensure access to laterals owned/maintained by District	Yes	-
iii(d) Limit the discharge of FOG and other debris	Yes	-
iii(e) Enforce any violation of District ordinances	Yes	-

5.3.2 Effectiveness of SSMP Elements and Recommended Modifications

Prevent Illicit Discharges Authority (SSMP 3.A)

- Level of Effectiveness: Ordinance 09-02 bans inflow from storm water sources (2.04.A) and prohibits illicit discharges from service connections (2.04.B).
- Recommendations:
 - It was recommended in the 2013 audit that the District establish a flow monitoring program to evaluate the impact private collection systems have on the District’s system. The FY 15/16 Budget included the purchase of portable flow monitoring equipment with the capability of monitoring lower flows, which will allow for the monitoring private systems such as mobile home parks and apartment complexes. Since then, our priorities have shifted, and it is recommended to monitor the flows from each maintenance zone, which are (generally) delineated by the various sub-sheds in the system with the intent of modeling the collector pipes in our system to enhance the District’s hydraulic model and improve our ability to make decisions about the system. Monitoring private systems will be considered once this task is complete.

Design and Construction Standards (SSMP 3.B)

- Level of Effectiveness: The MUD Act and District Ordinance 09-02 provide the legal authority to require the proper design and construction of sewers and connections. Ordinance 09-02 references the District Standard Specifications and Improvement Standards for Sanitary Sewers as the requirements for proper design and construction. The legal authority for enforcing proper design and construction has been effective in ensuring that new construction and improvements are built according to District specifications.
- Recommendations: No recommended modifications at this time.



Sewer Access Authority (SSMP 3.C)

- Level of Effectiveness: Ordinance 09-02 provides the legal authority that ensures access for maintenance, inspection and repairs to publicly owned portions of laterals and clearly defines District responsibility and policy. District Ordinance 09-01 provides the legal authority to enter and inspect Food Service Establishments and other FOG producing businesses. The legal authority for ensuring access as described above has been effective because, to date, the District has not been denied access nor has been inhibited in a way that has prevented staff from performing required duties.
- Recommendations: No recommended modifications at this time.

Limit FOG Discharges Authority (SSMP 3.D)

- Level of Effectiveness: Ordinance 09-01 provides the legal authority to limit the discharge of FOG. The District’s legal authority has been effective in limiting the number of blockages caused by FOG as evidenced by the fact that one SSO caused by FOG occurred during the period of this audit. The District utilized Ordinance 09-01 and required the business to make significant improvements to prevent a recurrence. The District re-evaluated the goals of the FOG program and increased the pace of inspection and began permitting all Food Service Establishments.
- Recommendations: No recommended modifications at this time.

Enforcement Authority (SSMP 3.E)

- Level of Effectiveness: The MUD Act provides the legal authority to enforce violations of the District’s sewer ordinances. The legal authority to enforce any violation of the District sewer ordinances provided by the MUD Act has been sufficient to ensure that the District standards and specifications are implemented.
- Recommendations: No recommended modifications at this time.

5.4 Operation and Maintenance Program

5.4.1 Compliance

Table 8. Compliance with SSS WDR D.13.iv – O&M Program

SSMP Requirement	Compliance	Deficiencies
iv(a) Collection system maps	Yes	-
iv(b) Preventive O&M activities	Yes	-
iv(c) Rehabilitation and Replacement (R&R) plan	Yes	-
iv(d) Training	Yes	-
iv(e) Equipment and critical replacement parts	Yes	-



5.4.2 Effectiveness of SSMP Elements and Recommended Modifications

Collection System Maps (SSMP 4.A)

- Level of Effectiveness: The District maintains electronic and hard copy maps of the sanitary sewer system. The District does not own or operate the storm drain systems within its boundary. The storm drain systems are owned and operated by the District stakeholders (i.e., the City of Rocklin, the Town of Loomis, and unincorporated Placer County). The District has requested and received what is available from each jurisdiction. The City of Rocklin has provided GIS data of their storm drain system and it is integrated into the District's GIS program; the Town of Loomis has provided a storm drain master plan document that does not provide maps, but generally describes where and how storm water is conveyed; Placer County does not have storm drain information available for the unincorporated areas this District serves.

Electronic mapping data (sewer collection system) is accessible in the District's GIS, and hard copy maps are located at the District offices and select field crew trucks. Maps are updated with assets from new development, after repairs to the system, or following rehabilitation/replacement of assets. Procedure for updating the District GIS mapping has been effective, as corrections initiated from the field have been updated in a timely manner and in accordance with the established SOP.

The collection system maps are effective in communicating the location of District assets as well as providing a geospatial database to house important attributes about each asset. The District GIS (i.e., geospatial location and associated attribution) is available only to select staff. The District has implemented the use of Tablet computers in the field, with direct connection to the District's computer network. Electronic maps are now available in the field.

- Recommendations:
 - Continue to inquire about the availability and updates to surrounding jurisdiction's storm drain maps.

Preventive Operations & Maintenance Activities (SSMP 4.B)

- Level of Effectiveness: The audit identified and verified that the District engages in programs to complete the routine preventative maintenance activities listed in SSMP section 4.B. The District utilizes a computerized maintenance management system (CMMS) to schedule cleaning of known problem areas and to document completed work orders. In January 2017 the District launched a new CMMS (Lucity) with enhanced features compared to the legacy CMMS.

The District tracks a number of metrics related to the O&M activities. A selection of O&M activities are listed in **Table 11** with the actual quantities accomplished in FY15/16 and FY16/17.



Table 9. Activities related to SSS WDR D.13.iv(b)

Performance Measure	FY15/16	FY16/17
* Clean All Pipe Segments Identified as Needs to be cleaned	Yes	Yes
Mainline pipe repairs completed	14	11
Pipe Segments chemically treated for roots	52	54 Pipe; 244 Laterals
Cleanouts installed or repaired	29	54

* The District implemented its CCTV Driven Cleaning Program in July 2015. At the end of each month, CCTV defect data collected on pipe segments inspected is evaluated to determine whether a pipe segments needs cleaning. If a pipe segment is deemed “needs to be cleaned” it is included in a work order and cleaned the following month. This program is designed to clean only lines that need to be cleaned. The number of line segments cleaned is no longer relevant.

On March 1, 2017 the District assumed ownership of the lower lateral. To support this, the District hired two employees, purchased additional equipment and established its Lower Lateral Program, which includes condition assessment of all laterals, mitigation and repair/rehabilitation measures to ensure laterals perform as expected. The District intends to assess condition on all (23,000+) laterals within 10 years. The program began on July 24, 2017.

The District accomplishes a significant amount of maintenance-related activities each year. Improvements have been made in developing clearly-defined goals via an Annual Work Plan. However, the level which the goals were met has been sub-par to date. This was due, in part to organizational changes, changes in management, retirement of long-time employees and replacement by less experienced persons and changing priorities and expectations. Adjustments have been made moving forward and it is anticipated significant improvement will be demonstrated during FY 2017/2018.

The District has made strides towards developing formal, written SOPs for its preventative maintenance programs. Many SOPs have been developed and are being utilized in DRAFT form, including those recommended in past Audits. The District is considering utilizing consultants to supplement staff and complete/formalize DRATF SOP’s during the 2018/2019 fiscal year.

The District launched a new CMMS (Lucity) in January 2017 and has completed initial training of select users.

- Recommendations:
 - Finalize SOPs currently in DRAFT form and continue to develop pertinent SOPs.
 - Consider using outside resources to complete this task.
 - Periodically evaluate the (new) lower Lateral Program for effectiveness



Rehabilitation and Replacement Plan (SSMP 4.C)

- Level of Effectiveness: Pipelines and manholes are regularly inspected by District crews and defects are coded using the PACP defect coding system. The District developed its High-Risk Facility (HRF) Program, which resulted in a 5-Year CIP and R&R plan and related funding plan. High Risk Facilities include: Pipes with significant defects, Above-Grade Creek Crossings, Parallel Trunk Sewers (adjacent to creeks). The District tracks several metrics related to inspection activities. A selection of inspection activities is listed in **Table 12** with the actual quantities accomplished in FY15/16 and FY16/17.

Table 10. Performance Measures related to SSS WDR D.13.iv(c)

Performance Measure	FY15/16	FY16/17
Manhole inspections per year – Goal 1550 + Warranty	2,462	1,650
Pipe Segments CCTV Inspected – Goal 1550 + Warranty	1520	1576

The District accomplishes a significant amount of inspection-related activities each year. Stating 7/1/2015 the District re-established its production goals for, amongst other things, CCTV inspection of mainline pipes and manhole inspections. The District is committed to CCTV inspecting their entire system every four (4) years. The CCTV crews perform manhole inspections while performing CCTV inspections. The goals are the same for both tasks.

The current long-term capital improvement projects are based on the projects identified in the District’s System Evaluation and Capacity Assurance Program (SECAP). Long-term planning of capital improvement projects does not currently account for the replacement of system assets based on the structural or maintenance condition, the work order history, the criticality of the asset location, etc. These are prioritized, and maintenance repairs are performed on a budget-by-budget basis.

- Recommendations:
 - Periodically evaluate the progress of 5-Year CIP and R&R Plans. Adjust as necessary

Training (SSMP 4.D)

- Level of Effectiveness: The District requires all maintenance workers and technical service staff to receive training. The District adheres to a prescribed Safety and Training Schedule. In addition, the tailgate safety meetings are, for the most part, held every 10 days. The current training program has been effective in developing safe and effective staff.

Training on the topics prescribed topics occur consistently. However, training on the operation of the various pieces of equipment that the District employs to complete the routine maintenance activities has not occurred regularly. The District has relied on on-the-job training and periodically rotates its crews to help ensure each employee maintains necessary competency. All employees are trained on new equipment prior to operating it. In addition, in the event of an accident or improper operation of a piece of equipment is discovered, additional training is immediately performed for the employee(s) involved. To increase the likelihood that staff will safely and consistently operate the equipment needed to complete assigned O&M tasks, training on the equipment should be improved upon. In addition, on-the-job training is not documented.



- **Recommendations:**
 - Develop a schedule for regular training on the specific equipment that the District owns. The schedule 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 the previous audit.

Equipment and Critical Replacement Parts (SSMP 4.E)

- **Level of Effectiveness:** In response to the last SSMP audit, a method for documenting the tracking of inventory and critical spare parts was implemented. A list of SPMUD Lift Station Critical Spare Parts is contained in the SSO ERP in Appendix A. The audits of the critical spare parts inventory annually.

The current process of ensuring the necessary parts has proven adequate. The District has not experienced a SSO due to the lack of equipment or critical spare parts (e.g., lift station pump failure, loss of power). The District’s on-call support service also maintains many of these parts at their facility. All lift stations can be supplied with electricity through fixed and portable generators and each station can be dewatered using bypass pumps and/or hydro-vacs.

- **Recommendations:** No recommended modifications at this time.

5.5 Design and Performance Provisions

5.5.1 Compliance

Table 11. Compliance with SSS WDR D.13.v – Design and Performance Provisions

SSMP Requirement	Compliance	Deficiencies
v(a) Sanitary sewer design and construction specifications	Yes	-
v(b) Procedures and standards for inspecting and testing new and R&R projects	Yes	-

5.5.2 Effectiveness of SSMP Elements and Recommended Modifications

Sanitary Sewer Design and Specifications (SSMP 5.A)

- **Level of Effectiveness:** The District Specifications and Improvement Standards for design and construction are effective in ensuring that new or rehabilitated infrastructure is designed and constructed in an acceptable manner.

The District Specifications and Improvement Standards are easily accessible to interested parties through the District website so that they can be more effectively implemented.

The District Specifications and Improvement Standards are updated as needed.



- Recommendations: No recommended modifications at this time.

Sanitary Sewer System Construction and Performance Provisions (SSMP 5.B)

- Level of Effectiveness: The procedures for testing of new/rehabilitated assets are clearly defined and these procedures have been effective in ensuring that recently constructed assets perform as expected.
- Recommendations: No recommended modifications at this time.

5.6 Overflow Emergency Response Plan

5.6.1 Compliance

Table 12. Compliance with SSS WDR D.13.vi - OERP

SSMP Requirement	Compliance	Deficiencies
vi(a) Proper notification procedures	Yes	-
vi(b) Program for appropriate SSO response	Yes	-
vi(c) Procedure for prompt notification to regulatory agencies	Yes	-
vi(d) Procedures for appropriate training of staff and contractors	Yes	-
vi(e) Procedures to address emergency operations (e.g., traffic, crowd control)	Yes	-
vi(f) Program to ensure containment of SSO to prevent discharge and minimize adverse impacts on the environment	Yes	-

The State Water Board amended the monitoring and reporting program (MRP) with revised requirements (Revised MRP WQ 2013-0058-EXEC) that took effect September 9, 2013. The revised requirements are available at the State Water Resources Control Board’s Sanitary Sewer Overflow Reduction Program website (http://www.waterboards.ca.gov/water_issues/programs/ss/). The changes from these revised requirements include the type of data that must be collected in the event of an SSO and the follow up reporting that is required and this is addressed in the current OERP.

- Recommendations: No recommended modifications at this time.

5.6.2 Effectiveness of SSMP Elements and Recommended Modifications

Notification Procedures (SSMP 6.A)

- Level of Effectiveness: Historically the District’s average SSO response time (i.e., notification of SSO to operator arrival time) has met the District goal of 30 minutes during working hours and 60 minutes during non-working hours. Beginning in January 2017, response times are being recorded in each work order and the information is being regularly scrutinized as part of the SSO debriefing procedure. This indicates



that the notifications procedures employed by the District are effective in facilitating a rapid response from the District's first responders.

Section 1 of the SSO ERP clearly outlines the notification procedures for District personnel for the various situations that may be encountered. Section 7 lists the contact information of all potentially applicable agencies. Appendix A contains a complete Agency contact list. These resources have proven effective for notifying appropriate agencies in response to a SSO.

- Recommendations: No recommended modifications at this time.

Response Program (SSMP 6.B)

- Level of Effectiveness: The District SSO ERP effectively outlines the program that the District uses to appropriately respond to a SSO event. The SSO ERP has gone through several iterations over the years and encapsulates the best practices of the District in responding to a SSO. The SSO ERP has been effective in responding to SSOs.

The District has implemented procedures and methods to consistently estimate and document the SSO start time and SSO volume according to the best available information. The District also implements a Spill Response Evaluation Form after each SSO event to conduct a self-evaluation of the various aspects of a SSO response as defined in the SSO ERP. This is effective in documenting the level of effectiveness of the SSO ERP, the solutions to unique problems encountered during the response, and suggested improvements to the SSO ERP while the information from the event is still fresh in the responders' minds.

- Recommendations:
 - No recommended modifications at this time

Regulatory Notification Procedure (SSMP 6.C)

Level of Effectiveness: The current arrangement of the LRO and the District Engineer who is able to act in the absence of the LRO have met the needs of the District to effectively report to the CIWQS database in a timely manner. The On-Call Supervisor is responsible for reporting SSOs to Cal-OES, Placer Environmental Health Department, and other affected agencies as necessary.

The regulatory notification procedure has proven effective because to date, the District has not encountered a situation in which notification information for a required party was not available to District staff responding to a SSO.

- Recommendations: No recommended modifications at this time.

Staff and Contractors Training (SSMP 6.D)

- Level of Effectiveness:

Each employee is required to complete SSO response procedure training. Various aspects of SSO training are included in the monthly training schedule each year. The training has led to improvement in understanding and applying documented response procedures, in particular, documentation. In addition, more training has been provided for responses to lift station failures, as response opportunities are few and response personnel have indicated additional training would help their confidence. Enhanced SSO



response training has been provided to select staff who serve as On-Call Supervisors and it is required that they be contacted and involved in every SSO occurrence.

Contractors are also required to implement (approved) procedures prior to working within the collection system. This is done on a project-by-project basis.

- Recommendations: No recommended modifications at this time

Emergency Response Coordination (SSMP 6.E)

- Level of Effectiveness: Section 5 of the SSO ERP addresses emergency operations including hazardous spills, traffic control, and crowd control. The measures outlined in this section have never been implemented, as the District has not encountered a situation requiring these measures to date.
- Recommendations: No recommended modifications at this time.

Spill Mitigation and Containment Procedure (SSMP 6.F)

- Level of Effectiveness: An SSO ERP is available for staff training and for use during a SSO event. The SSO ERP is comprehensive and indicates proper roles and responsibilities as well as SOPs for multiple items including spill rate estimation (Appendix E of SSO ERP) and water quality sampling (Appendix F of SSO ERP). The SSO ERP has been effective in defining the steps to be taken to contain and prevent a SSO from discharging to waters of the United States and to minimize any adverse impact on the environment.
- Recommendations: No recommended modifications at this time.

5.7 FOG Control Program

5.7.1 Compliance

Table 13. Compliance with SSS WDR D.13.vii – FOG Control Program

SSMP Requirement	Compliance	Deficiencies
vii(a) Public education plan	Yes	-
vii(b) FOG disposal plan	Yes	-
vii(c) Legal authority to prohibit SSOs and blockages caused by FOG discharges	Yes	-
vii(d) BMPs, grease removal devices, recordkeeping, and reporting requirements	Yes	-
vii(e) Authority to inspect and enforce FOG ordinance	Yes	-
vii(f) FOG Characterization Assessment and Hot Spot Cleaning Schedule	Yes	-
vii(g) FOG Control Program Measures	Yes	-



The District historically has had very few problems with FOG-related blockages and SSOs. Despite that fact, the District began a FOG program in 2009 to be proactive in dealing with FOG sources. The District made efforts to accelerate inspections of FSE's and has begun permitting FSE's. To date, the District has applied enforcement actions on two FSEs.

5.7.2 Effectiveness of SSMP Elements and Recommended Modifications

Public Education Plan (SSMP 7.A)

- Level of Effectiveness: The efforts the District has made to distribute information through the District website and community events appear to be effective in reaching the objective of educating the public on the proper disposal of FOG and other substances. During this audit period the District wrapped two vehicles with FOG outreach information, amongst other information.
- Recommendations: No recommended modifications at this time.

FOG Disposal Plan (SSMP 7.B)

- Level of Effectiveness: The District offers free pick up of FOG from its residential customers. The FOG program also lists acceptable grease haulers and disposal facilities for FSEs to utilize to properly dispose of generated FOG. These programs appear effective because of the small number of FOG blockages in the system.

The District is a member of the South Placer Wastewater Authority (SPWA) and partners with the City of Roseville and Placer County for wastewater treatment. The SPWA is embarking on the development of a FOG receiving station. It was anticipated to be completed during this audit period, but it has yet to be undertaken. It is anticipated it will be operational sometime during the next SSMP audit period.

- Recommendations: No recommended modifications at this time.

Legal Authority to Prohibit SSOs and Blockages Caused by FOG Discharges (SSMP 7.C)

- Level of Effectiveness: District ordinance 09-01, which establishes requirements regarding FOG and the District's Standard Specifications provide the necessary legal authority for the District to prohibit FOG. These documents are effective in requiring the type of equipment to reduce FOG discharged from FSEs, as well as indicating the authority of the District to prohibit SSOs and blockages due to FOG.
- Recommendations: No recommended modifications at this time.

BMP, Grease Removal Devices, Recordkeeping, and Reporting Requirements (SSMP 7.D)

Level of Effectiveness: District Ordinance 09-01 section 2.04 requires that all FSEs have best management practices (BMPs). The District's efforts to disseminate information regarding BMPs, grease removal devices and the associated record keeping and reporting requirements have been effective. Also, each FSE must have an appropriately sized grease removal device per the Uniform Plumbing Code. The District provides information about BMP requirements, BMP posters, and BMP information sheets on the following topics; proper grease disposal, requirements for new and remodeled FSEs, grease interceptor maintenance, grease trap maintenance, selecting a grease hauler, a list of licensed grease haulers, and equipment cleaning in booklet form as a resource for FSEs within the District. The District supplements



the information provided about its program through onsite inspections/meetings with FSEs to reinforce the level of understanding of the FOG program and its requirements.

District Ordinance 09-01 section 4.10 includes a list of recordkeeping items that may be required to be kept for no less than three years and made available upon request of a FOG Inspector or District representative.

- Recommendations: No recommended modifications at this time.

Inspection and Enforcement Authority – FOG Producers (SSMP 7.E)

- Level of Effectiveness: Ordinance 09-01 provides District inspectors right of entry to access and inspect FSEs and take enforcement actions for non-compliance. As identified in **Section 3.1** above, FOG is not a significant contributor the number or volume of SSOs. If FOG were a significant contributor to SSOs, then it would be expected that the number of enforcement actions against FSEs contributing to the blockages might be higher. However, the low number of FOG-related SSOs correlates with the low number of FOG-related enforcement actions.
- Recommendations: No recommended modifications at this time.

FOG Characterization Assessment and Hot Spot Cleaning Schedule (SSMP 7.F)

- Level of Effectiveness: The District currently has 214 pipeline segments on the high frequency (hot spot) cleaning schedule. The cleaning schedule and records of cleaning are documented in the CMMS. The District's aggressive hot spot cleaning schedule has proven effective in limiting the number of SSOs due to FOG blockages.

A recommendation from the previous audit was to formalize (via SOP) the process of adding an asset to the High Frequency cleaning program. Though the process has yet to be formalized in an SOP, it is being practiced.

- Recommendations:
 - 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.

FOG Source Control Program (SSMP 7.G)

- Level of Effectiveness: Near the end of this audit period the District implemented its FOG Wastewater Discharge Permit (WDP) program as a means for FOG source control by applying incremental and progressive discipline if permit holders are in violation of the FOG ordinance until performance measurements are met.
- Recommendations: No recommended modifications at this time



5.8 System Evaluation and Capacity Assurance Plan

5.8.1 Compliance

Table 14. Compliance with SSS WDR D.13.viii - SECAP

SSMP Requirement	Compliance	Deficiencies
viii(a) Evaluate hydraulic deficiencies	Yes	-
viii(b) Establish design criteria	Yes	-
viii(c) Establish short- and long-term CIP	Yes	-
viii(d) Develop schedule of completion dates for CIP	Yes	-

5.8.2 Effectiveness of SSMP Elements and Recommended Modifications

Evaluation of Hydraulic Deficiencies (SSMP 8.A)

- Level of Effectiveness: The District maintains its own hydraulic model and hydraulic modeling software. The evaluation of the hydraulic capacity of the sewer trunk system using this model identified potential deficiencies and recommended improvements at different trigger points. Having the hydraulic model maintained by the District allows for continuous use of the model results and periodic updates of the hydraulic model as needed. This is an effective method for evaluating potential deficiencies in the system and assuring capacity for customers under various scenarios. The District updated the hydraulic model in May, 2015.
- Recommendations: No recommended modifications at this time

Design Criteria (SSMP 8.B)

- Level of Effectiveness: The District established a 10-year 6-hour peak wet weather design storm for the evaluation of existing collection system components and sizing of new collection system components. A 10-year 6-hour peak wet weather design storm has been effective in accounting for the impact of wet weather events on the system and planning for system improvements.
- Recommendations:
 - No recommended modifications at this time

Short-term and Long-term Capital Improvement Plan (SSMP 8.C)

- Level of Effectiveness: The District SECAP and hydraulic model includes the identification of short and long-term Capital Improvement Projects (CIP) to meet current and future build-out flow projections for trunk sewers larger than 10 inches. The District experienced a capacity-related SSO during this audit period. The hydraulic model identified this deficiency. The Capital Improvement project to resolve the deficiency was at Plan Approval stage and was scheduled to go out to bid within two months of the spill. It is anticipated the project will be completed by December 2018. The short-term and long-term CIPs identified in the model to address hydraulic deficiencies are effective in assuring that the system has sufficient capacity in-step with future growth.



Per recommendation in the previous audit, the District has begun the process of collecting flow data model the smaller collector pipes

- Recommendations:
 - No recommended modifications at this time.

Capital Improvement Program Schedule (SSMP 8.D)

- Level of Effectiveness: The hydraulic model identified a number of sewer trunk segments that need additional capacity as new development continues to connect to the collection system. The schedule of capital improvement projects to address potential hydraulic deficiencies in the system has been effective in identifying the order and timing in which projects need to be accomplished. At the time of this audit, one large-scale project is under construction, one is nearing Plan Approval, and a third is in Plan Development.
- Recommendations: No recommended modifications at this time.

5.9 Monitoring, Measurement, and Program Modifications

5.9.1 Compliance

Table 15. Compliance with SSS WDR D.13.ix – MMM

SSMP Requirement	Compliance	Deficiencies
ix(a) Maintain metrics to prioritize SSMP activities	Yes	-
ix(b) Measure effectiveness of SSMP elements	Yes	-
ix(c) Assess preventative maintenance program	Yes	-
ix(d) Update elements based on evaluations	Yes	-
ix(e) Identify and illustrate SSO trends	Yes	-

5.9.2 Effectiveness of SSMP Elements and Recommended Modifications

Relevant Information to Prioritize SSMP Activities (SSMP 9.A)

- Level of Effectiveness: The District tracks a number of metrics to prioritize SSMP activities and assess the associated production and level of effort. This information is used as a tool to prioritize future work.
- Recommendations: No recommended modifications at this time.

Metrics to Monitor Effectiveness of SSMP (SSMP 9.B)

- Level of Effectiveness: The District currently tracks performance using a number of metrics. However, none of these metrics are associated with specific SSMP elements. Very few of these metrics have identified targets or goals. These metrics can be used to measure the level of effort, but without associating metrics to specific SSMP elements and without setting goals for each metric it is difficult to monitor the effectiveness of the SSMP.



- Recommendations:
 - 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. The ultimate measure of SSMP effectiveness is the limiting of SSOs. However, setting goals for activities related to various SSMP elements and measuring performance against those goals, will help determine how success in those elements, relates to the overall effectiveness of limiting SSOs. Associating metrics with specific SSMP elements will allow for direct assessment of those elements and provide consistency in their evaluation in future audits. Assign the individuals responsible for the various elements of the SSMP to complete the Performance Indicator Assessment Forms that are developed for their SSMP elements. A sample Performance Indicator Assessment Form is included in **Appendix 7.1** of this internal audit. Performance Indicator Assessment Forms can be developed for each metric and assessed periodically by the person responsible, according to the suggested audit frequency for that metric. At the time of the next internal SSMP audit, the completed Performance Indicator Assessment Forms can be used to evaluate the effectiveness of SSMP elements and included as attachments to the audit. This is a carry over from the last audit.

Metrics to Assess Preventative Maintenance Program (SSMP 9.C)

- Level of Effectiveness: The District tracks a number of metrics to quantitatively evaluate the performance of the activities of the preventative maintenance program. This is effective because it allows the District to monitor the performance of particular activities over time and against other metrics (e.g., staffing levels, SSO trends) to determine correlations between the data. However, not all of the metrics have an associated goal, which makes it difficult to assess whether or not that activity is meeting the intended result.
- Recommendations:
 - Develop goals for metrics that track preventative maintenance activities and identify the person/position responsible for tracking data against those goals.

SSMP Performance Monitoring and Update Process (SSMP 9.D)

- Level of Effectiveness: The District tracks revisions/updates to the SSMP using Track Changes in Microsoft Word and is maintained by the Superintendent. The Track Changes to the SSMP is effective in documenting the changes to the SSMP over time. Track Changes allows for multiple individuals to suggest modifications to the SSMP. The Track Changes program documents who made the suggested changes and when and allows for the suggested changes to be accepted or rejected in the next SSMP revision.
- Recommendations: No recommended modifications at this time.

SSO Trends – Frequency, Location and Volume (SSMP 9.E)

- Level of Effectiveness: The District tracks a number of key pieces of information in order to attempt to identify trends in SSO data. Appendix C in the SSMP summarizes key pieces of information (e.g., pipe age, pipe material, pipe diameter, SSO cause) about each SSO event as well as the results of SSO trending to communicate the highest priorities for attempting to minimize the number and severity of SSOs.



- Recommendations: No recommended modifications at this time.

5.10 SSMP Program Audits

5.10.1 Compliance

Table 16. Compliance with SSS WDR D.13.x – SSMP Program Audits

SSMP Requirement	Compliance	Deficiencies
x Conduct periodic audits	Yes	-

5.10.2 Effectiveness of SSMP Elements and Recommended Modifications

Periodic SSMP Internal Audits (SSMP 10)

- Level of Effectiveness: The District conducts an internal audit biennially with a primary focus on the evaluation of system metrics towards the elimination of preventable SSO and the reduction of the impact of those SSOs that do occur. The internal audit is helpful in identifying areas of improvement. The past audit identified enhancements and plans were put in place to improve the SSMP. This audit has specified additional recommended enhancements. The regular review of the SSMP assures the usefulness of the planned activities.
- Recommendations:
 - Post this SSMP internal audit to the District website.
 - Schedule the next internal SSMP audit for July - August 2019.
 - Use the format of this audit for future internal audits.



5.11 Communication Program

5.11.1 Compliance

Table 17. Compliance with SSS WDR D.13.xi – Communications Program

SSMP Requirement	Compliance	Deficiencies
xi(a) Communicate on a regular basis with the public and tributary/satellite systems regarding SSMP	Yes	-

5.11.2 Effectiveness of SSMP Elements and Recommended Modifications

Internal Communication – Staff and Board of Directors (SSMP 11)

- Level of Effectiveness:** The District communicates information about the SSMP and the related programs to the Board of Directors periodically through the General Manager. This communication is important to inform the Board of implementation and performance of the District against the SSMP.

The District communicates the implementation and performance of the SSMP to the public via the District website, quarterly billing statements, and the CIWQS database. It is difficult to assess the level of effectiveness of the communication of SSMP-related information because of the limited response.

The District does not have any satellite agencies that discharge into the District’s collection system. However, the District discharges into the City of Roseville collection system and the Placer County SMD No.2 collection system. The City of Roseville and Placer County are regional partners with the District in the South Placer Wastewater Authority (SPWA). Tri-yearly meetings with the regional partners have proven effective to discuss the ongoing coordination between the tributary/satellite systems.
- Recommendations:** No recommended modifications at this time.



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 4.1**. **Table 20** is a summary of the results of that evaluation.

Table 18. 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 each SSMP elements effectiveness as described in **Section 4.2**. **Table 21** is a summary of those recommendations.

Table 19. Summary of Audit Recommendations

SSMP Section	Recommendation	Timeline for Completion
1	Continue to evaluate Strategic Plan goals for effectiveness as it relates to the SSMP.	Annually
4.A	Continue to inquire about the availability and updates to surrounding jurisdiction's storm drain maps.	Annually
4.B	Finalize SOPs currently in DRAFT form and continue to develop pertinent SOPs. Consider using outside resources to complete this task. Periodically evaluate the (new) lower Lateral Program for effectiveness	Jul 2019
4.C	Periodically evaluate the progress of 5-Year CIP and R&R Plans. Adjust as necessary	Annually
4.D	Develop a schedule for regular training on the specific equipment that the District owns. The schedule 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 the previous audit.	Jul 2019
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.	Dec 2018
9.C	Develop goals for metrics that track preventative maintenance activities and identify the person/position responsible for tracking data against those goals.	Dec 2018
10	Post this SSMP internal audit to the District website. Schedule the next internal SSMP audit for July - August 2019. Use the format of this audit for future internal audits.	Jul 2018



SECTION 7 Appendices

7.1 Appendix – Sample Performance Indicator Assessment Form



7.1 Appendix – Sample Performance Indicator Assessment Form

Goal:		O&M PM – SSS WDR-D.iv.b		
Responsible Person (RP):		Field Supervisor		
<u>Description of Performance Indicator(s) (PIs):</u>				
The PIs listed below will be used to measure the effectiveness of the activities outlined in the District SSMP related to the requirements of section D.iv.b of the SSS WDR.				
<u>PIs and Data Analysis Methods:</u>				
<p>1. <i>Number of manholes cleaned and visually inspected.</i> Discussion & Scoring Criteria: This PI measures the number of manholes that maintenance staff clean and inspect each year.</p> <p>2. <i>Miles of sewer main flushed each year.</i> Discussion & Scoring Criteria: This PI measures the miles of collection system flushed with high velocity vacuum cleaning as part of the preventative maintenance program. Cleaning the entire collection system (~250 miles) every 5 years is acceptable per industry standards, every 3 years is good, and every 2 year is excellent. The District consistently tracks this data throughout the year.</p>				
PI	Excellent	Good	Acceptable	Below Goal
1	> 1200	> 1050	> 900	< 900
2	> 125	> 85	> 50	< 50

Performance Tracking		
PI	Measured Value	Performance Assessment Comments / Related Information / Justification
1		
2		

SAMPLE

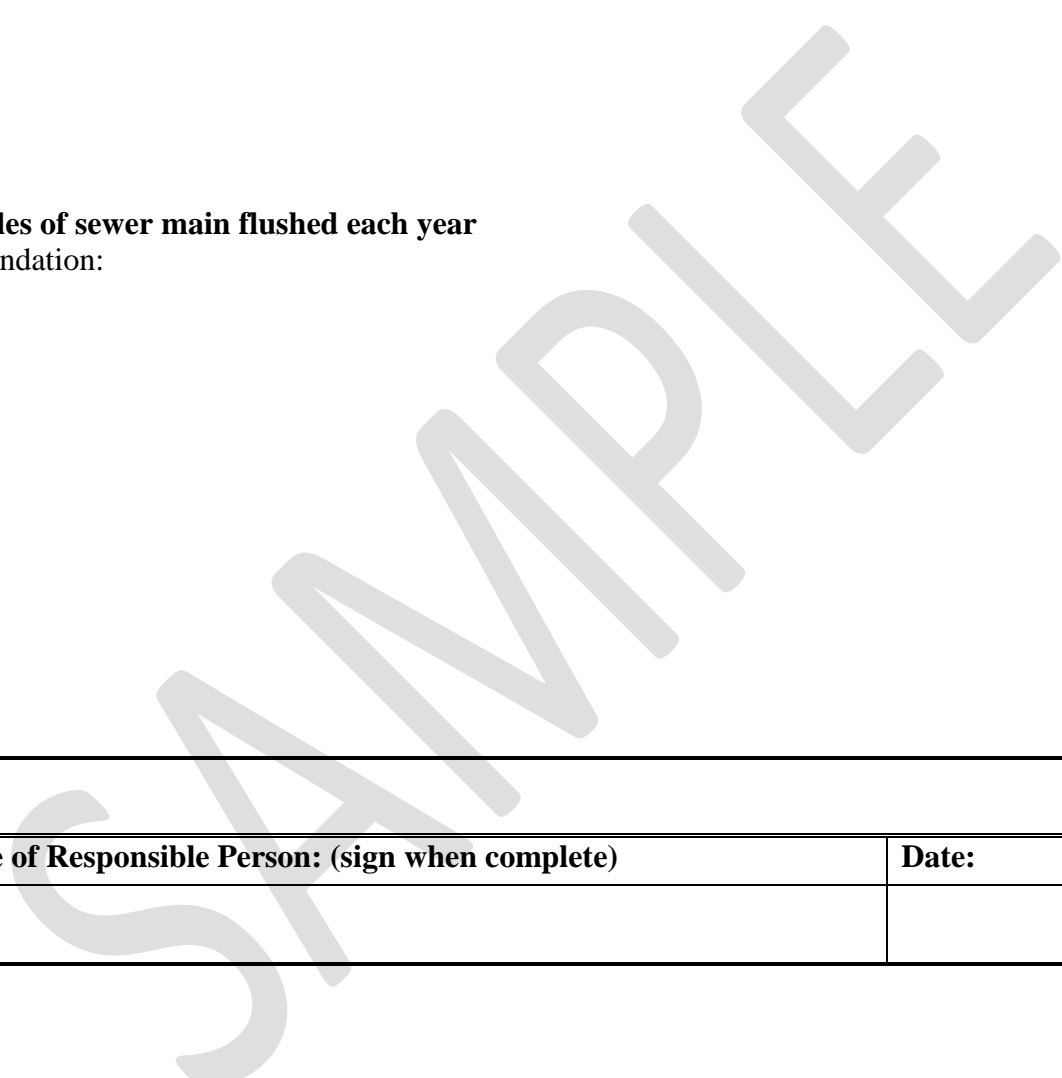
Recommendations for Programmatic or SSMP Updates

PI 1 – Number of manholes cleaned and visually inspected

Recommendation:

PI 2 – Miles of sewer main flushed each year

Recommendation:



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



7.2 Appendix – List of SSOs During the Audit Period and Associated Data

SPMUD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Location	L05-054	430 Main	3468 Los Flores	462 Main	T18-F08	I09-002	I09-002	K12-020	LL Capacity	5390 Paragon	5911 Becky	4840 Grove	5307 Heritage	8352 Joe Rodgers	5465 S. Grove	3561 Bankihead	T18-054
Category	3	3	3	3	3	3	1	3	1	3	3	3	3	3	3	3	3
Start Time	8/3/15 5:30 AM	11/25/15 11:00 AM	11/29/15 12:16 PM	12/2/15 10:20 AM	12/5/15 5:00 AM	12/30/15 2:00 PM	3/12/16 7:00 PM	1/5/17 9:30 AM	2/20/17 6:15 PM	3/5/17 11:45 AM	3/7/17 7:00 PM	3/17/17 8:00 AM	3/17/17 8:51 AM	6/5/17 6:30 AM	6/21/17 12:00 PM	6/24/17 12:00 PM	6/28/17 8:30 AM
Arrive Time	8/3/15 9:30 AM	11/25/15 4:21 PM	11/30/15 12:25 PM	12/2/15 10:45 AM	12/9/15 8:35 AM	12/30/15 5:45 PM	3/14/16 2:43 PM	1/5/17 10:55 AM	2/20/17 7:25 PM	3/5/17 12:23 PM	3/8/17 8:51 AM	3/17/17 2:58 PM	3/17/17 8:45 AM	6/5/17 9:07 AM	6/22/17 10:27 AM	6/25/17 12:35 PM	6/28/17 10:30 AM
Notified Time	8/3/15 9:16 AM	11/25/15 3:42 PM	11/30/15 12:16 PM	12/2/15 10:25 AM	12/9/15 8:30 AM	12/30/15 5:09 PM	3/14/16 2:32 PM	1/5/17 10:30 AM	2/20/17 7:15 PM	3/5/17 11:55 AM	3/8/17 8:21 AM	3/17/17 2:50 PM	3/17/17 8:20 AM	6/5/17 8:18 AM	6/22/17 10:13 AM	6/25/17 11:45 AM	6/28/17 10:30 AM
End Time	8/3/15 9:45 AM	11/25/15 4:55 PM	11/30/15 12:25 PM	12/2/15 10:53 AM	12/9/15 8:47 AM	12/30/15 6:13 PM	3/14/16 3:14 PM	1/5/17 11:25 AM	2/21/17 5:52 AM	3/5/17 12:06 PM	3/8/17 9:20 AM	3/17/17 3:24 PM	3/17/17 8:51 AM	6/5/17 9:45 AM	6/22/17 10:30 AM	6/25/17 12:35 PM	6/28/17 11:08 AM
Volume	13	33	300	23	600	260	5513	27	36997	33	47	**	2	34	20	23	79
Water	0	0	0	0	0	0	4727	0	36997	0	0	0	0	0	0	0	0
Retrieve	6	33	0	0	6	100	786	27	0	31	0	0	0	2	0	0	0
Start - Arrive	0:4:00	0:5:21	1:0:09	0:0:25	4:3:35	0:3:45	1:19:43	0:1:25	0:1:10	0:0:38	0:13:51	0:6:58	0:0:00	0:2:37	0:22:27	1:0:35	0:2:00
Notify - Arrive	0:0:14	0:0:39	0:0:09	0:0:20	0:0:05	0:0:36	0:0:11	0:0:25	0:0:10	0:0:28	0:0:30	0:0:08	0:0:25	0:0:49	0:0:14	0:0:50	0:0:00
Duration (d:hh:mm)	0:4:15	0:5:55	1:0:09	0:0:33	4:3:47	0:4:13	1:20:14	0:1:55	0:11:37	0:0:21	0:14:20	0:7:24	0:0:00	0:3:15	0:22:30	1:0:35	0:2:38

CIWQS = 0

** Nothing in file to indicate spill volume

CIWQS = 2

Cell N, 10 = Spill occurred after First Responder Arrival -6 minutes

CIWQS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Start Time	8/3/15 5:30 AM	11/25/15 11:00 AM	11/29/15 12:16 PM	12/2/15 10:20 AM	12/5/15 5:00 AM	12/30/15 2:00 PM	3/12/16 7:00 PM	1/5/17 9:30 AM	2/20/17 6:15 PM	3/5/2017 11:45	3/7/17 7:00 PM	3/17/17 8:00 AM	3/17/17 8:51 AM	6/5/17 6:30 AM	6/21/17 12:00 PM	6/24/17 12:00 PM	6/28/17 8:30 AM
Notified Time	8/3/15 9:16 AM	11/25/15 3:42 PM	11/30/15 12:16 PM	12/2/15 10:25 AM	12/9/15 8:30 AM	12/30/15 5:09 PM	3/14/16 2:32 PM	1/5/17 10:30 AM	2/20/17 7:15 PM	3/5/2017 11:55	3/8/17 8:21 AM	3/17/17 2:50 PM	3/17/17 8:20 AM	6/5/17 8:18 AM	6/22/17 10:13 AM	6/25/17 11:45 AM	6/28/17 10:30 AM
Arrive Time	8/3/15 9:30 AM	11/25/15 4:21 PM	11/30/15 12:25 PM	12/2/15 10:45 AM	12/9/15 8:35 AM	12/30/15 5:45 PM	3/14/16 2:43 PM	1/5/17 10:55 AM	2/20/17 7:25 PM	3/5/2017 12:23	3/8/17 8:51 AM	3/17/17 2:58 PM	3/17/17 8:45 AM	6/5/17 9:07 AM	6/22/17 10:27 AM	6/25/17 12:35 PM	6/28/17 10:30 AM
End Time	8/3/15 9:45 AM	11/25/15 4:55 PM	11/30/15 12:25 PM	12/2/15 10:53 AM	12/9/15 8:47 AM	12/30/15 6:13 PM	3/14/16 3:14 PM	1/5/17 11:25 AM	2/21/17 5:52 AM	3/5/2017 12:06	3/8/17 9:20 AM	3/17/17 8:05 AM	3/17/17 8:51 AM	6/5/17 9:45 AM	6/22/17 10:30 AM	6/25/17 12:35 PM	6/28/17 11:08 AM
Start - Arrive	0:4:00	0:5:21	1:0:09	0:0:25	4:3:35	0:3:45	1:19:43	0:1:25	0:1:10	0:0:38	0:13:51	0:6:58	0:0:00	0:2:37	0:22:27	1:0:35	0:2:00
Notify - Arrive	0:0:14	0:0:39	0:0:09	0:0:20	0:0:05	0:0:36	0:0:11	0:0:25	0:0:10	0:0:28	0:0:30	0:0:08	0:0:25	0:0:49	0:0:14	0:0:50	0:0:00
Duration (d:hh:mm)	0:4:15	0:5:55	1:0:09	0:0:33	4:3:47	0:4:13	1:20:14	0:1:55	0:11:37	0:0:21	0:14:20	0:0:05	0:0:00	0:3:15	0:22:30	1:0:35	0:2:38

QC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Start - Arrive	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00
Notify - Arrive	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00
Duration (d:hh:mm)	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00	0:7:19	0:0:00	0:0:00	0:0:00	0:0:00	0:0:00

Corrective Actions

CCTV inspected and hydro-cleaned line segment. No indication of defect. No further action required

Put on periodic PM. Repaired defect in pipe

Line placed on periodic PM. Line was hydro-cleaned and CCTV inspected. Line identified as needing to be replaced, not scheduled yet

Performed corrective repair

No need to change cleaning frequency. Contacted fast food owner regarding grease issues; a non-corrosive plug was installed in the cleanout

Notice of Violation was issued to JackOIn-the-Box

District inspectors required developer to CCTV pertinent line segments. Issued verbal warning to developer of consequences of a repeat offense

Updated ERP to address capacity spills. Project or remedy capacity deficiency is slated to go to bid within two months

Performed repair to resolve defect

Informed resident about "over-papering". Placed on periodic PM to CCTV inspect to ensure line is remaining clear

Performed repair of defect that caused the SSO

Performed repair of defect that caused the SSO; located and raised the PLCO

Replaced entire lower lateral

Performed repair of defect that caused the SSO; located and raised the PLCO

Replaced entire lower lateral

Performed repair of defect that caused the SSO