CITY OF ROSEVILLE
Sewer System Management Plan (SSMP)
Three-Year Audit for FY 18/19 – FY 20/21

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Prepared by: Michael Fisher, P.E., Water Works Engineers
Adam Correa, E.I.T., Water Works Engineers

Assisted by: Dan Pruden, City Wastewater Superintendent

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SECTION 1 Audit Objectives

This report covers the results of the required Sewer System Management Plan (SSMP) internal audit process for the City of Roseville (City) for fiscal years 2018-2019 (FY 18/19), 2019-2020 (FY 19/20), and 2020-2021 (FY 20/21). The goal of the SSMP is to provide a written framework and plan for properly managing, operating, and maintaining all parts of the sanitary sewer system (collection system). The SSMP will help the City minimizing sanitary sewer overflows (SSOs) and complying with the 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 evaluates the effectiveness of the SSMP, by reviewing the performance of the collection system against the performance measures used by the City to evaluate compliance with requirements of the SSS WDRs.

The intention of the SSMP audit is to help the SSMP evolve over time as a "living document" that City continually adjusts after identifying potential enhancements and implementing changes to address any deficiencies to the management, operation and maintenance of the City sanitary sewer collection system. Recently, the SWRCB is proposing a statewide sanitary sewer system order reissuance. The proposed reissuance, which will be built on the existing general order, with a primary focus of reducing the statewide spill volume. This audit briefly discusses the proposed reissued order by the SWRCB and considers recommendations for future compliance.

The City is committed to completing the SSMP internal audit (Audit) on a biennial basis that is consistent with the procedure outlined in Appendix J-1 of the SSMP. The City completed its first Audit for years 2010 and 2011, but subsequently contracted Water Works Engineers (WWE) to conduct the FY 11/12-12/13, FY 13/14-14/15, and FY15/16-17/18 audits. This audit reviews results of the FY 18/19, FY 19/20, and FY 20/21, which is a three-year program. The key objective of this Audit is to review the SSMP compliance, implementation, and effectiveness. This report includes the following key tasks:

1. Review records from previous Audits and confirm deficiencies have been addressed (SECTION 2).
2. Evaluate the City's historical SSO data and performance measures listed in the SSMP (SECTION 3).
3. Using a standardized audit procedure detailed in Section 4, identify deficiencies and provide recommendations that could improve the effectiveness of the SSMP and its compliance with the future reissue order.
4. Analyze the City's preventative maintenance (PM) and rehabilitation and replacement (R&R) programs as it relates to the operation and maintenance of the collection system (Section 5.4).
5. Review the Sanitary Sewer Overflow Emergency Response Plan (SSEORP) for SSOs and identify improvements as needed (Section 5.6).
6. Document all findings during the Audit and retain it on file (SECTION 6).

SECTION 2 Agency Background / System Information

The City of Roseville, in Placer County, is located approximately 16 miles north of the City of Sacramento. Along Interstate 80, Roseville is located adjacent to the City of Rocklin in the north-east and the City of Citrus Heights in the south. The City covers approximately 43 square miles near the base of the foothills of the Sierra Mountains. Typical elevations are within a range of 250 to 100 feet of sea level with an average slope across the City of 0.5% from east to west. Several streams flow through the City (i.e., Dry Creek, Pleasant Grove Creek, Kaseburg Creek, Linda Creek, Cirby Creek, Secret Ravine, and Miners Ravine.).

The City is responsible for the operation and maintenance of a continually growing collection system that has grown over 6% since the last internal audit to now serve approximately 147,000 people. **Table 1** lists key information about the City collection system over the past three Audit periods.

Table 1 – Overview of Collection System

Audit	FY 11/12 – 12/13	FY 13/14 – 14/15	FY 15/16 – 17/18*	FY18/19-20/21*
Miles of Mainline	485.52	501.11	515.7	578.4
Miles of laterals (lower)	235.3	238	266	293
Pump stations	14	15	16	17
Sewer service lateral connections	41,568	43,619	47,638	51605
Population served	122,060	128,832	137,213	146590
WWC Staff	25	28	29	33
Annual Budget (FY1/ FY2/ FY3)	$3,400,000/ $3,800,00	$3,700,000/ $4,000,000	$5,069,000/ $5,279,0000	$5,572,264/$5,702,649/$6,258,201
Category 1 SSOs	2	0	1	0
Category 2 SSOs	75	0	1	0
Category 3 SSOs	-	89	85	114

*Three-year audit

The City treats wastewater conveyed through its collection system at two regional wastewater treatment plants that are both owned and operated by the City (i.e., Dry Creek and Pleasant Grove WWTPs). Two other satellite collection systems owned and operated by other agencies (i.e., South Placer Municipal Utility District and Placer County) discharge directly into the City's collection system. A small portion of the City's collection system discharges outside of Roseville and into the Sacramento Area Sewer District (SASD) collection system, which is treated at the Sacramento Regional WWTP. The City is a part of the Central Valley Region 5 (Sacramento sub-region) of the SWRCB.

2.1 Review of Last SSMP Audit

The previous audit for of the City SSMP was conducted by WWE for FY 15/16-17/18 and was completed in September 2019. In the last Audit, a list of approximately 54 recommended actions to address deficiencies or improve the effectiveness of the City SSMP were listed. **Table 2** summarizes identified deficiencies and associated action items, along with a description of the status of the task (i.e., Completed, Ongoing Updates, In/No Progress, Considered) outlined in the last SSMP audit. documents on the City's website and based on information from City staff.

Table 2 – Summary of Findings from the Last SSMP Internal Audit

Element	Action Item	Status
2 – Organization	Post Appendix A-1 – Roseville's SSMP Development Plan and Implementation Schedule on the website.	In Progress
	Modify Appendix B-1: Update City Council positions and add phone numbers (Mayor Carol Garcia, Vice Mayor Susan Rohan, City Attorney Robert Schmitt). Update Commissioners and phone numbers: Chair Blandon Granger, Vice Chair John Speight. Update Liaisons and phone numbers for EU Director Richard Plecker, and Secretary Cheryl Hammond. Update Principal EU engineer and phone number for Jason Shykowski. Update Administrative Analyst and phone number for Maurice Chaney.	Ongoing Progress
	Post Appendix Appendix B-1 – Personnel Responsible for SSMP Elements on the website.	No Progress
	Post Appendix Appendix B-2 – Personnel Responsible for SSO Reporting on the website.	No Progress
	Post Appendix Appendix B-3 – Personnel Responsible for Responding to SSOs Weekly Standby on the website.	No Progress
	Modify Figure 2-2 Flowchart: Update the WWC Divisions overflow emergency response plan chain of communication to match existing operations, whereby WWTP and LS staff and SCADA alerts should always call the 24-hour call center instead of WWC service staff. This was also included during the previous audit but has not been completed.	No Progress
	Include Figure 2-2 flowchart as Appendix F to the SSOERP (Appendix F-1) and mention in the text.	No Progress
3 - Legal Authority	Post Appendix C-1 – Pretreatment Program Enforcement Response Plan on the website.	No Progress
	Update the related links for Appendices C-3 and C-4 for sanitary sewer design and construction.	No Progress
	Post Appendix C-5 – Joint Exercise of Powers Agreement for the South Placer Wastewater Authority on the website.	No Progress
	Post Appendix C-6 – Agreement Regarding the Operation and Use of the South Placer Regional Wastewater Facilities on the website.	In Progress

	Post Appendix C-7 – Wastewater Service Agreement by Contract and Operating Agreement between SASD, SRCSD and City of Roseville on the website.	No Progress
4 - O&M	Post Appendix D-1 – City of Roseville Sewer Map Grid System on the website.	No Progress
	Post Appendix D-9 – Mapping Update Policy on the website.	No Progress
	Update SSMP Section 4.3 Overview with updated statistics about the City's service area, number of customers, miles of main, number of services, and number of lift stations. Also update the number of WWC employees.	Ongoing Progress
	Update Appendix D-2 – Maintenance Cleaning Schedule: Update with Maximo CCMS example and post on the website.	No Progress
	Update Appendix D-3 –CCTV Video Report and post on the website.	No Progress
	Update Appendix D-4 –SOP and post on the website.	No Progress
	Describe the process/procedure for evaluating available data (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections, etc.), conducting a risk assessment to determine the assets to be renewed, and developing the R&R plan with its associated data. This was also included during the previous audit but has not been completed.	No Progress
	Document the upcoming transition in responsibilities between WWC and EU Engineering in developing and operating the R&R plan by describing it in the SSMP. Confirm that field observations from WWC field crew are accounted for by EU Engineering when conducting risk assessment. This was also included during the previous audit but has not been completed.	No Progress
	Post Appendix D-8 – Technical Memorandum O&M Program SSMP Audit-Rehabilitation and Replacement Plan (Element IVC) on the website.	No Progress
	Update the CWEA website link.	No Progress
	Update Appendix D-5 – CWEA Certification Handbook Link.	No Progress
	Update and post Appendix D-6 – Equipment Inventory List on the website.	No Progress
	Update and post Appendix D-7 – Critical Replace Parts List on the website.	No Progress
5 - DPP	Update Appendix E-1 – Sanitary Sewer Design link.	No Progress
	Update Appendix E-2 – Sanitary Sewer System Construction link.	No Progress
	Post Appendix E-3 – Technical Memo, SSMP Preparedness Audit Design and Performance Provisions Element V on the website.	No Progress
6 - OERP	The WWC has developed a table of information specific to lift station response which includes all of the lift stations in the City and lists for each station; the average flow from the station, the wet well depth, the volume of the wet well, the available storage/downtime if the lift station goes down, the point at which a SSO will first occur if the lift station goes down, the assigned manhole for decanting if vacuum trucks are used to draw down the wet well, and the street location of the decant manhole. This information should be included as an Appendix in the OERP and the information for each lift station should be posted onsite at each respective lift station. This list should also be updated to incorporate new lift stations at Washington Blvd and 7600 Sierra College. This was also recommended during the previous audit but has not been implemented.	No Progress
	Modify Figure 6-2 – SSO Procedure Flow Chat, to report SSO category 1 larger than 1,000 gallons to Cal OES within 2 hours per WDR requirements (currently if > 50,000 gal).	No Progress
	Post Appendix F-1 – SSOERP on the website along with corresponding attachments	No Progress
	Modify SSOERP Appendix C – Water Quality Sampling Procedures to the meet the requirements of the amended MRP.	No Progress

	○ Account for spill travel time in the surface water and scenarios where monitoring may not be possible to safety concerns or access restrictions once an SSO has stopped. This may be estimated by dropping floatable debris, for instance, and measuring the time required to travel a certain distance. This was also recommended during the previous audit but has not been implemented. Expand minimum sampling parameters to include appropriate bacterial indicators that have been specifically listed in the beneficial uses of the City's waterways or more broadly listed by the regional Basin Plan. This was also recommended during the previous audit but has not been implemented.	
	Modify SSOERP Appendix C – Water Quality Sampling Procedures to include a list of all of the required equipment that the employee would need to conduct proper sampling. This was also recommended during the previous audit but has not been implemented.	No Progress
7 – FOG Control Program	Modify the EU Engineering GIS database to include hotspot assets and FSEs and add them as layers to the maps that WWC receives.	No Progress
8 – SECAP	Modify Appendix I-1 of the SSMP to indicate that the system evaluation and capacity assurance plan will be reviewed and updated every 10 years. This was also recommended during the previous audit but has not been implemented.	No Progress
9 – MMM	Incorporate system and financial measures recommended in Table 18, from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP.	No Progress
	Update Appendix I-4 and modify it to include document location and review frequency.	No Progress
	Modify I-4 – Key Performance Indicators (KPI) FOG section, to reflect the change in responsibilities from IWS to WWC.	No Progress
	Consider addition of recommended PM measures in Table 18, from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP. The goal is to produce a single living KPI document that can be used to evaluate the effectiveness of SSMP elements.	No Progress
	Update Appendix I-3 – SSO History (last update 2013).	No Progress
	Update SSO trends data in Appendix I-4 – KPI Benchmarking.	In Progress
	Consider addition of recommended SSO measures in Table 18, from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP. The goal is to produce a single living KPI document that can be used to evaluate the effectiveness of SSMP elements.	No progress
10.2	Post this SSMP internal audit to the City website.	Complete
10.2	Schedule the next internal SSMP audit for July-August of 2021.	Complete
10 – SSMP Program Audits	Develop a description manual to replace Appendix J-1 and J-2 of the SSMP, to support each KPI element. This manual describes required information for KPI monitoring, including but not limited to: ○ Elements definition ○ How to fill each KPI items ○ Personnel responsible ○ Review frequency	No Progress
	Update the SSMP change log and add it as an appendix to the SSMP, documenting all changes made to the SSMP since its last certification, indicating when an element was changed/updated and who authorized the change. An example of a change log is shown at Appendix 7.5. This was also recommended during the previous audit but has not been implemented.	No Progress
	Document the submittal process for proposed changes to the SSMP. The process	No Progress

	may include the following; identify the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification, the process for review, and the process for updating the SSMP on the City website and documenting changes. This was also recommended during the previous audit but has not been implemented.	
11 – Communication	As of September 2013, the State Water board amended the MRP of the SSS WDR and the City produced a training PowerPoint to City staff, council, and stakeholders regarding the update. Attach the PowerPoint to the SSMP website. This was also recommended during the previous audit but has not been implemented.	No Progress
	Post Appendices K-1 – WWC WDR awareness Program and K-2 – Sanitary sewer regulations/WDR PowerPoint presentations on the website.	No Progress
	Update Appendix K-3 – Two EU newsletters FOG/medications links.	No Progress
	Update SSMP Appendix K-4 – FOG Outreach Program with marketing Plan budget & spending and post it on the website. Consider an additional metric to be used in the KPI that reflects the City's performance in terms of FOG outreach program. Few additional metrics are recommended in **Table 18**. This was also recommended during the previous audit but has not been implemented.	No Progress
	Add the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD) as an appendix. This was also recommended during the previous audit but has not been implemented.	No Progress
	Modify SSMP 11.4 to include the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD). This was also recommended during the previous audit but has not been implemented.	No Progress
	Post Appendix K-5 – Funding agreement related to south placer regional wastewater facilities on the website.	No Progress

2.2 Review of FY 18/19, FY 19/20, and FY 20/21

The City has prioritized eliminating SSOs from the collection system and was successful preventing Category 1 and Category 2 SSOs during the FY 18/19, FY 19/20 and FY 20/21. The city experienced one Category 3 spill during FY 18/19 which resulted in a 409 gallon spill, which occurred on a lower lateral, caused by roots. Two Additional Category 3 spills over 100 gallons, from which, one occurred on a lower later (caused by pipe failures) and the other occurred on a mainline, which was caused by cross connection with a conduit. All remaining spills were less than 100 gallons, of which, seven of them occurred on mainlines.

SECTION 3 SSO Trends

3.1 Historical SSO Data

A total of 114 Category 3 SSOs occurred during the audit period FY 18/19 (31 SSOs), FY 19/20 (33 SSOs), and FY 20/21 (50 SSOs). **Appendix 7.1** of this report includes the date, location, type, volume, volume recovered, and recovery percentage of total volume of each SSO spill.

One of the City-defined tasks of the Audit is to compare the information submitted to the publicly available California Integrated Water Quality System (CIWQS) database with internal City records. The WWC Superintendent verifies that SSO data in CIWQS is accurate and matches the SSO Field Report Forms. **Table 3** shows an organized view of key data present in the CIWQS and City internal records and shows discrepancies, for the three-year audit period. As shown, Table 3 shows how accurately CIWQS data reflect the City's records, with few exceptions, details of which are listed in **Appendix 7.2**. The information presented in the "Internal Records" column represents a summarized view of various performance measures maintained by the City.

Table 3 – CIWQS and City SSO Historic Data

SSO Historical Data since last SSMP Internal Audit	CIWQS Data FY 18/19	Internal Records FY 18/19	CIWQS Data FY 19/20	Internal Records FY 19/20	CIWQS Data FY 20/21	Internal Records FY 20/21
Total number of potential SSO service calls received	-	288	-	523	-	325
Total number of SSOs reported	31	31	33	33	50	50
Total volume of SSOs [Gal]	869	869	580	520	825	823.7
Total volume of SSOs that reached waters of the state [Gal]	0	0	0	0	0	0
Volume of SSOs recovered [%]	38%	38%	84%	85%	64%	64%
Average SSO response time [h:mm]	0:19	0:21	0:22	0:21	0:18	0:18
Average SSO duration time [h:mm]*	3:59	4:00	4:35	1:47**	6:13	6:12

* Including long-duration SSO events (> 3 hours long) that increased the average SSO duration.

**Missing one City Internal report with large Spill duration. Spill was entered in CIWQS.

The following section investigates the City's historical SSO data to identify potential SSO trends to provide insight into measuring the effectiveness of the City SSMP and future improvements in reducing SSOs. **Figure 1** highlights the category and number of SSOs since FY 06/07. The SWRCB defined three new SSO categories as of September 13th, 2013. A category 1 SSO is currently defined as a spill of any volume that reaches surface water. A Category 2 SSO is currently defined as a spill greater than or equal to 1,000 gallons that does not reach surface water. A Category 3 SSO is currently defined as a spill less than 1,000 gallons that does not reach surface water. **Figure 1** shows an increasing trend on the total number of SSO events per year since FY 16/17 and is limited to Category 3 SSOs only.

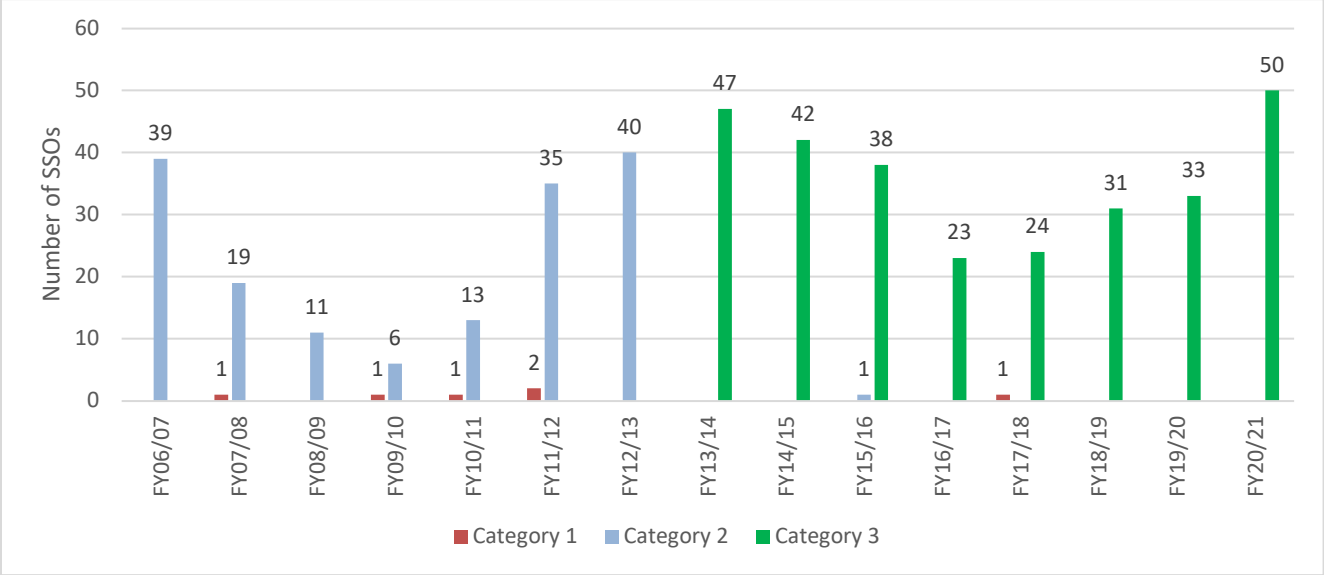

Figure 1 – Number of SSOs per Fiscal Year

With the goal of minimizing the spill volume, another valuable source of analysis is comparing average gallons spilled per SSO across fiscal years. **Figure 2** demonstrates average volume per SSO event since 2007, which equally weight out all spills and shows an annual average. Although, the number of SSO events has increased over the years (See **Figure 1**), **Figure 2** indicates that the average spill volume per incident has decreased during this audit period. It appears that the average volume was higher due to several outliners including the three high-volume spills occurring in FY18/19 (two spills) and FY 19/20 (one spill). As mentioned, during FY 18/19 one of these high-volume incidents occurred by a pipe/structure failure (105 gallons, all of which was recovered). The second spill was caused by roots in a lower lateral (409 gallons, zero gallons recovered). In FY 19/20 one large spill occurred in a mainline caused by Contractor in a mainline (154 gallons, 149 gallons recovered). Given the past records, **Figure 2** shows an average value of about 38 gal/SSO throughout the years. After reviewing the City's performance measures, it appears that the resulted high average volumes were most likely incidental driven and were not related to the SSMP effectiveness or the system performance. In addition, analysis of the City's SSO data showed that in about 21% of the events the City's staff did not see an active spill, in other words, these spills were ended before arrival of the staff. These incidents correspond to 11% of the total spill volume during this audit period.

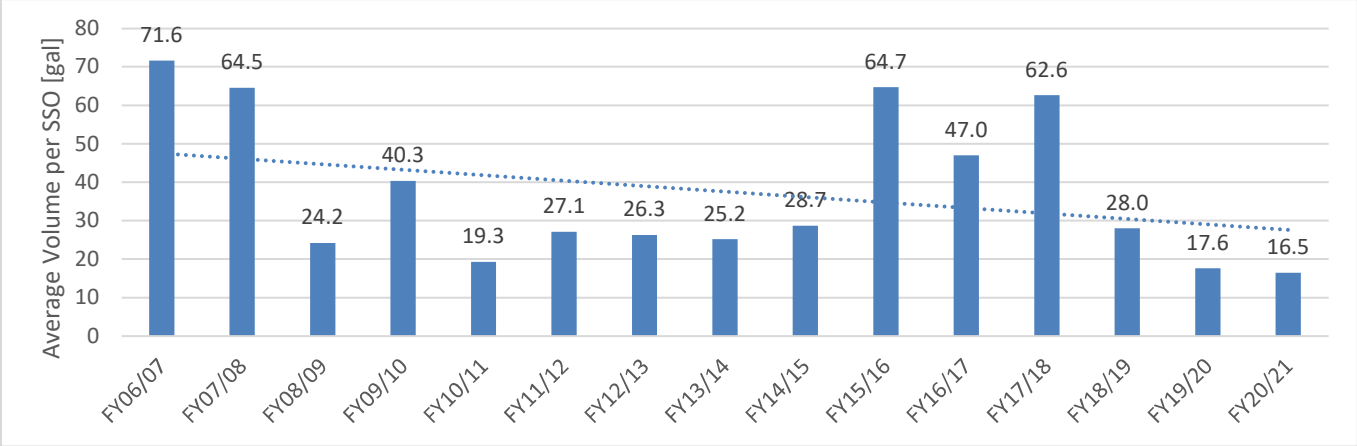

Figure 2 – Average Gallons per SSO

Here, City's average number of SSOs and average spill volume per SSO per 100 miles of sewer pipeline are compared with the results from sub-region Central Valley –Sacramento (part of State Water Control Board Region 5) and California (State), to provide regional context and insight into the City's collection system performance. **Table 4** summarizes these findings, gathered from the SWRCB's annual performance reports. These reports and their related data can be found online at the following link:

https://www.waterboards.ca.gov/water_issues/programs/sso/#prgm_docs

https://www.waterboards.ca.gov/board_info/exec_dir_rpts/

The board has not published similar data for fiscal years later than 2016. However, as shown in **Table 4**, the City average SSOs/100 miles of sewer pipe is far below the average of all municipal agencies in the Central Valley Sacramento region 5, and is lower than the State. The City's average spill volume/100 miles of sewer pipe is an order of magnitude smaller than the state, which highlights how effective the City's SSO preventative maintenance and response program has been.

Table 4 – Regional Comparison of SSO Data

Fiscal Year	Average # of SSOs per 100 miles			Average Spill Volume per 100 miles [gallons]		
	City	Region 5	State	City	Region 5	State
2011/12	4.88	12.4	4.28	132	3,396	13,925
2012/13	5.85	12.72	4.38	154	4,371	8,194
2013/14	6.39	11.96	4.38	160	2,878	4,587
2014/15*	5.71	9.91	4.65	163	6,324	11,484
2015/16*	4.99	8.76	4.01	323	7,484	25,134
2016/17	2.94	Not Available		138	Not Available	
2017/18	3.20	Not Available		196	Not Available	
2018/19	3.56	Not Available		100	Not Available	
2019/20	3.79	Not Available		67	Not Available	
2020/21	3.76	Not Available		95	Not Available	

* These values do not include laterals in the total system size.

Table 5 demonstrates the leading causes of SSOs in this audit period compared to the previous audit period (FY 15/16-17/18). Generally, given the three-year period, the number of SSOs caused by roots has increased, but the volume has decreased by 16%, which results in a lower average SSO volume. Also, FOG related events have decreased during this period. Furthermore, no Capacity-caused SSOs was observed in this audit period. However, SSOs caused by debris and pipe/structure failure have experienced a notable increase in quantity of spills. With debris spills increasing by 53%, while Pipe Failures increased by 157%.

Table 5 – Leading Causes of SSOs in FY18-21 (results from FY15-18 in parenthesis)

By Number		By Volume		By Average Volume per SSO	
Cause	**Number**	**Cause**	**Gallons**	**Cause**	**Gallons**
Roots	70 (62)	Roots	1325.5 (1576)	Roots	19 (25)
FOG	1 (2)	FOG	10 (67)	FOG	10 (34)
Debris	23 (15)	Debris	475.2 (908)	Debris	21 (61)
Pipe Failure	18 (7)	Pipe Failure	244 (2278)	Pipe Failure	14 (325)
Capacity	0 (0)	Capacity	0 (0)	Capacity	0 (0)
Others*	2 (1)	Others*	155 (342)	Others*	78 (342)
Total	114 (87)	Total	2212.7 (5171)	Total	141 (787)

*Includes one vacuum truck incident for this audit, and one contractor incident with a bored conduit.

To track the leading SSO cause, WWE summarized the average SSO volume per cause for the past four audit periods, results are shown in **Figure 3**. The actions planned because of this SSMP Audit will target the leading causes to most effectively reduce the number and more importantly spill volume of SSOs. As shown here, the FY 18/19 - FY 20/21 period has experienced similar average volume of root caused SSOs, lower FOG related spill volumes, and similar average volume for debris caused spills. However, as shown here, pipe failure and incidental SSOs volumes have decreased during this period which would typically correspond with SSOs occurring on residential lateral or small diameter pipes.

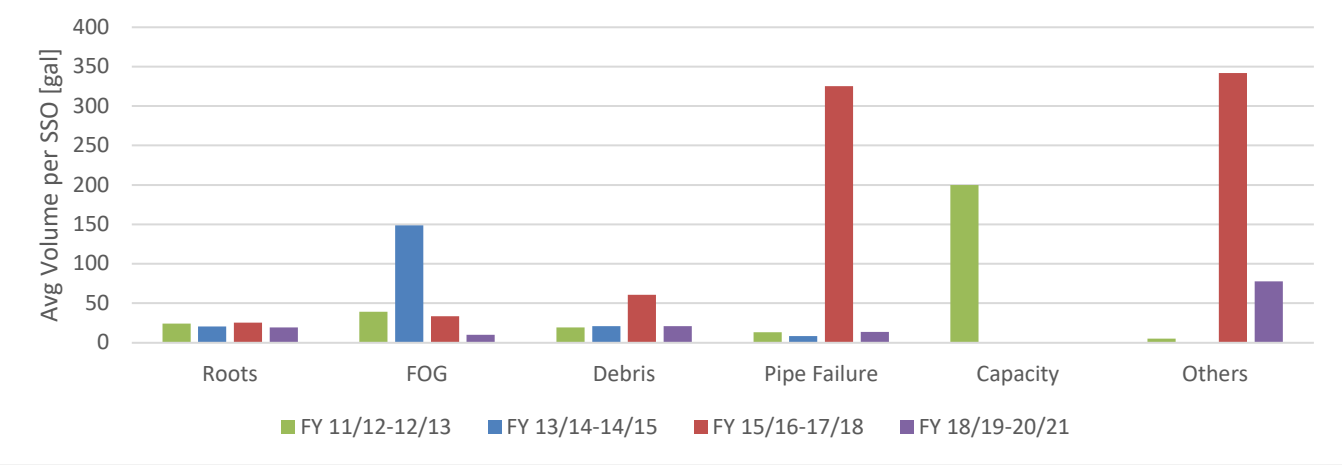

Figure 3 – Average SSO Volume per Cause

3.2 Performance Measures

To achieve proper operation and management of the sanitary sewer system and to prevent SSOs, the City utilizes multiple performance measures to assess the effectiveness of the SSMP. While the City may use other performance measures for evaluation purposes, the following measures are typically used:

- SSO Rate (SSOs per 100 miles of collection system piping per year)
- Number of SSOs for each cause (roots, FOG, debris, pipe failure, capacity, lift station failures, etc.)
- Average SSO volume (gallons)
- Percentage of SSOs greater than 100 gallons (%)
- Percentage of SSOs reported as Category 1 (%)
- Percentage of SSO volume recovered (%)
- Percentage of SSO volume reaching a surface water (%)

The City's SSO records were queried to analyze each performance measure from FY 11/12 to FY 20/21 and the data is shown in **Table 6** below. Overall, there was an increase in the number of SSOs during this audit period, however the City's SSO average has decreased compared to previous years, which was due to smaller-volume incidents, caused by roots and debris.

Table 6 – Performance Measures

Performance Measures		FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21
SSO Rate, SSOs/100 mi		4.88	5.85	6.39	5.71	4.99	2.94	3.20	3.56	3.79	5.74
SSO Cause	FOG	0	1	4	1	2	0	0	1	0	0
	Roots	18	30	32	31	30	20	12	20	17	33
	Debris*	8	2	8	2	4	2	9	8	12	3
	Pipe/Structure Failure	6	4	2	7	3	1	3	2	3	13
	Vandalism	1	0	0	0	0	0	0	0	0	0
	Capacity	0	2	0	0	0	0	0	0	0	0
	Construction	0	0	0	1	0	0	0	0	0	0
	Unknown/Other	2	3	1	0	0	0	1	0	1	1
TOTAL # of SSO		35	42	47	42	39	23	25	31	33	50
Average SSO Vol (gal)		27	26	25	29	65	47	63	28	18	16
% of SSOs > 100 gal		2.8%	2.3%	2.1%	4.7%	2.6%	4.3%	8.0%	6.5%	3.0%	0.0%
Category 1 % of Total SSOs		0%	7%	0%	0%	0%	0%	22.3%	0%	0%	0%
% of Spill Volume Recovered		99%	63%	94%	93%	95%	91%	54%	38%	84%	64%
% of Spill Vol Reaching Surface Water		0%	37%	0%	0%	0%	0%	0.4%	0%	0%	0%

*Includes non-dispersible and rags

SECTION 4 Audit Procedure

In accordance with SSS WDRs Section D.13, the primary SSMP audit objective is to focus on evaluating the effectiveness of implementing the SSMP and the City's compliance with the SSMP requirements identified in the SSS WDRs Order. Also, according to recent SWRCB WDR workshops, it is expected that the statewide general order reissuance, with the primary focus on reducing spill volume, emphasis on the following:

- **Requirements focused on spill volume:** Although the total number of spills has increased over the past few years, the CIWQS data has shown that the state experienced lower volume of spills. While, majority are caused by tree roots, the proposed reissuance will likely require enrollees to demonstrate system-specific spill reduction programs.
- **Improved Data Quality**: With the goal of enhancing data accuracy, additional measures are being considered to provide higher quality spill volume data, such as maintaining certified operators and emphasizing on staff training.
- **Enhanced Order Enforceability**: To address poor performing systems and those with lack of SSMP implementation.
- **To Incentivize Order Compliance**: To recognize and acknowledge systems with good performance.
- **Effective Planning for System Resilience**: To ensure effective and adaptive planning for spill reduction.

This section details the procedures used to meet the existing order, while considering future expectations.

4.1 Review of SSMP Compliance

This Audit assessed the City's SSMP against the requirements outlines in the SSS WDR. The subsections of **SECTION 5** listed below are organized by SSMP elements. Each subsection contains a table which lists the SSS WDR section D.13 requirements and City's level of compliance of the SSMP with that requirement. The compliance status of the City'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 any compliance deficiencies, then an explanation of the deficiency is given. Each deficiency will have a recommended SSMP enhancement, which may include action items, adjustments, and/or timelines of the planned completion.

4.2 Review of SSMP Effectiveness

After the SSMP compliance assessment compared to SSS WDR requirements, an evaluation of the effectiveness of the SSMP elements has been conducted to comply with the requirements for SSMP audits per subsection D.13 of the SSS WDR. The discussion review if the plan outlined for each section is being followed, and how effective the plan is at reaching the desired objectives. Recommendations will be made where appropriate based on the results of this Audit to identify tasks to improve the effectiveness of SSMP activities. Performance metrics will be used wherever possible to measure the effectiveness of the SSMP elements.

This section will not repeat the information and plans presented in each section of the SSMP and is intended to evaluate the effectiveness of the stated plans for each SSMP element. The reader should reference the City's SSMP to obtain the information referenced by this Audit.

A summary of the recommended modifications made through this Audit is included in **SECTION 6**.

SECTION 5 Audit of SSMP Elements

This section evaluates all elements of the City's SSMP. Each section of this chapter is associated with one of the eleven elements of the SSMP in accordance with SS WDR section D.13 requirements. Each element is evaluated for compliance and effectiveness described above in 4.1 and 4.2 respectively.

5.1 Goals

5.1.1 Compliance

Table 7 – Compliance with SSS WDR D.13.i - Goals

SSMP Requirement	Compliance	Deficiencies
i Properly manage, operate, and maintain all portions of the City's wastewater collection system.	Yes	-

5.1.2 Effectiveness of SSMP Elements and Recommended Modifications

Roseville Goals (SSMP 1.2)

- Level of Effectiveness: The City currently has seven goals identified in the SSMP. The goals of the City recorded in the SSMP have been effective in guiding the City's activities to support the objective of the SSS WDR to protect the waters of the state.

- Recommendations: Post Appendix A-1 – Roseville's SSMP Development Plan and Implementation Schedule on the website. This was also included during the previous audit but has not been completed.

5.2 Organization

5.2.1 Compliance

Table 8 – 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

List Legally Responsible Official (LRO) (SSMP 2.1)

- Level of Effectiveness: The City has Ken Glotzbach (EU Director) and Dan Pruden (Wastewater Collections Superintendent) listed in CIWQS as LROs. Todd Jordan (Process Engineer) is listed as a data

submitter. Appendix B-1 of the SSMP is not currently publicly accessible. The current organization of data submitters and LROs has proven effective in reporting SSOs to meet the requirements of the September 2013 amended Monitoring and Reporting Program.

- Recommendations:
    - Modify Appendix B-1: Update City Mayor, Vice Mayor, City Attorney, and City Council positions and add phone numbers (Mayor Krista Berrnasconi, Vice Mayor Bruce Houdesheldt, City Attorney Michelle Sheidenberger, Councilmember Tracy Mendonsa). Update Commissioners and phone numbers: Chair Elaine Webb, Vice Chair James knox, Commissioners: Edward Belski, John Delancy, Richard Demarchi, Einar Maisch. Update Liaisons and phone numbers for EU Director Richard Plecker, and Secretary Pam Walsh. Update Assistant EU Director Ken Glotzbach, Wastewater Collection Superintendent Dan Prudent, Waste Water Collection Supervisor positions, Principal EU engineer and phone number for Jason Shykowski. Update Administrative Analyst and phone number for Maurice Chaney.
    - Update and Post the following Appendices on the website:
        - Appendix B-1 – Personnel Responsible for SSMP Elements This was also included during the previous audit but has not been completed.
        - Appendix B-2 – Personnel Responsible for SSO Reporting This was also included during the previous audit but has not been completed.
        - Appendix B-3 – Personnel Responsible for Responding to SSOs Weekly Standby. This was also included during the previous audit but has not been completed.

SSMP Responsibility Organization Chart (SSMP 2.2)

- Level of Effectiveness: The SSMP Responsibility Organization Chart (SSMP Figure 2-1) is current in the SSMP and lists a descriptive definition of each individual's responsibilities. The chart is effective in defining the work flow and responsibilities of the individuals as well as departments within the City of Roseville's operations with relation to the SSMP. The narrative of the general position description is outlined in Section 2.2 of the SSMP.

- Recommendations: No recommendations at this time.

Chain of Communication Reporting Chart (SSMP 2.3)

- Level of Effectiveness: The internal notification contact chart is current and readily available to all wastewater utility district staff. The city of Roseville has a 24-hour call center, standardized answering script and procedures, and a full-time staff wastewater utility customer service representative. The individual's job is to respond to any service calls including but not limited to: backups, SSOs, smell complaints, etc. This has been an effective and well-utilized service, as service calls have increased and the average SSO response time has remained below the 40-minute target. Only 6 SSO response times were above 40 minutes during the audit period (0:42:00, 0:45:00, 0:46:00, 0:41:00, 0:43:00, and 1:05:00) which totaled 51 gallons in spills and the remaining 95% of the responses were under 40 min.

- Recommendations:
  - Modify Figure 2-2 Flowchart: Update the WWC Divisions overflow emergency response plan chain of communication to match existing operations, whereby WWTP and LS staff and SCADA alerts should always call the 24-hour call center instead of WWC service staff per Appendix B-3. This was also included during the previous audit but has not been completed.
  - Include Figure 2-2 flowchart as Appendix F to the SSOERP (Appendix F-1) and mention in the text. This was also included during the previous audit but has not been completed.

5.3 Legal Authority

5.3.1 Compliance

Table 9 – 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 City	Yes	-
iii(d) Limit the discharge of FOG and other debris	Yes	-
iii(e) Enforce any violation of City ordinances	Yes	-

5.3.2 Effectiveness of SSMP Elements and Recommended Modifications

Industrial Pretreatment Program (SSMP 3.2)

- Level of Effectiveness: The Industrial Waste Section (IWS) administers the Pretreatment Program Enforcement Response Plan and implements enforcement procedures specified by the U.S. EPA in accordance with 40CFR 403.5 (f) (5). The IWS has the authority to permit and monitor significant industrial users (SIUs) and small commercial/industrial dischargers. The implementation of the Pretreatment Program Enforcement Response Plan has been effective in providing the City the authority to control and prevent illicit discharges to the collection system.

- Recommendations: Post Appendix C-1 – Pretreatment Program Enforcement Response Plan on the website. This was also included during the previous audit but has not been completed.

Municipal Code and Design and Construction Standards (SSMP 3.3)

- Level of Effectiveness: The City's design and construction standards regulate the preparation of plans for construction of additions/improvements to the sewer. The Roseville Municipal Code (RMC) section 14.12.040 requires that building sewer and connection into the public sewer system conform to the requirements of the building and plumbing code or other applicable rules and regulations of the City. The RMC also requires an installation of a lateral line clean out at the point of connection with the public sewer. The City design and construction standards and the RMC section 14.12.040 have been effective in providing the City the legal authority to properly design and construct the sewers and connections.

- Recommendations: Post Appendices C-2, C-3, and C-4 for Municipal Code, sanitary sewer design and construction.

Municipal Code – Sewer Access Authority (SSMP 3.4)

- Level of Effectiveness: The Charter in the RMC, Article X Sec. 10.01 designates the authority to access City owned and operated facilities, either within or outside its corporate limits, number of activities including, but not limited to maintenance, inspection, and repair related to sewage collection. The authority gives legal access to all City-owned sewer facilities. The City has not had issues to date with lack of access to facilities based on legal authority. The current legal authority to access sewer facilities has been effective in supporting the goals of the SSMP.

- Recommendations: No recommended modifications at this time.

Municipal Code – FOG (SSMP 3.5)

- Level of Effectiveness: The RMC chapter 14.14 is a robust FOG ordinance that lists regulatory requirements, fees, administrative requirements, and authority to enforce regulatory compliance. This ordinance is effective in identifying the required equipment and BMPs for FSEs as well as indicating the authority of the City to enforce the FOG requirements.

- Recommendations: No recommended modifications at this time.

Municipal Code – Enforcement Authority (SSMP 3.6)

- Level of Effectiveness: The RMC section 14.12.060 authorizes the City to penalize violators of the City's code requirements. At the discretion of the City attorney, an individual may be charged with an infraction or a misdemeanor. The authority to penalize infractions that may cost City resources has proven effective to maintain proper use of the wastewater collection system.

- Recommendations: No recommended modifications at this time.

Inter-Agency Agreements and Satellite Systems (SSMP 3.7)

- Level of Effectiveness: The City maintains a Joint Exercise of Powers Agreement for the South Placer Wastewater Authority and Agreement Regarding the Operation and use of the South Placer Regional Wastewater Facilities. In addition, the City has an Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD).

- Recommendations: Post the following Appendices on the website:
    - Appendix C-5 – Joint Exercise of Powers Agreement for the South Placer Wastewater Authority. This was also included during the previous audit but has not been completed.

- Appendix C-6 – Agreement Regarding the Operation and Use of the South Placer Regional Wastewater Facilities. This was also included during the previous audit but has not been completed.
- Appendix C-7 – Wastewater Service Agreement by Contract and Operating Agreement between SASD, SRCSD and City of Roseville. This was also included during the previous audit but has not been completed.

5.4 Operation and Maintenance Program

5.4.1 Compliance

Table 10 – 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	The City does have an R&R plan in place, but additional improvement should be implemented (see below)
iv(d) Training	Yes	The City provides regular training but additional improvements to the training program should be implemented (see below)
iv(e) Equipment and critical replacement parts	Yes	-

5.4.2 Effectiveness of SSMP Elements and Recommended Modifications

Roseville Collection System Maps (SSMP 4.2)

- Level of Effectiveness: The city maintains electronic and hard copy maps of the sanitary sewer system and storm drain system. Updates to the electronic map system are translated to the field crew trucks via single sheet prints, if required. Full hard copy mapbooks are updated on a yearly basis. The City Mapping Update Policy is followed to ensure mapping is correct and completed in GIS and made available to the required users. The mapping policy document is added to the SSMP as an appendix and is posted to the City's SSMP website page.

- Recommendations: Post the following Appendices on the website:
  - Appendix D-1 – City of Roseville Sewer Map Grid System. This was also included during the previous audit but has not been completed.
  - Appendix D-9 – Mapping Update Policy. This was also included during the previous two audits but has not been completed.

Roseville Preventive Operations & Maintenance Activities (SSMP 4.3)

- Level of Effectiveness: WWC engages in various programs to complete routine preventative maintenance activities, which include jet cleaning, lateral eeling, chemical root control, CCTV inspections, visual inspections, and lift station maintenance.

  According to **Table 6**, the City experienced an increase in root-caused SSOs during the last year of the audit period, which is explained by the decrease of total sewer lateral mechanical cleaning (eeled), as shown in **Table 11**. The City outperformed preventative maintenance targets and past performance measures as evident in **Table 11,** with the exception of Sewer main flushed per year (miles) during FY 18/19, and FY 19/20, which may have been related to an equipment maintenance issue (see **Table 12**). Other performance measures or benchmarks are reviewed in full in the recommendations of **Section 5.9**.

Table 11 – Performance Measures related to SSS WDR D.13.iv(b)

Performance Measure	Target	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21
Total number of sewer maintenance field staff	NA	23	24	24	24	26	24	26	26
Sewer main flushed per year (miles)	250	330	284	248	295	283	226.1	235.9	296.14
Sewer laterals mechanically cleaned (eeled) per year (miles)	8	13.89	14.69	14.77	7.41	1.07	268	265	74
Average high velocity cleaning per crew per day [LF]	1670	2393	2922	2618	3115	2998	N/A	N/A	N/A
Average cost of hydro cleaning [$/LF]	0.36	0.30	0.32	0.33	0.29	0.32	0.34	0.34	0.34
Average cost of sewer mechanical cleaning [$/LF]	1.60	1.23	1.20	0.77	0.94	1.66	0.30	0.30	0.30

- Recommendations:
  - Update SSMP Section 4.3 Overview with updated statistics about the City's service area, number of customers, miles of main, number of services, and number of lift stations. Also update the number of WWC employees.
  - Update the following Appendices and post on the website:
    - Appendix D-2 – Maintenance Cleaning Schedule: Update with Maximo CCMS example. This was also included during the previous audit but has not been completed.
    - Appendix D-3 – CCTV Video Report. This was also included during the previous audit but has not been completed.

- Appendix D-4 – SOP. This was also included during the previous audit but has not been completed.

Rehabilitation and Replacement Plan (SSMP 4.4)

- Level of Effectiveness: The City regularly CCTV inspects pipelines using the national Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) coding standard. The City evaluates the risk of failure for each asset based on the various data sources it maintains (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections) and assigns high risk assets in a ranked Rehabilitation and Replacement (R&R) Plan. If an R&R project is not completed in one year, then it is rolled over to the next. The City maintains a 5-year list of planned R&R CIP projects.

  The city creates an asset group in their Maximo CCMS, based on their condition assessment and PACP scores. This ongoing list is prioritized and provided to Tech Services, when CIP budget is prepared, to put a CIPPP project together. Also, while performing routine hydro work in the grids, the vactor group performs manhole inspections of each asset. Once there are enough manholes that require rehabilitation, the City produces a list with asset IDs that will be sent to Tech Services for manhole Rehabilitation CIP. In the past 9 years, the City has not discovered a substantial number of manholes to develop a manhole CIP project.

  In accordance with the City-utilized performance measures related to inspection and R&R program activities as displayed in **Table 12**, the City has met or exceeded majority of inspection targets during this audit program. However, total miles of mainline rehabilitated during this three-year were less than the target. SSOs caused by structural failure during the audit period are overlaid with the City's 2018 I/I study and shown in **Appendix 7.3.** As shown, most of these spills occurred in regions with older pipes, such as region 5, 15, and 15A. These regions are also known for their higher I/I response and capacity issues during wet seasons. The City has been actively performing I/I analysis and smoke testing to identify system defects in these regions, results of which are incorporated in CIP decision makings.

Table 12 – Performance Measures related to SSS WDR D.13.iv (c)

Performance Measure	Target	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21
Total miles visually inspected per year (not CCTV)	0.25	0.25	0.25	0.18	0.25	0.25	0	0	0
Lateral CCTV inspected per year [miles]	16	14.69	26	35.71	32.51	36.14	29.74	22.46	27.88
Main CCTV inspected per year [miles]	30	53.27	65	84.32	59.71	64.1	119.9	94.65	38.57
Laterals rehabilitated per year [number]	50	90	43	60	85	89	74	82	110
Laterals rehabilitated or replaced per year [miles]	0.25	0.39	0.16	0.27	0.66	0.42	0.45	0.46	0.62
Mains Rehabilitated or replaced per year [miles]	5	2.65	6	0	0	1.07	0.05	0.09	3.4
Average Cost of CCTV (lateral) [$/LF]	1.34	1.46	1.11	1.15	1.04	1.00	1.24	1.29	1.28
Average cost of CCTV (main) [$/LF]	0.53	0.55	0.41	0.41	0.36	0.40	0.60	0.75	1.85

- Recommendations:
  - Describe the process/procedure for evaluating available data (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections, etc.), conducting a risk assessment to determine the assets to be renewed, and developing the R&R plan with its associated data. This was also included during the previous two audit but has not been completed.
  - Document the upcoming transition in responsibilities between WWC and EU Engineering in developing and operating the R&R plan by describing it in the SSMP. Confirm that field observations from WWC field crew are accounted for by EU Engineering when conducting risk assessment. This was also included during the previous two audits but has not been completed.
  - Post Appendix D-8 – Technical Memorandum O&M Program SSMP Audit-Rehabilitation and Replacement Plan (Element IVC) on the website. This was also included during the previous audit but has not been completed.

Training (SSMP 4.5)

- Level of Effectiveness: The WWC requires employees be certified with CWEA, DMV, CPR, First Aid, Confined Space Policy, Gas Detector Policy, as well be trained in equipment safety, maintain OSHA rules, and review material safety data sheets.

  The existing training program has been effective in supporting a well-trained staff. Over this audit period WWC has reported 10 on the job accidents in FY 18/19, 8 in FY 19/20, and 6 in FY 20/21, which are more than previous audits however the number of accidents has declined year over year. WWC strives for

zero-on-the-job accidents and has weekly tail-gate training meetings and monthly training sessions where WWC staff is trained in part via various SOPs.

- Recommendations: Update the following links:
  - The CWEA website link. This was also included during the previous audit but has not been completed.
  - Appendix D-5 – CWEA Certification Handbook link. This was also included during the previous audit but has not been completed.

Equipment and Critical Replacement Parts (SSMP 4.6)

- Level of Effectiveness: WWC maintains a list of equipment and critical replacement parts inventory in Appendix D of the SSMP. The critical replacement parts list is 100% stocked, up to date, and is maintained by the Material Technician at Dry Creek WWTP. The equipment and critical replacement parts inventory and upkeep is effective and ensures that a lift station critical part failure can be quickly mitigated.

- Recommendations: Update and post the following Appendices on the website:
  - Appendix D-6 – Equipment Inventory List. This was also included during the previous audit but has not been completed.
  - Appendix D-7 – Critical Replace Parts List. This was also included during the previous audit but has not been completed.

5.5 Design and Performance Provisions

5.5.1 Compliance

Table 13 – 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 5.2)

- Level of Effectiveness: The City's design and construction standards are available on the website and the online SSMP documentation lists their location. These designs and construction standards are effective in ensuring that new or rehabilitated infrastructure is designed and constructed in an acceptable manner.

- Recommendations: Update Appendix E-1 – Sanitary Sewer Design link. This was also included during the previous audit but has not been completed.

Sanitary Sewer System Construction and Performance Provisions (SSMP 5.3)

- Level of Effectiveness: The City's construction and design standards include procedures and requirements for the testing of new/rehabilitated assets and has been effective in ensuring that recently constructed assets perform as expected.

- Recommendations:
  - Update Appendix E-2 – Sanitary Sewer System Construction link. This was also included during the previous audit but has not been completed.
  - Post Appendix E-3 – Technical Memo, SSMP Preparedness Audit Design and Performance Provisions Element V on the website. This was also included during the previous audit but has not been completed.

5.6 Overflow Emergency Response Plan

5.6.1 Compliance

Table 14 – 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 staff and contractor training	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	No	SSOERP does not meet certain water quality monitoring requirements of the amended MRP document

5.6.2 Effectiveness of SSMP Elements and Recommended Modifications

Notification Procedures (SSMP 6.2)

- Level of Effectiveness: The average SSO response time during the audit period was 20 minutes, with 21 minutes for FY 18/19, 21 minutes for FY 19/20, and 18 minutes for FY 20/21 (see **Table 3**). These response times are much faster than the City target response time of 40 minutes and indicates that the notification procedures employed the City are effective in facilitating a rapid response from the City's first responders.

- Recommendations: No recommended modifications at this time.

Response Program (SSMP 6.3)

- Level of Effectiveness: SSO response procedures are documented in Appendix F-1 Section 2 of the SSMP and are summarized in the flow chart in Figure 6-2 of the SSMP and Appendix F-1 SSOERP. The flow chart uses a series of yes/no questions to guide SSO responders in quickly identifying the right sequence of decisions and actions to properly assess and mitigate an SSO. This chart is simple and effective in explaining the process in which to mitigate an SSO.

  During the audit period, the average SSO volume spilled was 21 gallons, with an average 62% recovered from the total SSO volume. Similarly, the average SSO duration length was 4:55 hours long, however there were 20 long-duration SSOs (over 3 hours) that caused the average SSO duration length to increase. One of these SSOs in FY 20/21 spilled from a lateral for 94 hours and resulted in volume spilled of 1.5 gallons. In all these instances, the City was notified very late, and once notified, stopped all long duration SSOs in under 30 minutes. The average City response time to SSO calls during the audit period was 20 minutes, and the average time it took to stop the SSO (SSO mitigation) once on-site was just under 5 minutes. These statistics demonstrate that the City has been effective in responding and mitigating SSOs.

- Recommendations:
  - The WWC has developed a table of information specific to lift station response which includes all of the lift stations in the City and lists for each station; the average flow from the station, the wet well depth, the volume of the wet well, the available storage/downtime if the lift station goes down, the point at which a SSO will first occur if the lift station goes down, the assigned manhole for decanting if vacuum trucks are used to draw down the wet well, and the street location of the decant manhole. This information should be included as an Appendix in the OERP and the information for each lift station should be posted onsite at each respective lift station. This list should also be updated to incorporate new lift stations at Washington Blvd and 7600 Sierra College. This was also recommended during the previous two audits but has not been implemented.
  - Modify Figure 6-2 – SSO Procedure Flow Chat, to report SSO category 1 larger than 1,000 gallons to Cal OES within 2 hours per WDR requirements (currently if > 50,000 gal). This was also recommended during the previous audit but has not been implemented.
  - Post Appendix F-1 – SSOERP on the website along with corresponding attachments. This was also recommended during the previous audit but has not been implemented.

Regulatory Notification Procedure (SSMP 6.4)

- Level of Effectiveness: The Superintendent and Utility Manager are the legally responsible officials (LRO) for certifying SSO reports submitted to CIWQs. The Superintendent and Supervisor are also responsible for reporting the SSOs to RWQCB, OES, and Placer Environmental Health Department as required. This section is effective in conveying the responsibility the LRO in reporting SSOs to the proper authorities.

- Recommendations: No recommended modifications at this time.

Staff and Contractors Training (SSMP 6.5)

- Level of Effectiveness: Each WWC employee is required to complete the SSO response procedure training updates and review of SSO training are included in the weekly tailgate meeting throughout the year. They are also trained on the various SOPs implemented within WWC. Contractors are also required to implement the procedures identified in the SSO training prior to working within the collection system. As evidenced by the fast response and mitigation times, the WWC staff's training has been effective.

- Recommendations: No recommended modifications at this time.

Emergency Response Coordination (SSMP 6.6)

- Level of Effectiveness: WWC employees are required to complete the Emergency Action plan training annually. This covers HAZ WOPER first responders and Roseville's Incident Command System (ICS). These process, procedures, and response systems are also reviewed via weekly safety tail gate meetings. These training sessions have been effective way to prepare staff to deal with hazardous waste and materials.

- Recommendations: No recommended modifications at this time.

Spill Mitigation and Containment Procedure (SSMP 6.7)

- Level of Effectiveness: Appendix F-1 of the SSMP includes an SSOERP which includes an SOP for estimating spill volumes, containment, and mitigation of spills. The new amended Monitoring and Reporting Program (MRP) requirements implemented in September 2013 require a robust water quality monitoring plan that must account for spill travel time in surface water, among several new requirements. The City's current SSOERP Appendix C Water Quality Sampling Procedures document does not meet these requirements.

- Recommendations:
    - Modify SSOERP Appendix C – Water Quality Sampling Procedures to the meet the requirements of the amended MRP.
        - Account for spill travel time in the surface water and scenarios where monitoring may not be possible to safety concerns or access restrictions once an SSO has stopped. This may be estimated by dropping floatable debris, for instance, and measuring the time required to travel a certain distance. This was also recommended during the previous audit but has not been implemented.
        - Expand minimum sampling parameters to include appropriate bacterial indicators that have been specifically listed in the beneficial uses of the City's waterways or more

broadly listed by the regional Basin Plan. This was also recommended during the previous audit but has not been implemented.

- Modify SSOERP Appendix C – Water Quality Sampling Procedures to include a list of all of the required equipment that the employee would need to conduct proper sampling. This was also recommended during the previous audit but has not been implemented.

5.7 FOG Control Program

5.7.1 Compliance

Table 15 – 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	-

5.7.2 Effectiveness of SSMP Elements and Recommended Modifications

Public Education Plan (SSMP 7.2)

- Level of Effectiveness: The City has developed and operates a comprehensive FOG outreach program to residents, restaurants, and the plumbing community on the proper disposal of FOG. The main objective is to educate the City of Roseville residents and restaurants on the proper disposal of FOG to meet or exceed outreach standards set forth in the State General WDR requirements. The program has implemented TV ads, flyers, bill inserts, and websites to convey the message of educating the public on the proper disposal of FOG and other substances. This system appears to be effective in educating the public on the proper disposal of FOG and other substances. Maurice Chaney is listed as responsible party for FOG public Education Plan in Appendix B-1.

- Recommendations: No modifications recommended at this time.

FOG Disposal Plan (SSMP 7.3)

- Level of Effectiveness: During the past audit periods the Industrial Waste Section (IWS) oversaw the FOG disposal plan with permitted Food Service Establishment (FSE), however all FOG program-related responsibilities transitioned to WWC in 2016. The City currently has 421 FSEs that are required to and

have obtained a FOG wastewater discharge permit (FOG WDP). The same City regulations from the audit period are in place which require permittees to retain a minimum 3 years of documentation to prove the proper cleaning, maintenance, and removal of FOG from grease control devices and the disposal site location. The City provides information about the permitting process and permit applications on the City website (URL address below) as a resource for businesses and residences within the City. (https://livesewersmart.com/)

The FOG record keeping requirements for FSEs appear to be effective in that only 1 FOG-related SSOs occurred over the audit period.

- Recommendations: No modifications recommended at this time.

Record Keeping Requirements (SSMP 7.4)

- Level of Effectiveness: As discussed in the previous section, FOG control program responsibilities transitioned from IWS to WWC in 2016, but during the audit period, IWS operated the program. The City requires in RMC Section 14.14.260 that permitted FSEs retain logbooks on grease control device maintenance cycles, FOG hauling records, sampling data and sludge height monitoring in FOG control devices, BMPs, and records of private lateral SSOs and subsequent mitigation. The recordkeeping requirements and time frames identified in the RMC have enough information necessary for the City to enforce permit requirements of FSEs.

- Recommendations: No modifications recommended at this time.

Legal Authority to Prohibit SSOs and Blockages Caused by FOG Discharges (SSMP 7.5)

- Level of Effectiveness: The RMC Section 14.12.050 provides the City with a FOG ordinance and legal authority to require FOG interceptors when deemed necessary by the director. The ordinance prohibits FOG-related blockages and SSOs and limits the maximum allowable concentration of FOG in FSE discharges at the current level of 100 mg/L of wastewater. This ordinance is effective in providing the City with the tools necessary to minimize FOG discharges into the sewer system.

- Recommendations: No modifications recommended at this time.

BMP, Grease Removal Devices, Recordkeeping, and Reporting Requirements (SSMP 7.6)

- Level of Effectiveness: The City requires all FSEs that discharge FOG to acquire a FOG WDP permit which includes provisions for FSEs to maintain BMPs and grease interceptors, cleaning records, and to report private FOG-related SSOs or blockages. The FOG WDP requirements are effective in providing the City with the tools to limit FOG discharges into the sewer system.

- Recommendations: No modifications recommended at this time.

Inspection and Enforcement Authority – FOG Producers (SSMP 7.7)

- Level of Effectiveness: All FSEs that discharge FOG are required to obtain and comply with a City FOG WDP. Under the permit, the FSE must comply with the FOG ordinance as detailed under the RMC, and the City maintains the legal authority to physically inspect the FSE and determine if it is in compliance. The City possesses effective tools to regulate FOG discharges via a robust FOG ordinance which also requires an effective FSE inspection program. Under oversight from WWC, the City plans on inspecting at least 294 FSEs each fiscal year During this audit, the city documented 0 FSE inspections for FY 18/19, 0 inspections for FY 19/20, and 221 inspections for FY 20/21. The lack of inspections could be due to equipment or due to Covid Pandemic however since only one SSO was caused by FOG, the FOG inspection and enforcement authority element of the SSMP has been effective.

- Recommendations: No modifications recommended at this time.

FOG Characterization Assessment and Hot Spot Cleaning Schedule (SSMP 7.8)

- Level of Effectiveness: The City has been effective in limiting FOG-related SSOs to one during the three-year audit period by identifying and placing assets impacted by FOG as a last resort on the hot-spot, high frequency 3-month cleaning list. If the City encounters abnormal FOG levels in a pipe it will first reach out to FSEs and residents that it thinks may be contributing to it and distribute pamphlets to them to minimize FOG discharges. If that does not solve the problem, then the asset is put on the hot-spot list. Approximately 60% of the 90 hot-spot assets have FOG-related issues that require significant City resources to clean every 3 months.

- Recommendations:
    - Modify the EU Engineering GIS database to include hotspot assets and FSEs and add them as layers to the maps that WWC receives.

FOG Control Program Measures (SSMP 7.9)

- Level of Effectiveness: The City has established that all FOG-producing FSEs acquire a FOG WDP which limits discharge of FOG, requires proper O&M records, hauling record, BMPs, and other conditions. The FOG Control Program measure provides the City's with an effective tool to limit FOG discharges from FSEs.

- Recommendations: No modifications recommended at this time.

5.8 System Evaluation and Capacity Assurance Plan

5.8.1 Compliance

Table 16 – 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 Process – Capacity Enhancement Projects (SSMP 8.2)

- Level of Effectiveness: The City has developed two hydraulic simulation models to identify peak flows in the collection system in 2006. In addition, the City developed a new hydraulic model and System Evaluation and Capacity Assurance Plan (SECAP) in 2017, which was done by Woodard and Curran. The modeling efforts conducted in 2006 and 2017 have been effective in evaluating the system and planning for future growth, which is evident from no capacity-deficiency-related SSOs during this audit period. In 2018, Water Works Engineers (WWE) conducted a follow up I/I study upon the existing 2017 model to further analyze results and identify basins and assets with high I/I response. The results of the 2018 I/I study is being actively used by the City as their I/I reduction program base.

- Recommendations: Modify Appendix I-1 of the SSMP to indicate that the system evaluation and capacity assurance plan will be reviewed and updated every 10 years. This was also recommended during the previous two audit but has not been implemented.

Design Criteria (SSMP 8.3)

- Level of Effectiveness: The City established a 10-year, 24-hour peak design storm for the hydraulic wet weather loading of the existing collection system along with flow generation factors based on water use records and flow monitoring data. Based on the lack of capacity-related SSOs during the audit period, it appears the City's capacity design criteria are effective.

- Recommendations: No recommended modifications at this time.

Capacity Enhancement Measures (SSMP 8.4)

- Level of Effectiveness: The SPWA Wastewater Systems Evaluation includes the identification of short and long-term Capital Improvement Project (CIP) to meet current and future wastewater flows. The new hydraulic model introduced in 2017 provides new capacity enhancement measures.

- Recommendations: No modifications recommended at this time.

Capital Improvement Program Schedule (SSMP 8.5)

- Level of Effectiveness: The City lists the goal of the CIP is to develop annual project bundles of approximately $1.5 to $2.0 million based on WWC condition assessment data and the hydraulic model CIP results and subsequent flow monitoring or studies. The CIP schedule is effective in identifying the tasks required to assure hydraulic capacity within the collection system.

- Recommendations: No modifications recommended at this time.

5.9 Monitoring, Measurement, and Program Modifications

5.9.1 Compliance

Table 17 – 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	The City does have performance indicators linked with SSMP elements, but additional improvements should be implemented (see below)
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

Utility Metrics to Prioritize SSMP Activities (SSMP 9.2)

- Level of Effectiveness: The WWC tracks four categories of utility metrics to monitor and measure the effectiveness of the various elements of this SSMP, which include system information, financial information, sewer maintenance, and performance measures. The city also tracks various performance measures related to various SSMP elements and they are summarized in **Appendix 7.4**. Appendix I has effectively been used to identify and track the specific metrics each of the City's four categories.

- Recommendations: No modifications recommended at this time.

Metrics to Monitor Effectiveness of SSMP (SSMP 9.3)

- Level of Effectiveness: The utility metrics listed in Appendix I-4 pertain to different overseeing departments within the City, and the coordination between these different Departments in measuring/monitoring various metrics and sharing results has been effective in ensuring the SSMP goals have been met.
- Recommendations:

- Incorporate system and financial measures recommended in **Table 18,** from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP.
- Update Appendix I-4 and modify it to include document location and review frequency.
- Modify I-4 – Key Performance Indicators (KPI) FOG section, to reflect the change in responsibilities from IWS to WWC.

Metrics to Assess Preventative Maintenance Program (SSMP 9.4)

- Level of Effectiveness: The City's current utility metrics Appendix I defines the frequency and type of utility metric that is being tracked to measure SSMP effectiveness. This is effective because it allows the city to monitor performance of particular activities and compare against SSO trends to determined data correlations. These metrics do not all have associated goals or targets, however, which makes it hard to track whether the activity is meeting the intended result.

- Recommendations: Consider addition of recommended PM measures in **Table 18,** from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP. The goal is to produce a single living KPI document that can be used to evaluate the effectiveness of SSMP elements.

SSMP Performance Monitoring and Update Process (SSMP 9.5)

- Level of Effectiveness: Individual staff oversee various SSMP element performance indicators. The City tracks all revisions/updates with the SSMP using a revision log that is maintained by the LRO. The log is effective documenting changes to the SSMP and encourages the use of the SSMP as a living document.

- Recommendations: No modifications recommended at this time.

SSO Trends – Frequency, Location and Volume (SSMP 9.6)

- Level of Effectiveness: The City tracks a comprehensive list of performance metrics that are included in Appendix I-4 of the SSMP and summarized in **Table 19**. This allows the City to quickly identify and respond to changing trends in SSOs over time. These metrics are monitored on a monthly, quarterly, semi-annual, and annual basis.

- Recommendations:
  - Update Appendix I-3 – SSO History (last update 2013).
  - Update SSO trends data in Appendix I-4 – KPI Benchmarking.
  - Consider addition of recommended SSO measures in **Table 18,** from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP. The goal is to produce a single living KPI document that can be used to evaluate the effectiveness of SSMP elements.

Table 18 –Recommended Additional Performance Indicators

Description	Performance Indicator	Unit
System Information	Total System Length	miles
	Service Area	sq. miles

	Population	people
	# maintenance Holes	MHs
	# Pump Stations PS/ Lift Station	number
	Sewer < 8 inch	miles
	8 inches < sewer < 15 inches	miles
	15 inches < sewer < 21 inches	miles
	21 inches < sewer < 42 inches	miles
	Average age of system	years
	New sewer main installation	miles
	New sewer lateral installation	miles
	WWC Staff	number
Financial Information	Total annual division budget	$
	Total annual O&M budget	$
	O&M budget of annual	%
	Lift station O&M cost	$
	Lift station O&M cost of annual	%
	Annual capital for sewer rehab	$
	Sewer monthly rate for residents	$
O&M	Certified operators	number
	O&M field staff	number
	Average high velocity cleaning per crew per day	LF
	Total visually inspected per year (not CCTV)	miles
SSO	Number of SSO calls received	number
FOG	Public education outreach budget per year	$
	Public education outreach budget of annual	%

Table 19 – Current Performance Measures to Monitor SSO Trends

Performance Measure	Unit	Target	Source
SSOs - Total number, mains and laterals	Number	-	A, B
SSOs - Total volume, mains and laterals	Gal	-	A, B
SSOs - Total volume recovered	Gal	-	B
SSOs - Total number of wet weather	Number	-	A, B
SSOs - Total volume of wet weather	Gal	-	A, B
SSOs - % of spills caused by FOG (main)	%	-	A, B
SSOs - % of spills caused by roots (main)	%	-	A, B
SSOs - % of spills caused by Vandalism (main)	%	-	A, B
SSOs - caused by LS failures	Number	-	A, B
SSOs - caused by pipe failures	Number	-	A, B
SSOs - % of spill volume caused by FOG (lateral)	%	-	A, B
SSOs - % of spill volume caused by roots (lateral)	%	-	A, B
SSOs - % of spill volume caused by Vandalism (lateral)	%	-	A, B
Customer service requests per year	Number	-	A, B
Sewer odor complaints	Number	-	A, B
Flooding claims per year	Number	-	A, B
Cost of flooding claims per year	$	-	A, B
SSO – Repeats within two years	Number	0	B, C
SSOs - Category 1	Number	0	C, D
SSOs / 100 mi pipe / year - Category 2	Number	2.0	C
SSOs / 100 mi pipe / year - Mainline	Number	0.6	C
SSOs / 100 mi pipe / year - Lateral	Number	8.0	C

A = SSMP section 9.6

B = SSMP Appendix I

C = WW Collections KPIs

D = Program / Performance Reports

5.10 SSMP Program Audits

5.10.1 Compliance

Table 20 – 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

Audit Procedures, Roles, and Responsibilities (SSMP 10.2)

- Level of Effectiveness: The City conducts an internal audit biennially to continually measure the effectiveness of the SSMP primarily through evaluating system metrics, performance measures, and reduce SSOs by improving SSMP procedures to better respond to new SSO trends. In addition, the audit evaluates the City's compliance with SSMP requirements, particularly the amended MRP requirements that were formalized in September 2013. The City developed an audit form as a template to record information produced during the internal SSMP audits. This form is included in SSMP Appendix J-2. The previous audit identified many areas of improvement which the City responded and acted on. Some of these recommended improvements were excluded from this audit based on discussions with the City that eliminated the need for them. Others are considered standing and should still be implemented by the City. Generally, the internal audits implemented by the City have been effective in improving the SSMP and turning it into a living document that that is current, practical, and useful for the City.
- Recommendations:
    - The SSMP must be recertified by the City Council. Last Certification was completed 4/7/2014. Per SSS WDR D.14, the City must have the SSMP updated and re-certified by the governing board (i.e. City Council) every five years.
    - Post this SSMP internal audit to the City website.
    - Schedule the next internal SSMP audit for July-August of 2023.
    - Develop a description manual to replace Appendix J-1 and J-2 of the SSMP, to support each KPI element. This manual describes required information for KPI monitoring, including but not limited to:
        - Elements definition
        - How to fill each KPI items
        - Personnel responsible
        - Review frequency

SSMP Program Modification/Update Process (SSMP 10.3)

- Level of Effectiveness: The City developed a program for monitoring, reviewing sewer performance metrics and the effectiveness of SSMP elements on a biennial basis. Based on the results of the SSMP audits, the Wastewater Utility Manager is assigned to initiate/direct corrective actions to respond to

deficiencies and enhancements identified in the audit. As determined in the City's SSMP revision log, the City has been prompt in responding to audit and continually strives to implement improvements.

- Recommendations:
  - Update the SSMP change log and add it as an appendix to the SSMP, documenting all changes made to the SSMP since its last certification, indicating when an element was changed/updated and who authorized the change. An example of a change log is shown at **Appendix 7.5**. This was also recommended during the previous audit but has not been implemented.
  - Document the submittal process for proposed changes to the SSMP. The process may include the following; identify the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification, the process for review, and the process for updating the SSMP on the City website and documenting changes. This was also recommended during the previous audit but has not been implemented.

5.11 Communication Program

5.11.1 Compliance

Table 21 – 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, Utility Commission, and City Council (SSMP 11.2)

- Level of Effectiveness: The WWC has used PowerPoint presentations as a resource to describe the purpose of the SSMP and summarize SSS WDR requirements to the City council and City staff. These presentations are attached to the SSMP website.

- Recommendations:
  - As of September 2013, the State Water board amended the MRP of the SSS WDR and the City produced a training PowerPoint to City staff, council, and stakeholders regarding the update. Attach the PowerPoint to the SSMP website. This was also recommended during the previous audit but has not been implemented.
  - Post Appendices K-1 – WWC WDR awareness Program and K-2 – Sanitary sewer regulations/WDR PowerPoint presentations on the website.
  - Post Appendix K-3 – Two "EU Today" Newsletters Preventing Fog in Pipes and Not Flushing Medication down the Sewer.
  - Update Appendix K-3 – Two EU newsletters FOG/medications links.

Stakeholder Communication – Residential, Commercial and Industrial (SSMP 11.3)

- Level of Effectiveness: The City communicates regularly with the public and stakeholders via monthly newsletters entitled "EU Today" that includes items regarding sewer utilities. This newsletter is presented online and through bill inserts. A sample newsletter is included in Appendix K of the SSMP. In addition, the City specifically communicates FOG related items to the community via FOG outreach program over TV ads, flyers, direct mail, and site visits to FSEs.

- Recommendations:
    - Update and Post SSMP Appendix K-4 – FOG Outreach Program with marketing Plan budget & spending and post it on the website. Consider an additional metric to be used in the KPI that reflects the City's performance in terms of FOG outreach program. Few additional metrics are recommended in **Table 18**. This was also recommended during the previous audit but has not been implemented.

Tributary/Satellite Communication (11.4)

- Level of Effectiveness: The City routinely communicates with their satellite partners and has three formal agreements in place that include:
    - The joint exercise of power agreement for the SPWA
    - The agreement regarding the operation of and use of South Placer Regional Wastewater Facilities
    - The funding agreement relating to the South Placer Regional Wastewater Facilities
    - Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD).

- Recommendations:
    - Add the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD) as an appendix. This was also recommended during the previous audit but has not been implemented.
    - Modify SSMP 11.4 to include the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD). This was also recommended during the previous audit but has not been implemented.
    - Post Appendix K-5 – Funding agreement related to south placer regional wastewater facilities on the website.

SECTION 6 Audit Summary

This section summarizes the level of compliance of the SSMP with the SSMP requirements identified in subsection D.13 and he identified deficiencies as described in **Section 4.1. Table 22** summarizes the result of this evaluation.

Table 22 – Summary of SSMP Compliance Deficiencies

SSMP Requirement	Compliance	Deficiencies
vi(f) Program to ensure containment of SSO to prevent discharge and minimize adverse impacts on the environment	No	SSOERP does not meet certain water quality monitoring requirements of the amended MRP document.

In addition, **Table 23** lists a summary of all recommendations for this audit.

Table 23 – Summary of Audit Recommendations

SSMP Section	Recommendation	Suggested Timeline for Completion
1.2	Post Appendix A-1 – Roseville's SSMP Development Plan and Implementation Schedule on the website.	Jan 2022
2.1	Modify Appendix B-1: Update City Mayor, Vice Mayor, City Attorney, and City Council positions and add phone numbers (Mayor Krista Berrnasconi, Vice Mayor Bruce Houdesheldt, City Attorney Michelle Sheidenberger, Councilmember Tracy Mendonsa). Update Commissioners and phone numbers: Chair Elaine Webb, Vice Chair James knox, Commissioners: Edward Belski, John Delancy, Richard Demarchi, Einar Maisch. Update Liaisons and phone numbers for EU Director Richard Plecker, and Secretary Pam Walsh. Update Assistant EU Director Ken Glotzbach, Wastewater Collection Superintendent Dan Prudent, Waste Water Collection Supervisor positions, Principal EU engineer and phone number for Jason Shykowski. Update Administrative Analyst and phone number for Maurice Chaney.	Jan 2022
2.1	Post the following Appendices on the website: ○ Appendix B-1 – Personnel Responsible for SSMP Elements ○ Appendix B-2 – Personnel Responsible for SSO Reporting ○ Appendix B-3 – Personnel Responsible for Responding to SSOs Weekly Standby	Jan 2022
2.3	Modify Figure 2-2 Flowchart: Update the WWC Divisions overflow emergency response plan chain of communication to match existing operations, whereby WWTP and LS staff and SCADA alerts should always call the 24-hour call center instead of WWC service staff.	Jan 2022
2.3	Include Figure 2-2 flowchart as Appendix F to the SSOERP (Appendix F-1) and mention in the text.	Jan 2022
3.2	Post Appendix C-1 – Pretreatment Program Enforcement Response Plan on the website.	Jan 2022
3.3	Update the related links for Appendices C-2, C-3, and C-4 for sanitary sewer design and construction.	Jan 2022
3.7	Post the following Appendices on the website: o Appendix C-5 – Joint Exercise of Powers Agreement for the South Placer Wastewater Authority	Jan 2022

	o Appendix C-6 – Agreement Regarding the Operation and Use of the South Placer Regional Wastewater Facilities o Appendix C-7 – Wastewater Service Agreement by Contract and Operating Agreement between SASD, SRCSD and City of Roseville	
4.2	Post the following Appendices on the website: o Post Appendix D-1 – City of Roseville Sewer Map Grid System on the website. o Post Appendix D-9 – Mapping Update Policy on the website.	Jan 2022
4.3	Update SSMP Section 4.3 Overview with updated statistics about the City's service area, number of customers, miles of main, number of services, and number of lift stations. Also update the number of WWC employees.	Jan 2022
4.3	Update the following Appendices and post on the website: o Appendix D-2 – Maintenance Cleaning Schedule: Update with Maximo CCMS example o Appendix D-3 – CCTV Video Report o Appendix D-4 – SOP	Jan 2022
4.4	Describe the process/procedure for evaluating available data (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections, etc.), conducting a risk assessment to determine the assets to be renewed, and developing the R&R plan with its associated data. This was also included during the previous audit but has not been completed.	Jan 2022
4.4	Document the upcoming transition in responsibilities between WWC and EU Engineering in developing and operating the R&R plan by describing it in the SSMP. Confirm that field observations from WWC field crew are accounted for by EU Engineering when conducting risk assessment. This was also included during the previous audit but has not been completed.	Jan 2022
4.4	Post Appendix D-8 – Technical Memorandum O&M Program SSMP Audit-Rehabilitation and Replacement Plan (Element IVC) on the website.	Jan 2022
4.5	Update the following links: o The CWEA website link. o Appendix D-5 – CWEA Certification Handbook link.	Jan 2022
4.6	Update and post the following Appendices on the website: o Appendix D-6 – Equipment Inventory List o Appendix D-7 – Critical Replace Parts List	Jan 2022
5.2	Update Appendix E-1 – Sanitary Sewer Design link.	Jan 2022
5.3	Update Appendix E-2 – Sanitary Sewer System Construction link.	Jan 2022
5.3	Post Appendix E-3 – Technical Memo, SSMP Preparedness Audit Design and Performance Provisions Element V on the website.	Jan 2022
6.3	The WWC has developed a table of information specific to lift station response which includes all of the lift stations in the City and lists for each station; the average flow from the station, the wet well depth, the volume of the wet well, the available storage/downtime if the lift station goes down, the point at which a SSO will first occur if the lift station goes down, the assigned manhole for decanting if vacuum trucks are used to draw down the wet well, and the street location of the decant manhole. This information should be included as an Appendix in the OERP and the information for each lift station should be posted onsite at each respective lift station. This list should also be updated to incorporate new lift stations at Washington Blvd and 7600 Sierra College. This was also recommended during the previous audit but has not been implemented.	Jan 2022
6.3	Modify Figure 6-2 – SSO Procedure Flow Chat, to report SSO category 1 larger than 1,000 gallons to Cal OES within 2 hours per WDR requirements (currently if > 50,000 gal).	Jan 2022
6.3	Post Appendix F-1 – SSOERP on the website along with corresponding attachments	Jan 2022
6.7	Modify SSOERP Appendix C – Water Quality Sampling Procedures to the meet the requirements of the amended MRP.	Jan 2022

	○ Account for spill travel time in the surface water and scenarios where monitoring may not be possible to safety concerns or access restrictions once an SSO has stopped. This may be estimated by dropping floatable debris, for instance, and measuring the time required to travel a certain distance. This was also recommended during the previous audit but has not been implemented. ○ Expand minimum sampling parameters to include appropriate bacterial indicators that have been specifically listed in the beneficial uses of the City's waterways or more broadly listed by the regional Basin Plan. This was also recommended during the previous audit but has not been implemented.	
6.7	Modify SSOERP Appendix C – Water Quality Sampling Procedures to include a list of all of the required equipment that the employee would need to conduct proper sampling. This was also recommended during the previous audit but has not been implemented.	Jan 2022
7.8	Modify the EU Engineering GIS database to include hotspot assets and FSEs and add them as layers to the maps that WWC receives.	Jan 2022
8.2	Modify Appendix I-1 of the SSMP to indicate that the system evaluation and capacity assurance plan will be reviewed and updated every 10 years. This was also recommended during the previous audit but has not been implemented.	Jan 2022
9.3	Incorporate system and financial measures recommended in Table 18, from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP.	Jan 2022
9.3	Update Appendix I-4 and modify it to include document location and review frequency.	Jan 2022
9.3	Modify I-4 – Key Performance Indicators (KPI) FOG section, to reflect the change in responsibilities from IWS to WWC.	Jan 2022
9.4	Consider addition of recommended PM measures in Table 18, from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP. The goal is to produce a single living KPI document that can be used to evaluate the effectiveness of SSMP elements.	Jan 2022
9.6	Update Appendix I-3 – SSO History (last update 2013).	Jan 2022
9.6	Update SSO trends data in Appendix I-4 – KPI Benchmarking.	Jan 2022
9.6	Consider addition of recommended SSO measures in Table 18, from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP. The goal is to produce a single living KPI document that can be used to evaluate the effectiveness of SSMP elements.	Jan 2022
10.2	The SSMP must be recertified by the City Council. Last Certification was completed 4/7/2014. Per SSS WDR D.14, the City must have the SSMP updated and re-certified by the governing board (i.e. City Council) every five years.	Jan 2022
10.2	Post this SSMP internal audit to the City website.	Jan 2022
10.2	Schedule the next internal SSMP audit for July-August of 2023.	Jan 2022
10.2	Develop a description manual to replace Appendix J-1 and J-2 of the SSMP, to support each KPI element. This manual describes required information for KPI monitoring, including but not limited to: ○ Elements definition ○ How to fill each KPI items ○ Personnel responsible ○ Review frequency	Jan 2022
10.3	Update the SSMP change log and add it as an appendix to the SSMP, documenting all changes made to the SSMP since its last certification, indicating when an element was changed/updated and who authorized the change. An example of a change log is shown at Appendix 7.5. This was also recommended during the previous audit but has not been implemented.	Jan 2022
10.3	Document the submittal process for proposed changes to the SSMP. The process may include the following; identify the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how	Jan 2022

	suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification, the process for review, and the process for updating the SSMP on the City website and documenting changes. This was also recommended during the previous audit but has not been implemented.	
11.2	As of September 2013, the State Water board amended the MRP of the SSS WDR and the City produced a training PowerPoint to City staff, council, and stakeholders regarding the update. Attach the PowerPoint to the SSMP website. This was also recommended during the previous audit but has not been implemented.	Jan 2022
11.2	Post Appendices K-1 – WWC WDR awareness Program and K-2 – Sanitary sewer regulations/WDR PowerPoint presentations on the website.	Jan 2022
11.2	Update Appendix K-3 – Two EU newsletters FOG/medications links.	Jan 2022
11.3	Update SSMP Appendix K-4 – FOG Outreach Program with marketing Plan budget & spending and post it on the website. Consider an additional metric to be used in the KPI that reflects the City's performance in terms of FOG outreach program. Few additional metrics are recommended in **Table 18**. This was also recommended during the previous audit but has not been implemented.	Jan 2022
11.4	Add the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD) as an appendix. This was also recommended during the previous audit but has not been implemented.	Jan 2022
11.4	Modify SSMP 11.4 to include the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD). This was also recommended during the previous audit but has not been implemented.	Jan 2022
11.4	Post Appendix K-5 – Funding agreement related to south placer regional wastewater facilities on the website.	Jan 2022

SECTION 7 Appendices

7.1 Appendix – Historical SSO Data

7.2 Appendix – SSO Data Comparison Charts

7.3 Appendix – Structural SSO GIS Mapping

7.4 Appendix – Key Performance Indicators

7.5 Appendix – Change Log Example

7.1 Appendix – Historical SSO Data

Dated: FY 18/19, FY 19/20, and FY 20/21

Appendix 7.1 – Historical SSO Data for FY 18/19 to FY 20/21

#	Event ID	Date of SSO	Address	Spill Type	Spill Volume [gal]	Spill Recovered [gal]	Spill Recovery [%]	Spill Cause	Location
1	850146	7/30/2018	276 Spyglass Hill	Category 3	105	105	100%	Debris-Rags	LL
2	850517	8/8/2018	196 South Lincoln	Category 3	1	1	100%	Roots	LL
3	850609	8/9/2018	117 Meadowgate Drive	Category 3	26	0	0%	Roots	LL
4	850709	8/12/2018	117 Ash St	Category 3	13	3	23%	Roots	LL
5	851063	8/28/2018	300 Yosemite	Category 3	409	0	0%	Roots	LL
6	850868	8/28/2018	601 Douglas Blvd	Category 3	28	25	89%	Roots	LL
7	851163	9/9/2018	1201 Meadow Ln	Category 3	16	1	6%	Roots	LL
8	851297	9/19/2018	312 Folsom	Category 3	2	2	100%	Roots	Main
9	852004	10/4/2018	400 Elefa St	Category 3	17	15	88%	Roots	LL
10	852225	10/25/2018	9117 Moondancer Cir	Category 3	19	13	68%	Roots	LL
11	855199	12/21/2018	1331 Champagne Cir	Category 3	33	0	0%	Roots	LL
12	855472	12/23/2018	100 Alta Vista	Category 3	10	10	100%	Grease	Main
13	855930	1/12/2019	240 Duranta	Category 3	1	1	100%	Roots	LL
14	855675	1/15/2019	1211 Ross CT	Category 3	29	25	86%	Debris-Rags	LL
15	855986	1/20/2019	1018 Melrose Ave	Category 3	2	2	100%	Pipe/Structure Failure	LL
16	856355	1/28/2019	1040 Shenencock Way	Category 3	15	14	93%	Roots	LL
17	856617	2/4/2019	314 Folsom	Category 3	15	14	93%	Debris-Rags	LL
18	856801	2/6/2019	312 Folsom	Category 3	3	2	67%	Debris-Rags	Main
19	856820	2/19/2019	236 Elm St	Category 3	3	1	33%	Pipe/Structure Failure	LL
20	856798	2/24/2019	712 Hillcrest	Category 3	9	7	78%	Roots	LL
21	857431	3/18/2019	1044 Magnolia Way	Category 3	20	19	95%	Roots	LL
22	857531	3/30/2019	301 Coronado	Category 3	5	5	100%	Roots	LL
23	858014	4/12/2019	311 Circuit	Category 3	3	0	0%	Roots	LL
24	858150	4/19/2019	801 Vernon St	Category 3	15	12	80%	Debris-Rags	LL
25	858533	5/2/2019	2551 La Croix Dr	Category 3	6	4	67%	Debris-Rags	LL
26	858177	5/4/2019	276 SpyGlass Hill	Category 3	5	3	60%	Debris-Rags	LL
27	859382	5/12/2019	1121 Champion Oaks	Category 3	20	15	75%	Roots	LL
28	858540	5/14/2019	801 Vernon St	Category 3	4	3	75%	Debris-Rags	LL
29	858670	5/20/2019	146 Elm St	Category 3	22	13	59%	Roots	LL
30	858673	5/24/2019	130 Donner Ave	Category 3	11	10	91%	Roots	LL
31	860089	6/23/2019	348 B St	Category 3	2	2	100%	Roots	LL
32	861344	8/6/2019	312 Evelyn Ct	Category 3	3	0	0%	Roots	LL
33	861387	8/19/2019	233 D St	Category 3	18	8	44%	Roots	LL
34	861459	8/22/2019	1012 Audrey Way	Category 3	5	2	40%	Roots	LL
35	861492	9/2/2019	110 Zola Ave	Category 3	3	2	67%	Roots	LL
36	861672	9/14/2019	1420 Spring Valley Dr	Category 3	2	2	100%	Roots	LL
37	862432	9/15/2019	73 Bernice Ave	Category 3	9	8	89%	Roots	LL
38	862480	9/26/2019	300 Main St	Category 3	3	2	67%	Debris-Rags	LL
39	863062	10/8/2019	421 Pleasant St	Category 3	5	0	0%	Pipe/Structure Failure	LL
40	863198	10/16/2019	1008 Shearer st	Category 3	1	1	100%	Roots	LL
41	863091	10/21/2019	100 Atkinson St	Category 3	16	12	75%	Debris-Rags	LL
42	863728	11/9/2019	137 Cedar St	Category 3	8	6	75%	Roots	LL
43	863690	11/11/2019	921 Herbert St	Category 3	11	6	55%	Roots	LL
44	863729	11/20/2019	131 Elm St	Category 3	9	3	33%	Pipe/Structure Failure	LL
45	863634	11/23/2019	520 B St	Category 3	77	74	96%	Debris-Rags	LL

46	863785	12/3/2019	1005 Circuit Dr	Category 3	11	10	91%	Roots	LL
47	863909	12/13/2019	276 Spyglass Hill	Category 3	5	3	60%	Debris-Rags	LL
48	863802	12/15/2019	301 Bitner St	Category 3	33	31	94%	Roots	LL
49	863888	12/16/2019	501 Brookwood Dr	Category 3	20	19	95%	Roots	LL
50	864408	12/17/2019	1033 Portside Cir.	Category 3	9	8	89%	Debris-Rags	LL
51	864470	12/17/2019	1896 Ambridge Dr	Category 3	4	3	75%	Pipe/Structure Failure	LL
52	863893	12/27/2019	1940 Inglis Wy.	Category 3	13	12	92%	Roots	LL
53	864668	1/16/2020	910 Carol Ann Ct.	Category 3	20	19	95%	Roots	Main
54	864878	1/18/2020	2012 Cirby Way	Category 3	3	3	100%	Roots	LL
55	865188	1/20/2020	197 Donner	Category 3	2	1	50%	Debris-Other	LL
56	864796	1/28/2020	603 Rigby Ct	Category 3	40	38	95%	Debris-Rags	LL
57	865414	2/11/2020	1080 Douglas Blvd	Category 3	2	1	50%	Roots	LL
58	865218	2/23/2020	530 Loretto Dr	Category 3	1	0	0%	Roots	LL
59	865833	2/25/2020	640 Elefa St	Category 3	3	1	33%	Debris-Rags	LL
60	866387	3/22/2020	276 Spyglass Hill	Category 3	5	5	100%	Debris-Rags	LL
61	867100	4/14/2020	311 Manzanita	Category 3	16	14	88%	Debris-Rags	Main
62	866491	4/19/2020	1335 Chignahuapan Way	Category 3	9	9	100%	Debris-Rags	LL
63	866906	5/9/2020	400 Automall Dr	Category 3	154	139	90%	Contractor Cause	Main
64*	867987	6/21/2020	401 Coronado	Category 3	60	35	58%	Debris-Rags	Main
65	868910	9/5/2020	1600 Russel Way	Category 3	10	9	90%	Roots	LL
66	868986	9/13/2020	625 Windsor	Category 3	10	9	90%	Roots	LL
67	869306	9/15/2020	4100 Shorthorn Way	Category 3	89.2	32	36%	Debris-Rags	LL
68	869422	9/22/2020	1600 Kit Carson Way	Category 3	17	16	94%	Roots	LL
69	869983	10/11/2020	710 Vine Ave	Category 3	10	9	90%	Pipe/Structure Failure	LL
70	869767	10/11/2020	2006 Poliey Dr	Category 3	5	4	80%	Roots	LL
71	870006	10/22/2020	305 Union St	Category 3	1.5	0.28	19%	Roots	LL
72	870345	10/28/2020	2207 Lee Way	Category 3	6	4	67%	Roots	LL
73	870728	11/4/2020	420 Winfield Ct	Category 3	30	29	97%	Roots	LL
74	870959	11/11/2020	101 Sharon Way	Category 3	2	2	100%	Roots	LL
75	871000	11/24/2020	1559 Mistywood Dr	Category 3	55	0	0%	Roots	LL
76	871051	11/27/2020	1011 Oakland Ave	Category 3	64	44	69%	Pipe/Structure Failure	LL
77	871442	12/9/2020	609 Windsor Dr	Category 3	44	43	98%	Pipe/Structure Failure	Main
78	871608	12/14/2020	105 Half D St	Category 3	48	44	92%	Roots	LL
79	872084	12/22/2020	333 Atkinson St	Category 3	17	1	6%	Roots	LL
80	871663	12/26/2020	406 Berkeley	Category 3	2	0	0%	Roots	LL
81	871531	1/3/2021	538 Loretto Ave	Category 3	5	1	20%	Roots	LL
82	872200	1/5/2021	330 Circuit Dr	Category 3	5	1	20%	Pipe/Structure Failure	LL
83	872110	1/9/2021	1729 Tanglewood	Category 3	33	30	91%	Roots	Main
84	871602	1/10/2021	628 Main St	Category 3	49	46	94%	Roots	LL
85	872277	1/25/2021	420 Circuit Dr	Category 3	5	2	40%	Roots	LL
86	872331	2/4/2021	213.5 Irene	Category 3	2	1	50%	Pipe/Structure Failure	LL
87	872405	2/4/2021	221 Church St	Category 3	2	1	50%	Roots	LL
88	872635	2/8/2021	1326 Chignahuapan Way	Category 3	2	2	100%	Debris-Rags	LL
89	872485	2/9/2021	805 Clina Way	Category 3	17	15	88%	Debris-Rags	LL
90	873130	2/14/2021	1011 Circuit Dr	Category 3	46	41	89%	Roots	LL
91	873014	2/16/2021	209 Elm St	Category 3	19	0	0%	Pipe/Structure Failure	LL
92	872794	2/16/2021	224 Diamond Oaks Rd	Category 3	15	15	100%	Pipe/Structure Failure	LL
93	872482	2/18/2021	510 Highland Ave	Category 3	2	0	0%	Roots	LL

94	872632	2/26/2021	1467 West Colonial Pkwy	Category 3	2	1	50%	Pipe/Structure Failure	LL
95	872728	3/1/2021	329 Berkeley Ave	Category 3	9	8	89%	Pipe/Structure Failure	LL
96	872928	3/4/2021	115 Alta Vista Ave	Category 3	2	1	50%	Pipe/Structure Failure	LL
97	872853	3/9/20121	701 Lincoln St	Category 3	23	22	96%	Roots	LL
98	873302	3/11/2021	543 Alta Vista Ave	Category 3	31	25	81%	Roots	LL
99	873405	3/16/2021	406 Earl	Category 3	11	9	82%	Pipe/Structure Failure	LL
100	873615	3/24/2021	824 Atlantic St	Category 3	18	14	78%	Pipe/Structure Failure	LL
101	873317	3/27/2021	69 Bernice Ave	Category 3	1	0	0%	Roots	LL
102	873318	3/28/2021	206 Irene Ave	Category 3	3	3	100%	Roots	LL
103	873529	3/31/2021	100 Atkinson St	Category 3	20	2	10%	Pipe/Structure Failure	LL
104	873738	4/5/2021	243 Irene Ave	Category 3	1	0	0%	Contractor Cause	LL
105	873705	4/6/2021	2029 Polley Dr	Category 3	19	0	0%	Roots	LL
106	874120	4/12/2021	521 Main St	Category 3	2	1	50%	Roots	LL
107	873979	4/19/2021	1105 Muir Ct	Category 3	6	5	83%	Roots	LL
108	874115	4/21/2021	252 Elm St	Category 3	4	0	0%	Roots	LL
109	874206	4/28/2021	702 Vinewood	Category 3	12	3	25%	Roots	LL
110	873975	5/1/2021	1215 Sheffield Way	Category 3	2	1	50%	Roots	LL
111	873970	5/4/2021	1610 Old Hart Ranch Rd	Category 3	28	25	89%	Roots	LL
112	874471	5/17/2021	213 Half Irene Ave	Category 3	5	1	20%	Roots	LL
113	874814	5/30/2021	312 Earl Ave	Category 3	7	1	14%	Roots	LL
114	875444	6/28/2021	307 Brentwood Rd	Category 3	5	1	20%	Roots	LL

NOTES:

*Spill Report was entered in California Integrated Water Quality System Project (CIWQS). However City Spill Report was lost during Transition.

7.2 Appendix – SSO Data Comparison Charts

2018/2019 SSO Data Comparison

		Spill Volume		Rec Volume		SSO Duration		Response Time		Duration	Response	Cause		
	EVENT ID	CIWQS	City	CIWQS	City	CIWQS	City	CIWQS	City	>3 hr	>40 min	CIWQS	City	Notes
1	850146	105	105	105	105	0.156944	0.156944	0.006944	0.006944	1	0	Pipe Structural Problem/Failure	Debris-Rags	
2	850517	1	1	1	1	0.033333	0.033333	0.017361	0.017361	0	0	Root Intrusion	Roots	
3	850609	26	26	0	0	0.189583	0.189583	0.013889	0.013889	1	0	Root Intrusion	Roots	
4	850709	13	13	3	3	0.004167	0.004167	0.029167	0.029167	0	1	Pipe Structural Problem/Failure	Roots	
5	850868	28	28	25	25	0.765972	0.765972	0.006944	0.006944	1	0	Root Intrusion	Roots	
6	851063	409	409	0	0	2.180556	2.180556	0.011111	0.011111	1	0	Root Intrusion	Roots	
7	851163	16	16	1	1	0.046528	0.046528	0.03125	0.03125	0	1	Pipe Structural Problem/Failure - Installation	Roots	
8	851297	2	2	2	2	0.001389	0.001389	0	0.019444	0	0	Pipe Structural Problem/Failure	Roots	Incorrect Agency Notification time in CIWQS
9	852004	17	17	15	15	0.024306	0.024306	0.009028	0.009028	0	0	Root Intrusion	Roots	
10	852225	19	19	13	13	0.051389	0.051389	0.009028	0.009028	0	0	Root Intrusion	Roots	
11	855199	33	33	0	0	0.083333	0.083333	0.013889	0.013889	0	0	Root Intrusion	Roots	
12	855472	10	10	10	10	0.0625	0.0625	0.009722	0.009722	0	0	Grease Deposition (FOG)	Grease	
13	855675	29	29	25	25	0.072917	0.072917	0.006944	0.006944	0	0	Debris-Wipes/Non-Dispersables	Debris-Rags	
14	855930	1	1	1	1	0.007639	0.007639	0.006944	0.006944	0	0	Root Intrusion	Roots	
15	855986	2	2	2	2	0.030556	0.030556	0.013194	0.013194	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
16	856355	15	15	14	14	0.115278	0.115278	0.009722	0.009722	0	0	Root Intrusion	Roots	
17	856617	15	15	14	14	0.035417	0.035417	0.021528	0.021528	0	0	Debris-Wipes/Non-Dispersables	Debris-Rags	
18	856798	9	9	7	7	0.047222	0.047222	0.027778	0.027778	0	0	Root Intrusion	Roots	
19	856801	3	3	2	2	0.027083	0.027083	0.00625	0.00625	0	0	Pipe Structural Problem/Failure	Debris-Rags	
20	856820	3	3	1	1	0.045833	0.058333	0	0.0125	0	0	Pipe Structural Problem/Failure - Installation	Pipe/Structure Failure	Incorrect Operator Arrival time and SSO End time in CIWQS
21	857431	20	20	19	19	0.549306	0.549306	0.01875	0.01875	1	0	Root Intrusion	Roots	
22	857531	5	5	5	5	0.038889	0.049306	0.013889	0.013889	0	0	Root Intrusion	Roots	Incorrect SSO Start time in CIWQS
23	858014	3	3	0	0	0.217361	0.217361	0.018056	0.018056	1	0	Root Intrusion	Roots	
24	858150	15	15	12	12	0.0375	0.0375	0.009722	0.009722	0	0	Debris from Construction	Debris-Rags	
25	858177	5	5	3	3	0.050694	0.050694	0.020833	0.020833	0	0	Debris-Rags	Debris-Rags	
26	858533	6	6	4	4	0.044444	0.044444	0.023611	0.023611	0	0	Debris-Wipes/Non-Dispersables	Debris-Rags	
27	858540	4	4	3	3	0.036111	0.036111	0.011806	0.011806	0	0	Debris-Wipes/Non-Dispersables	Debris-Rags	
28	858670	22	22	13	13	0.05625	0.05625	0.004861	0.004861	0	0	Root Intrusion	Roots	
29	858673	11	11	10	10	0.041667	0.041667	0.0125	0.0125	0	0	Root Intrusion	Roots	
30	859382	20	20	15	15	0.054167	0.054167	0.019444	0.019444	0	0	Root Intrusion	Roots	
31	860089	2	2	2	2	0.0375	0.0375	0.017361	0.015972	0	0	Root Intrusion	Roots	Incorrect Agency Notification time in CIWQS
	Total	869	869	327	327	5.145833	5.16875	0.421528	0.452083	6	2			
				38%	38%									
	31													
	Avg					3:59:02	4:00:06	0:19:35	0:21:00					

2019/2020 SSO Data Comparison

		Spill Volume		Rec Volume		SSO Duration		Response Time		Duration	Response	Cause		
	EVENT ID	CIWQS	City	CIWQS	City	CIWQS	City	CIWQS	City	>3 hr	>40 min	CIWQS	City	Notes
1	861344	3	3	0	0	0.68125	0.68125	0.021528	0.011111	1	0	Root Intrusion	Roots	Incorrect Agency notification time in CIWQS
2	861387	18	18	8	8	0.041667	0.041667	0.013889	0.013889	0	0	Root Intrusion	Roots	
3	861459	5	5	2	2	0.021528	0.021528	0.014583	0.014583	0	0	Root Intrusion	Roots	
4	861492	3	3	2	2	0.109028	0.109028	0.031944	0.031944	0	1	Pipe Structural Problem/Failure	Roots	
5	861672	2	2	2	2	0.000694	0.000694	0	0.011111	0	0	CS Mainentance Caused Spill/Damage	Roots	Incorrect Agency notification time in CIWQS
6	862432	9	9	8	8	0.034028	0.034028	0.023611	0.023611	0	0	Root Intrusion	Roots	
7	862480	3	3	2	2	0.036111	0.036111	0.025694	0.025694	0	0	Debris-Rags	Debris-Rags	
8	863062	5	5	0	0	0.533333	0.533333	0.016667	0.016667	1	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
9	863091	16	16	12	12	0.038194	0.038194	0.027778	0.027778	0	0	Debris-Rags	Debris-Rags	
10	863198	1	1	1	1	0.022222	0.022222	0.011806	0.011806	0	0	Root Intrusion	Roots	
11	863634	77	77	74	74	0.043056	0.043056	0.011806	0.011806	0	0	Debris-Rags	Debris-Rags	
12	863690	13	11	6	6	0.027778	0.027778	0.017361	0.017361	0	0	Root Intrusion	Roots	
13	863728	8	8	6	6	0.040278	0.04375	0.028472	0.028472	0	1	Root Intrusion	Roots	Incorrect SSO Start time in CIWQS- off by 5 mins
14	863729	9	9	3	3	0.601389	0.601389	0.007639	0.007639	1	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
15	863785	11	11	10	10	0.029167	0.029167	0.009722	0.009722	0	0	Root Intrusion	Roots	
16	863802	33	33	31	31	0.039583	0.039583	0.008333	0.008333	0	0	Root Intrusion	Roots	
17	863888	20	20	19	19	0.032639	0.032639	0.011806	0.011806	0	0	Root Intrusion	Roots	
18	863893	13	13	12	12	0.015972	0.015972	0.005556	0.005556	0	0	Root Intrusion	Roots	
19	863909	3	5	1	3	0.020139	0.020139	0.009722	0.009722	0	0	Debris-Rags	Debris-Rags	
20	864408	9	9	8	8	0.011806	0.011806	0.013889	0.013889	0	0	Debris-Rags	Debris-Rags	
21	864470	4	4	3	3	0.0375	0.0375	0.022222	0.022222	0	0	Root Intrusion	Pipe/Structure Failure	
22	864668	20	20	19	19	0.006944	0.006944	0.008333	0.008333	0	0	Root Intrusion	Roots	
23	864796	40	40	38	38	1.020833	0.020833	0.008333	0.008333	0	0	Debris-Wipes/Non-Dispersables	Debris-Rags	
24	864878	3	3	3	3	0.010417	0.010417	0.01875	0.01875	0	0	Root Intrusion	Roots	
25	865188	2	2	1	1	0.006944	0.006944	0.017361	0.017361	0	0	Pipe Structural Problem/Failure	Debris-Other	
26	865218	1	1	0	0	0.020833	-0.01181	0.016667	0.016667	0	0	Root Intrusion	Roots	SSO End Time on City Spill Report does not make sense.
27	865414	2	2	1	1	0.034722	0.034722	0.013889	0.013889	0	0	Root Intrusion	Roots	
28	865833	3	3	1	1	0.073611	0.073611	0	0	0	0	Debris-Wipes/Non-Dispersables	Debris-Rags	Notification time and Arrival time occurred at the same time. This a a operator noticed spill.
29	866387	5	5	5	5	0.040278	0.040278	0.029861	0.029861	0	1	Debris-Wipes/Non-Dispersables	Debris-Rags	
30	866491	9	9	9	9	0.832639	0.832639	0.005556	0.005556	1	0	Debris-Rags	Debris-Rags	
31	866906	154	154	149	139	0.106944	0.106944	0.015972	0.015972	0	0	Damage by Others Not Related to CS Construction/Maintenance (Specify Below)	Contractor Cause	
32	867100	16	16	14	14	0.039583	0.039583	0.015972	0.015972	0	0	Debris-Rags	Debris-Rags	
33	867987	60	0	35	0	1.704861	0	0.034722	0	0	0	Debris-Rags	Debris-Rags	CIty spill report is missing no way to compare info
	Total	580	520	485	442	6.315972	2.465972	0.519444	0.485417	4	3			
				84%	85%									
	33													
	Avg					4:35:36	1:47:36	0:22:40	0:21:11					

2020/2021 SSO Data Comparison

		Spill Volume		Rec Volume		SSO Duration		Response Time		Duration	Response	Cause		
	EVENT ID	CIWQS	City	CIWQS	City	CIWQS	City	CIWQS	City	>3 hr	>40 min	CIWQS	City	Notes
1	868910	10	10	9	9	0.020833	0.020833	0.010417	0.010417	0	0	Root Intrusion	Roots	
2	868986	10	10	9	9	0	0.025694	0.015278	0.015278	0	0	Root Intrusion	Roots	Incorrect Spill End Date was entered in CIWQS. Should be 9/13, but 9/3 was entered. Time was correct.
3	869306	90	89.2	32	32	0.600694	0.600694	0.015278	0.015278	1	0	Debris-Wipes/Non-Dispersables	Debris-Rags	Incorrect Spill Volume Reported to CIWQS.
4	869422	17	17	16	16	0.029167	0.029167	0.01875	0.01875	0	0	Root Intrusion	Roots	
5	869767	5	5	4	4	0.025	0.025	0.014583	0.014583	0	0	Root Intrusion	Roots	
6	869983	10	10	9	9	0.021528	0.021528	0.011111	0.011111	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
7	870006	2	1.5	0	0.28	3.945833	3.945833	0.009028	0.009028	1	0	Root Intrusion	Roots	Incorrect Spill Volume and Recovered Volume Reported to CIWQS
8	870345	6	6	4	4	0.028472	0.028472	0.018056	0.018056	0	0	Root Intrusion	Roots	
9	870728	30	30	29	29	0.015278	0.015278	0.013194	0.013194	0	0	Root Intrusion	Roots	
10	870959	2	2	2	2	0.020139	0.020139	0.008333	0.008333	0	0	Root Intrusion	Roots	
11	871000	55	55	0	0	0.664583	0.664583	0.00625	0.00625	1	0	Root Intrusion	Roots	
12	871051	64	64	44	44	1.996528	1.996528	0.001389	0.001389	1	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
13	871442	44	44	43	43	0.03125	0.03125	0.007639	0.007639	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
14	871531	5	5	1	1	0.032639	0	0.022222	0.022222	0	0	Root Intrusion	Roots	Incorrect End Spill time entered in CIWQS. Spill was not active upon arrival.
15	871602	49	49	46	46	0.329861	0.329861	0.009028	0.009028	1	0	Root Intrusion	Roots	
16	871608	48	48	44	44	0.041667	0.041667	0.00625	0.00625	0	0	Root Intrusion	Roots	
17	871663	2	2	0	0	0.020833	0	0.016667	0.017361	0	0	Root Intrusion	Roots	Incorrect Agency Notification time in CIWQS. No SSO end time in City report or Narrative. Unknown when Spill ended.
18	872084	17	17	1	1	0.041667	0.041667	0.007639	0.004861	0	0	Root Intrusion	Roots	Incorrect Agency Notification time in CIWQS
19	872110	33	33	30	30	0.15625	0.15625	0.006944	0.006944	1	0	Root Intrusion	Roots	
20	872200	5	5	1	1	0.0375	0.0375	0.004167	0.004167	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
21	872277	5	5	2	2	0.052778	0.020833	0.010417	0.010417	0	0	Root Intrusion	Roots	Incorrect End Spill time entered in CIWQS. Spill was not active upon arrival.
22	872331	2	2	1	1	0.056944	0.056944	0.014583	0.014583	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
23	872405	2	2	1	1	0.010417	0.010417	0.011806	0.011806	0	0	Root Intrusion	Roots	
24	872482	2	2	0	0	0.529861	0.529861	0.013889	0.013889	1	0	Root Intrusion	Roots	
25	872485	17	17	15	15	0.003472	0.003472	0	0.01875	0	0	Debris from Lateral	Debris-Rags	Incorrect Agency Notification time in CIWQS
26	872632	2	2	1	1	0.010417	0.010417	0.008333	0.008333	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
27	872635	2	2	2	2	0.071528	0.071528	0.026389	0.026389	0	0	Root Intrusion	Debris-Rags	
28	872728	9	9	8	8	0.001389	0.001389	0	0.009722	0	0	Debris from Lateral	Pipe/Structure Failure	Incorrect Agency Notification time in CIWQS
29	872794	15	15	15	15	0.052083	0.054167	0.009722	0.008333	0	0	Root Intrusion	Pipe/Structure Failure	Incorrect End spill time and Agency notification time in CIWQS
30	872853	23	23	22	22	0.048611	0.048611	0.007639	0.007639	0	0	Root Intrusion	Roots	
31	872928	2	2	1	1	0.010417	0.010417	0.00625	0.00625	0	0	Root Intrusion	Pipe/Structure Failure	
32	873014	19	19	0	0	0.0625	0.0625	0.009722	0.009722	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
33	873130	46	46	41	41	0.111806	0.111806	0.025694	0.025694	0	0	Root Intrusion	Roots	
34	873302	31	31	25	25	2.027083	2.027778	0.004861	0.004861	1	0	Root Intrusion	Roots	
35	873317	1	1	0	0	0.034028	0.034028	0.023611	0.023611	0	0	Root Intrusion	Roots	
36	873318	3	3	3	3	0.011806	0.011806	0.020833	0.020833	0	0	Root Intrusion	Roots	
37	873405	11	11	9	9	0.024306	0.024306	0.013889	0.013889	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
38	873529	20	20	2	2	0.604167	0.604167	0.009028	0.009028	1	0	Grease Deposition (FOG)	Pipe/Structure Failure	

7.3 Appendix – Structural SSO GIS Mapping

A 7.3

Structural SSO GIS MAPPING

Overlaid on City of Roseville I&I Study - 2018
Existing Conditions Average RDII[gpd/idm and Conduit Age [year]

PG WWTP
PGWWTP
DCWWTP
DC WWTP
Highlands
Sierra College/StrapRav

Structural Caused SSOs

Legend

Age [year]
- 1 - 10
- 11 - 20
- 21 - 30
- 31 - 50
- 51 - 80
- 81 - 110

Ave. RDII [gpd/idm]
- 1 - 200
- 201 - 600
- 601 - 1000
- 1001 - 2000
- 2001 - 2500
- 2501 - 3000
- 3001 - 3500
- 3501 - 4000
- 4001 - 5000
- 5001 - 9629

N
1:50,000

CITY OF ROSEVILLE CALIFORNIA
WATERWORKS ENGINEERS

7.4 Appendix – Key Performance Indicators

SSS WDR Ref.	Description	Performance Indicator	Unit	Target	KPI Data FY 14/15	KPI Data FY 15/16	KPI Data FY 16/17	KPI Data FY 17/18	KPI Data FY 18/19	KPI Data FY 19/20	KPI Data FY 20/21	Audit Frequency	Responsible Party
D.ii.c	Chain of Communication	Average response to customer inquiry	Minute	40	19.58	23	20	21	20	21	21	Quarterly	WW Superintendent
		Total customer service requests	Number	0	915	1549	533	302	288	523	325	Quarterly	WW Superintendent
		Total sewer odor complaints	Number	0	9	43	50	39	45	10	24	Quarterly	WW Superintendent
		Average rating in customer service card	Number	5	5	5	5	5	5	5	5	Quarterly	WW Superintendent
D.iv.a	Maps	Average response time to map update requests	Days	90	90	90	90	90	90	90	90	Quarterly	WW Superintendent
D.iv.b	PM Activities	Manholes Inspection performed	Number	0	2493	3575	1547	1511	149	293	88	Quarterly	WW Superintendent
		Sewer main flushed per year	Miles	250	284	248	295	283.12	226.1	235.9	296.14	Quarterly	WW Superintendent
		Sewer laterals mechanically cleaned (eeled) per year	Miles	8	14.32	14.77	7.41	1.07	268	235	74	Quarterly	WW Superintendent
		Working staff time to PM program	%	80%	85%	82%	82%	84%	84%	83%	84%	Quarterly	WW Superintendent
		Number of customer accounts per WW employee	Number	561	1517	1554	1772	1757	1943	1873	1873	Quarterly	WW Superintendent
		Average cost of hydro cleaning	$/lf	$0.36	$0.32	$0.33	$0.29	$0.32	$0.34	$0.34	$0.34	Annually	WW Superintendent
		Average cost of sewer mechanical cleaning	$/lf	$1.60	$1.20	$0.77	$0.94	$1.66	$0.30	$0.30	$0.30	Annually	WW Superintendent
D.iv.c	R&R Plan	Manholes rehabilitated	Number	50	0	0	0	0	0	0	0	Quarterly	WW Superintendent
		Sewer main CCTV inspected per year	Miles	30	75	84.32	59.71	64.1	119.9	94.65	38.57	Quarterly	WW Superintendent
		Sewer laterals CCTV inspected per year	Miles	16	26	35.71	32.51	36.14	29.74	22.46	27.88	Quarterly	WW Superintendent
		Sewer cleanouts installed per year	Number	75	76	83	144	141	67	118	58	Quarterly	WW Superintendent
		Sewer Laterals Rehabilitated	Number	50	48	60	85	89	74	82	110	Quarterly	WW Superintendent
		Total miles rehabed or replaced per year (main)	Miles	5	6	0	0	1.07	0.05	0.09	3.4	Annually	EU Engineering
		Total miles rehabed or replaced per year (lateral)	Miles	0.25	0.16	0.27	0.66	0.42	0.45	0.46	0.62	Annually	EU Engineering
		Annual capitol budget sewer rehab/replacement	$/M	$1.80	$1.05	$1.36	$2.61	$2.25	$2.70	$2.70	$2.10	Annually	WW Superintendent
		Average cost of CCTV main	$/lf	$0.53	$0.41	$0.41	$0.36	$0.40	$0.60	$0.75	$1.85	Annually	WW Superintendent
		Average cost of CCTV lateral	S/lf	$1.34	$1.11	$1.15	$1.04	$1.00	$1.24	$1.29	$1.28	Annually	WW Superintendent
D.iv.d	Training	On the job accidents	Number	0	5	3	3	4				Quarterly	EU Safety Coordinator
D.iv.e	Critical Parts	% of required numberof identified critical parts are stocked	%	100	100	100	100	100	100	100	100	Annually	Materials Technician
D.v.a&b	Construction	% of new sewer main accepted vs. inspected	%	100	100	100	100	100	100	100	100	Annually	WW Supervisor
		% of new sewer lateral accepted vs. inspected	%	100	100	100	100	100	100	100	100	Annually	WW Supervisor
D.vi.a	Notification	Average response time to SSO	Minutes	40	20	23	20	17	21	22	17	Quarterly	WW Superintendent
D.vi.b	SSO Response	Average SSO duration (main)	Minutes	40	n/a	70	0	0	0	154	146	Quarterly	WW Superintendent
		Average SSO duration (lateral)	Minutes	40	n/a	37	48	36	171	245	285	Quarterly	WW Superintendent
D.vii.a	Public Education	FOG public education outreach program events per year	Number	4	3	4	3	3	2	1	1	Annually	Environmental Utilities PIO
D.vii.b	FOG Disposal	Gallons of FOG curbside pickup per year	Gallons	25	179.75	293.1	373.25	296	506	323	595	Quarterly	Refuse Division
D.vii.d	BMPs &Devices	% of total FSE's with grease removal devices	%	90	90	97	98	98	98	98	98	Annually	Ind Waste Technician
		% of total FSE's with a variance	%	5	4	4	4	4	4	4	4	Annually	Ind Waste Technician
D.vii.e	FOG Inspections	FSE FOG inspections per year	Number	294	n/a	n/a	181	231	N/A	N/A	221	Quarterly	Ind Waste Technician
		Number of new FSE permits issued per year	Number	5	n/a	n/a	40	46	N/A	N/A	36	Quarterly	Ind Waste Technician
D.vii.f	Hot Spots	% of hotspot pipes CCTV inspected each year	%	100%	100%	100%	100%	100%	100%	100%	100%	Annually	WW Supervisor
		Number of SSO's caused by hot spots	Number	0	0	0	0	0	0	0	0	Quarterly	WW Superintendent
		SSO volume casued by hot spots	Gallons	0	0	0	0	0	0	0	0	Quarterly	WW Superintendent
		Total number of SSO's mains and laterals	Number	76	42	39	24	25	31	32	51	Quarterly	WW Superintendent
		Total volume SSO's mains and laterals	Gallons	2000	1202	2523	1086	1565	869	517	772	Quarterly	WW Superintendent
		% of total SSO volume recovered	%	100	94.5	95.42	91.25	53.86	37.63	86.8	63	Quarterly	WW Superintendent
		Total number of wet weather SSO's	Number	0	0	0	0	0	0	0	0	Quarterly	WW Superintendent
		Total volume of wet weather SSO's	Gallons	0	0	0	0	0	0	0	0	Quarterly	WW Superintendent

D.ix.e	SSO Trends	% of SSO's caused by FOG (main)	%	1	50	50	0	0	100%	0	0	Quarterly	WW Superintendent
		% of SSO's caused by roots (main)	%	70	0	0	0	0	0	0	50%	Quarterly	WW Superintendent
		% of SSO's caused by debris/rags (main)	%	0	0	0	0	0	0	100%	50%	Quarterly	WW Superintendent
		Number of SSO's caused by LS failure	Number	0	0	0	0	0	0	0	0	Quarterly	WW Superintendent
		Number of SSO's caused by pipe/structural failures	Number	0	0	1	1	3	1	3	14	Quarterly	WW Superintendent
		% of SSO's caused by FOG (laterals)	%	10	0	0	0	0	0	0	0	Quarterly	WW Superintendent
		% of SSO's casued by roots (laterals)	%	75	77.5	84	87	48	20	16	35	Quarterly	WW Superintendent
		% of SSO's casued by debris/rags (laterals)	%	0	12.5	10.8	9	28	9	11	2	Quarterly	WW Superintendent
		Repeats SSO's within two years	Number	0	2	0	0	0	4	1	1	Quarterly	WW Superintendent
		Number of Category 1 SSO's	Number	0	0	0	0	1	0	0	0	Quarterly	WW Superintendent
		SSO's/100 miles of pipe/year- Category 2	Number	2	0	1	0	0	0	0	0	Quarterly	WW Superintendent
		SSO's/100 miles of pipe/year - lateral	Number	15	16.26	15.04	9.35	8.81	9.56	10.24	16.38	Quarterly	WW Superintendent
		SSO's/100 miles of pipe/year -mains	Number	0.6	0.4	0.4	0	0.19	0.52	0.52	0.35	Quarterly	WW Superintendent
		Flooding claims per year	Number	0	1	0	0					Quarterly	WW Superintendent
		Total Cost of claims per year	$	0		0	0					Quarterly	Risk Management

7.5 Appendix – Change Log Example

3.5 References

3.5.1 SSMP Sample Change Log

{Insert Enrollee Name}
Sewer System Management Plan
Change Log

Date	SSMP Element/ Section	Description of Change/Revision Made	Change Authorized By: