City of Folsom

Environmental & Water Resources Department

2017 SSMP SELF-AUDIT

(July 1st, 2015 - June 30th, 2017)

CITY OF
FOLSOM
DISTINCTIVE BY NATURE

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Introduction

On May 2, 2006, the State Water Resource Control Board (SWRCB) adopted Statewide General Waste Discharge Requirements (GWDR's) for Sanitary Sewer Systems, herein referred to as the "General Order". The purpose of the General Order is to ensure that wastewater collection systems are properly operated and maintained by the municipalities that are in charge of their operations. The General Order applies to all public collection system agencies in California that own or operate collection systems comprised of more than one mile of pipe or sewer lines and convey untreated wastewater to a publicly owned treatment facility. The principal elements of the order include requiring each agency to prepare a Sewer System Management Plan (SSMP) which outlines how the municipality operates and maintains the collection system, reporting of all Sanitary Sewer Overflow (SSOs) to the SWRCB's online SSO database (CIWQS) with the ultimate goal of minimizing sanitary sewer overflows (SSO's).

Background

The City of Folsom's (City) sanitary sewer system is made up of approximately 352 miles of sanitary sewer pipe (main lines, force mains and laterals), ranging in size from 2 to 33 inches in diameter and pumped throughout the system by fourteen pump stations. The City's ownership and responsibility of miles of sanitary sewer pipe decreased from 354 miles to 352 miles through additional QA/QC of the City's CMMS database. The City has three major sewer sheds that all discharge to a 54-inch main interceptor on Folsom Boulevard that is operated and maintained by Sacramento Regional County Sanitation District. The table below summarizes the City of Folsom's Collection System.

Collection System Overview	
Miles of Gravity Sewer Mains	251 Miles
Miles of Sewer Force Mains	3 Miles
Miles of Sewer laterals (Lower Lateral)	98 Miles
Number of Pump Stations	14
Population Served (Includes Prison Population)	78,525

SSMP Internal Audit Overview

Section 10 of the WDR requires agencies to perform a self-audit every two years. The audit focuses on evaluating the effectiveness of the SSMP and the Agencies compliance with the SSMP requirements. The City's SSMP internal audit assesses the City's success in achieving compliance with various requirements of the SWRCB Order No. 2006-003 and implementing programs as stated in the SSMP. The SSMP audit process allows the SSMP document to develop over time through the identification of deficiencies in the management, operation and maintenance of the sanitary sewer collection system and the implementation of changes to the SSMP to address the deficiencies. The 2017 self-audit report is the 4th internal audit since the adoption of the GWDR's and addresses the following items:

- SSO history over the past 2 years
- Specific identification of performance areas in need of improvement
- Evaluate performance improvements identified in (07/01/2015 – 06/30/2017) Audit.
- Summary of proposed modifications to the SSMP elements and programs over the next audit periods to address all identified areas of past poor performance.
- Summary of proposed SSMP modifications (i.e. new programs, new performance indicators, etc.) not tied to poor performance, but tied to a desire to change or increase the scope of management, operations, and maintenance activities.

SSO History

Per the State Water Resources Control Board Order No. WQ2013-0058-EXEC, new spill categories, definitions and CIWQS reporting requirements took effect on September 9th, 2013. The most significant change in the order reclassified SSO spill categories to include a Category 3 spill. Each of the spill Categories are defined below:

Category 1:
Discharges of untreated or partially treated wastewater of **any volume** resulting from an enrollee's sanitary sewer system failure or flow condition that:

- Reach surface water and/or reach a drainage channel tributary to a surface water; or
- Reach a Municipal Separate Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly.

Category 2:
Discharges of untreated or partially treated wastewater of **1,000 gallons or greater** resulting from an enrollee's sanitary sewer system failure or flow condition that **do not** reach surface water, a drainage channel, or a MS4 unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.

Category 3:
All other discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition.

Over the past two years (07/01/2015 through 06/30/2017) the City of Folsom has responded to 38 Sanitary Sewer Overflows (SSO's). Of the 38 spills, 35 SSO's were classified as Category 3 SSO's, 0 were classified and Category 2 spills and 3 were classified as Category 1. The mainline SSO's decreased when compared to the last SSMP audit period (FY 13-15). The primary causes of the SSO's were roots. As shown in the tables below, the City is well below the Regional and State average for Category 1, Category 2, and Category 3 SSOs.

Audit comparison

Year	Category 1	Category 2	Category 3	Total
Audit (FY 11-13)	2	39	-*	41
Audit (FY 13-15)	1	0	47	48
Audit (FY 15-17)	3	0	35	38

* On September 9th, 2013 Category 3 spills were added to the reporting through SWRCB Order No. WQ2013-0058-EXEC to CIWQS, all previous spills were classified as either Category 1 or Category 2 SSO's

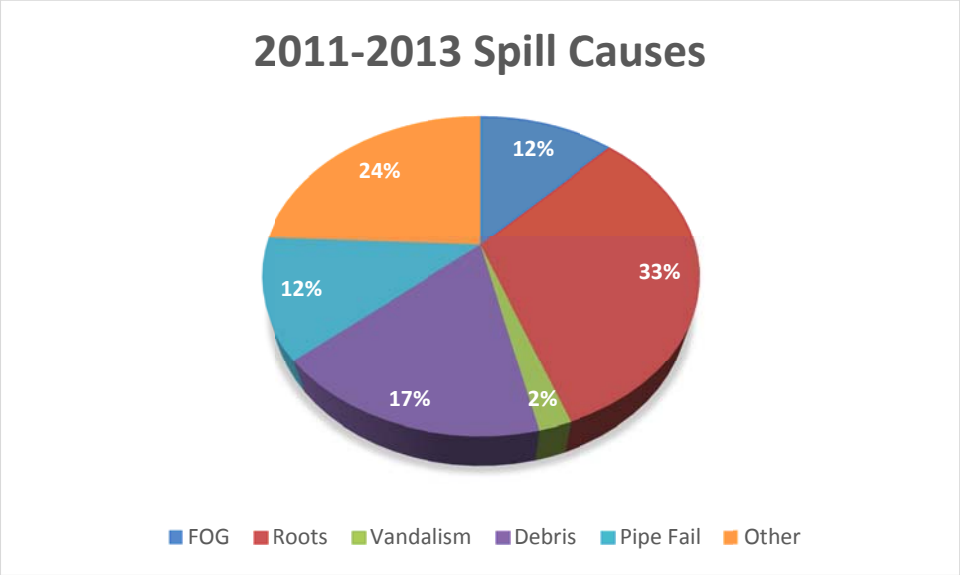
Category 1 Spill Rate Indices (#spills/100mi/year)			
Agency	Mainlines	Laterals	Other
City of Folsom	0.4	0	0.14
State - Municipal - Average	3.69	2.36	2.1
Region - Municipal - Average	5.07	1.93	5.44

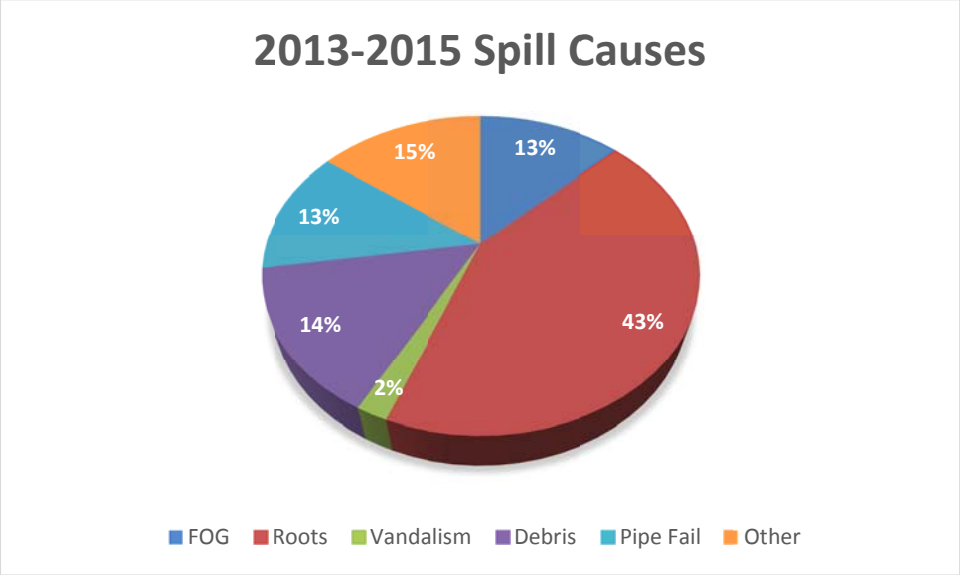
Category 2 Spill Rate Indices (#spills/100mi/year)			
Agency	Mainlines	Laterals	Other
City of Folsom	0	0	0
State - Municipal - Average	2.04	14.59	2.17
Region - Municipal - Average	2.84	3.37	3.97

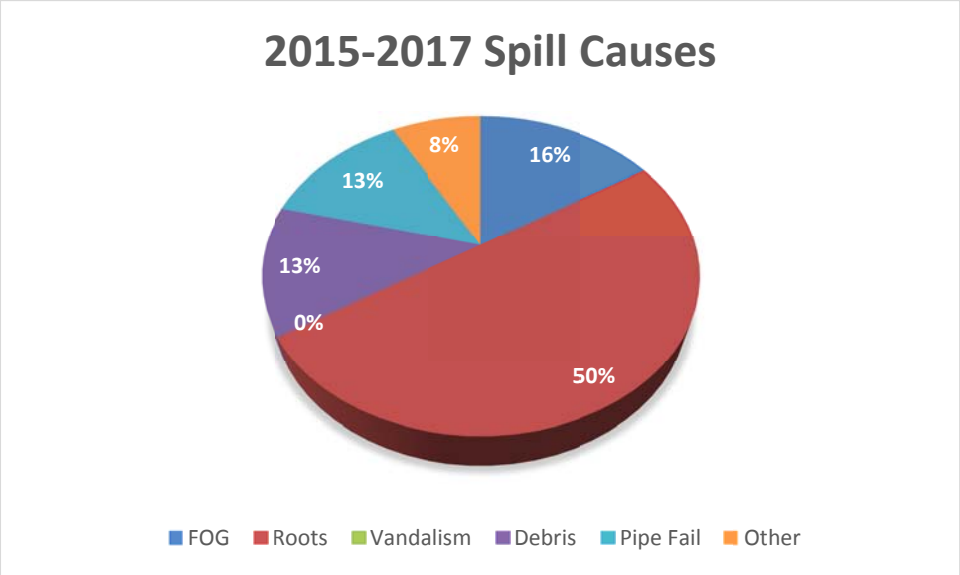
Category 3 Spill Rate Indices (#spills/100mi/year)			
Agency	Mainlines	Laterals	Other
City of Folsom	1.73	0.43	0.43
State - Municipal - Average	5.34	17.3	1.86
Region - Municipal - Average	6.75	20.74	3.19

Data for State and Regional Municipal average was taken from the CIWQS database (www.waterboards.ca.gov/ciwqs/).

The City also identified the cause of each spill that occurred from 07/01/2015 through 06/30/2017 and has categorized each spill type in the pie chart below. Additionally, the pie chart from FY 11-13 and FY 13-15 was also included to compare which spill categories increased, decreased or remained the same.







The top 3 spill causes over the past two years were roots, grease, and pipe failure. When comparing the pie chart to previous Fiscal Year audits, overall, the number of SSO's has reduced by 10 since the last audit period, however the volume of SSO's increased from 1,100 gallons in total volume during FY 13-15 to 4,276 gallons during FY 15-17. However, this increase in volume was attributed to a single SSO that occurred on October 31st, 2015 near 140 Canyon Rim Drive in which approximately 3,000 gallons spilled. The remaining 37 SSO's had a total spill volume of 1,276 gallons.

In addition to categorizing each spill type and cause, the City also evaluates its SSO response time during business hours and after business hours. Between 07/01/2015 and 06/30/2017 the City responded to 17 SSO's that occurred during business hours with an average response time of 25 minutes. The remaining 21 SSO's that occurred during non-business hours yielded an average response time of 25 minutes. These response times are well within the City's goal of responding to a spill within 30 minutes during business hours and within 60 minutes during non-business hours. For further explanation of each description, refer to Appendix A, Section 1 – Goals.

Performance Review

Attached to this report are performance assessment sheets, which summarize the collection and analysis of specific data, intended to provide a basis by which performance in various areas related to the management, operation, and maintenance of the sanitary sewer collection system may be measured. During each SSMP audit period, data is collected relating to each assessed area and a grade is provided for the City of Folsom's performance. Below is a summary of the grade given for each area assessed. For additional information, refer to Appendix A.

SSMP Performance Review

Section	No.	Description	Grade '13-'15	Grade '15-'17
Goals	1	Provide uninterrupted sewer service to meet customer's desired service levels.	A	A
	2	Minimize the risk of Sanitary Sewer Overflows (SSOs) by reducing the impact and probability of SSOs	A	A-
	3	Mitigate any unforeseen SSOs to minimize water quality and environmental impacts	A	A
	4	Ensure adequate sewer capacity to address the City's growth and storm flows	A	A
	5	Sustain aging sewer infrastructures by implementing an asset management program to extend asset lifecycle	A	A
	6	Ensure adequate funding support and resources to sustain long-term asset management	A	A
Organization	1	Update City staff responsibilities of the SSMP elements once a year due to organizational changes	A	A
Legal Authority	1	Prevent illicit discharges into the City's sanitary sewer system including I/I from satellite wastewater collection systems and laterals, storm water, etc.	B+	B-
	2	Require proper design and construction of sewers and connections	A	A
	3	Ensure access for maintenance, inspection and repairs to publicly owned portions of laterals	B	A
	4	Limit the discharge of FOG and other debris that may cause blockages	B	A
	5	Enforce violations of its sewer ordinances	B+	B+
Operations & Maintenance Program	I.1	Update mapping system to reflect new development projects, CIP projects, asset corrections due to field investigation, etc.	A	A
	I.2	Identify all sewer lines within the City that are not within the City's right of way and validate through documentation whether each of the sewer lines have dedicated sewer easements and whether the sewer is publicly or privately owned	A	A

	I.3	Continue to populate the GIS mapping system to include information such as age of infrastructure, development associated with sewer infrastructure, pipe type, pipe size, etc.	A	A
	II.1	Develop and implement standard operating procedures (SOPs) such as CCTV, manhole inspections, flushing, smoke testing, etc.	A	A
	II.2	Manhole Inspection, Flushing, CCTV, smoke testing, etc. is to be completed within a scheduled cycle.	B-	C
	II.3	Perform routine pump station inspections	A	A
	II.4	Develop and implement emergency response procedures	A	A
	II.5	Develop a list of construction related projects that identifies and prioritizes system deficiencies by implementing a short-term and long-term rehabilitation program to address each deficiency and create a time schedule for developing and implementing the rehabilitation program	A	A
	II.6	Establish a more effective odor control program	B+	A
	III.1	Schedule and track attendance of all safety meeting as it relates to sewer operations	A	A
	IV.1	Maintain and update an equipment and replacement parts inventory list	A	A
Design & Performance Program	1	Maintain design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems	A	A
	2	Maintain procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects	A	A
Overflow Emergency Response Plan	1	Ensure the City's Sanitary Sewer Overflow Response Plan Flow Chart, Sanitary Sewer Overflow Report Form and the Sanitary Sewer Overflow Response Plan is up to date	A	A
	2	Review all SSO's within the CIWQS for accuracy. Compare CIWQS SSO database to City's Excel SSO database for consistency.	A-	A-

	3	SSO History (Category 1, 2, and 3 SSO's)	A	A
	3A	Number of Category 3 SSOs	A	A
	3B	Number of Category 2 SSOs	A	A
	3C	Number of Category 1 SSOs	A	A
	4	Category 1, 2 and 3 Spill Causes	A	A
	5	Average response time during normal business hours	A	A
	6	Average response time after normal business hours	A	A
FOG Control Program	1	Necessary Legal Authority to prohibit discharges of FOG into the City's sanitary sewer system	A	A
	2	Commercial FOG Requirements for the installation of grease removal devices (such as traps or interceptors)	A	A
	3	Maintain a Public Outreach Program	B	A
	4	FOG Inspection of FSE's	B+	B+
	5	FOG outreach	B	A
	6	Lateral Inspections	B	B
Sewer Evaluation and Capacity Assurance Plan	1	Determination of maximum hydraulic capacity in key sewer main lines	A	A
	2	Determination of existing groundwater infiltration and rain dependent infiltration levels in the system.	B	A
Monitoring, Measurement, & Program Modifications	1	Establish and prioritize appropriate SSMP activities	A	A
Communication Program	1	Communication with satellite agencies	B	B
	2	Communication of the SSMP with the public	A	A

Evaluation of Performance Improvements identified in the 2015 SSMP Audit

The City identified the following items to address during the past two years (07/01/2015 – 07/01/2017). Outlined below were the most critical items during the last audit period that were in need of improvements after assessing performance (See Appendix A for more detail).

- Continue to pursue odor control improvements, specifically at Pump Station No. 2, and the Rowberry/Walden/Withers residential subdivision.
  - A 1,800 foot vent pipe and carbon scrubber was designed and construction was completed on April 27, 2016 to help reduce odor in the Rowberry/Walden/Withers residential subdivision.
  - The City has completed the design of this project and is currently out to bid for adding a carbon scrubber at Pump Station No. 2 to control odor. Construction will occur within FY 17/18. In addition, the City installed an ANUE agitator system in 2016 within the wet well to break up FOG and reduce odors.

- Continue to improve upon the new sewer lateral inspection program recently implemented.
  - In order to increase efficiency, in April of 2017, the City sent out Request for Proposals (RFP) for Sewer Lateral CCTV Inspection. This proactive program consists of closed circuit television (CCTV) inspection of all of the City owned laterals (approximately 22,000) over a three year period to proactively identify and repair lateral issues; effectively reducing the risk of sanitary sewer overflows. Once the laterals have been inspected, depending on the condition of the lateral, the City will repair the sewer lateral in house or put a list of laterals together as part of a Capital Improvement Project.

- Continue to improve the utility maintenance sewer division database (Lucity) for SSO related repair and replacement work
  - A SOP has been created that requires the Wastewater Collections Lead Worker to create a Work Request in Lucity for the City's Utility Maintenance Division. The Utility Maintenance Division then issues a Work Order, performs the repair and once the repair is completed the Work Order is closed.

- Continue to implement a proactive and progressive sewer lateral inspection and repair program with the goal of reducing spills over the next 2 years.
  - Spills during the FY 15-17 have been reduced from 48 SSO's to 38 SSO's from the previous FY 13-15. In addition, as described above, the City is currently in the process of having all 22,000 sewer laterals inspected over the next three years by an outside Contractor.

- Work toward reducing SSO's over the next 2 years.
    - Spills during the FY 15-17 have been reduced from 48 SSO's to 38 SSO's from the previous FY 13-15.

- Update the City's Operation and Maintenance schedule for smoke testing, CCTV, flushing, FOG inspections, lateral inspections and sanitary sewer manhole inspections.
    - On July 19, 2017 an internal memo was distributed within the City's Environmental & Water Resources Department that clearly outlined new procedures and protocols for meeting the smoke testing, CCTV, flushing, FOG inspections, lateral inspections and sanitary sewer manhole inspection schedule.

- There were 29 Sanitary Sewer Manholes (SSMH's) identified within the past 2 years as having Inflow & Infiltration (I/I). The City needs to rehabilitate the 29 manholes to reduce I/I.
    - The City repaired 26 of the 29 SSMH's.

- Complete identifying the remaining 9% of pipe material to be mapped in GIS. The remaining 9% of pipe material will need to be identified during wastewater crew asset inspections because either the improvement plans did not identify the material type or there were no improvement plans associated with certain areas within the City (i.e. historic Folsom)
    - The City still has 9% of its pipe material to identify. No progress on reducing this percentage was made within the last two Fiscal Years. Progress on this percentage needs to be addressed during SSMH and CCTV inspections.

Future Performance Improvements

The City will address the following items over the next 2 years (07/01/2017 –06/30/2019). Outlined below are the most critical items identified during this audit period that are in need of improvement after assessing performance (See Appendix A for more detail).

- Per the City's July 19, 2017 memo, revise standard operating procedures for flushing, sanitary sewer manhole inspections, and CCTV to meet the City's 5 year cycle.

- Ensure all FSE's are inspected for FOG compliance on a 2-year cycle

- Smoke test to reduce Inflow and Infiltration within Basins 4, 6A, 6C and 14 per the City's updated SECAP study.

- Inspected all 22,000 sewer laterals over the next three years (2018-2020) with the selected outside consultant.

- Continue to QA/QC the City's CMMS database (Lucity)

- Continue working to reduce SSO's

- Complete the 2017/2018 SECAP study

SSMP Modifications not tied to performance identified in (07/01/2015 – 07/01/2017) audit

Below is a list of proposed SSMP modifications that were identified in the (07/01/2015 – 07/01/2017) audit that were implemented and are now in place.

- Perform a Sewer System Evaluation and Capacity Assurance Plan (SECAP) Update by 2017
  - The City has been working on the SECAP study. The study should be completed by Fall 2017.

- Continue replacing old sewer infrastructure through CIP's
  - The City completed the replacement of several CIP Projects over the past two years and is currently in the Design or Construction Phase of other projects:
    - Old Town Wastewater Rehabilitation Project (Complete)
    - Sewer Service Lateral Project (On-Going)
    - Rowberry-Walden Odor Control Project (Complete)
    - Natoma Alley Sewer Rehabilitation Project (Design Phase)
    - Sewer Access Road Project (Design Phase)
    - Sewer Evaluation and Capacity Assurance Plan (Study)
    - Pump Station No. 2 Odor Control Project (Design Phase)
    - Pump Station No. 1Basin Abandonment Project (Construction Phase)
    - Pump Station Condition Assessment (Study)
    - CCTV Sewer Lateral Inspection (Condition Assessment)

- Continue to establish an effective sewer lateral inspection and repair program
  - In April of 2017, the City issued a Request for Proposals (RFP) for Sewer Lateral CCTV Inspection. This proactive program consists of closed circuit television (CCTV) inspection of all of the City owned laterals (approximately 22,000) over a three year period to proactively identify and repair lateral issues; effectively reducing the risk of sanitary sewer overflows. Once the laterals have been inspected, depending on the condition of

the lateral, the City will repair the sewer lateral in house or put a list of laterals together as part of a Capital Improvement Project.

- Improve upon PS No. 2 odor control
  - The City has completed the design of this project and is currently out to bid for adding a carbon scrubber at Pump Station No. 2 to control odor. Construction will occur within FY 17/18.

SSMP Modifications not tied to Performance for (07/01/2017 – 06/30/2019) Audit

- Complete the Sewer System Evaluation and Capacity Assurance Plan Update by Fall 2017.
- Continue replacing old sewer infrastructure through CIP's.
- Continue to establish an effective sewer lateral inspection and repair program.
- Complete the odor control improvements at Pump Station No. 2
- Once the Final 2017/2018 SECAP study is complete, address any deficiencies identified in the study through the City's Capital Improvement Program.
- Reduce I/I based on the 2017/2018 SECAP study recommendation

Certification of Audit

By signing below, we certify that the information contained in this audit report is correct to the best of our knowledge.

Name	Position	Signature	Date
Marcus Yasutake	Environmental & Water Resources Director	Marcus Yasutake	8/4/17

Appendix A – SSMP Assessment

SSMP Section 1 - Goals

Responsible Person (RP):
Environmental & Water Resources Director

Summary:
In 2006 when the Waste Discharge Requirements (WDR's) were adopted through Order No. 2006-0003-DWQ by the State Water Resources Control Board (SWRCB) the City's Environmental & Water Resources (EWR) Department set out to establish goals to comply with Section 1 of the SSMP. The goals set forth by the EWR Department include:

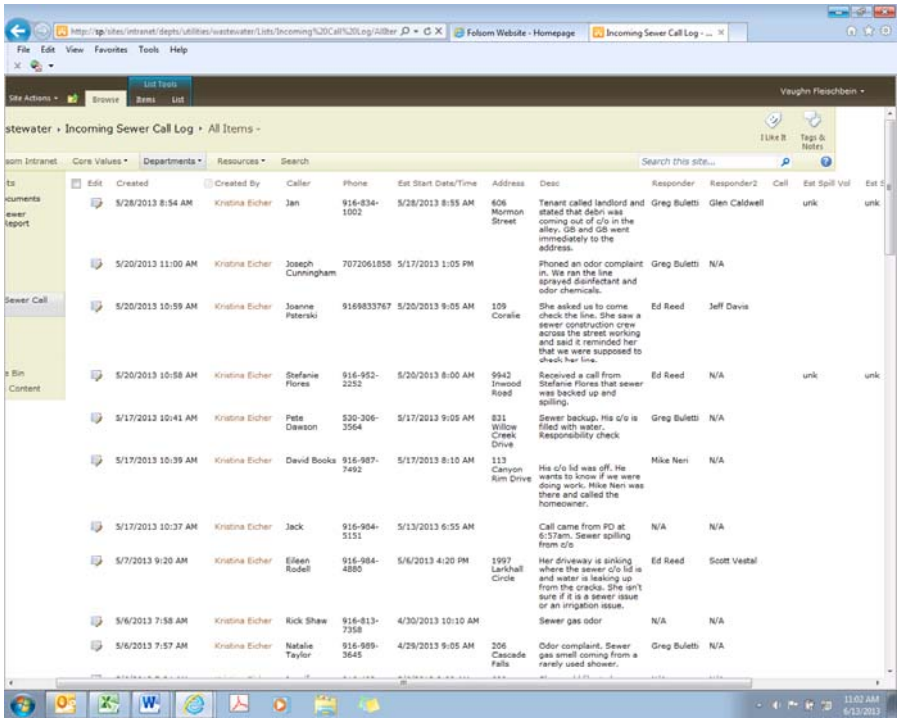
1. Provide uninterrupted sewer service to meet customers' desired service levels.
2. Minimize the risk of Sanitary Sewer Overflows (SSO's) by reducing the impact and probability of SSO's.
3. Mitigate any unforeseen SSO's to minimize water quality and environmental impacts.
4. Ensure adequate sewer capacity to address the City's growth and storm flows.
5. Sustain aging sewer infrastructures by implementing asset management program to extend asset lifecycle.
6. Ensure adequate funding support and resources to sustain long-term asset management.

All goals were approved and adopted by the City Council on October 23rd, 2007 through Resolution No. 8160.

1. Provide uninterrupted sewer service to meet customer's desired service levels.

Discussion: To achieve uninterrupted sewer service to meet customer's desired service levels the Wastewater Collections Division employs a full time staff person who receives calls from customers regarding wastewater complaints during the business hours of 7:00 a.m. to 3:30 p.m. Calls received during business hours that involve field investigation have a goal for wastewater crews to be on-site within 30 minutes. Examples of field investigated calls include sewer backups, sewer spills, odor complaints, missing cleanout lids, etc. Calls that come in after hours instruct the caller to contact the Police Department (PD) in the event of a sewer emergency. PD will contact the on-call wastewater personnel, and a wastewater employee proceeds to be on-site investigating the problem within 60 minutes. Non-emergency voicemails are addressed first thing the next morning. As of October of 2012 the Wastewater Collections Division recently transitioned to tracking all calls through the City's intranet as shown in the Figure below.

Figure 1 – Call Log



Grade: A

Recommendation: No action needed, the City will continue to uphold the goals as outlined above.

2. Minimize the risk of Sanitary Sewer Overflows (SSO's) by reducing the impact and probability of SSO's.

Discussion: To achieve minimizing the risk of Sanitary Sewer Overflows (SSO's) by reducing the impact and probability of SSO's the City has developed and employed a number of policies, procedures and practices. Some of the policies, procedures and practices are listed below:

- Perform Sanitary Sewer Inspection (Manhole Inspections, CCTV, flushing, etc.) of the entire wastewater system within the City of Folsom's scheduled cycle.
- Respond to all SSO's, with the goal of wastewater crews being on-site within 30 minutes during normal business hours and on-site within 60 minutes during non-business hours.
- Develop Standard Operating Procedures (SOP's) and provide frequent training on the SOP's

Over the past two years (07/01/2015 through 06/30/2017) the City of Folsom responded to 38 Sanitary Sewer Overflows (SSO's). Of the 38 spills, 35 SSO's were classified as Category 3 SSO's, 0 were classified and Category 2 spills and 3 were classified as Category 1. The mainline SSO's decreased when compared to the last SSMP audit period (FY 13-15). The primary cause of the

SSO's were roots. As shown in the tables below, the City is well below the Regional and State average for Category 1, Category 2, and Category 3 SSOs.

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* On September 9th, 2013 Category 3 spills were added to the reporting through SWRCB Order No. WQ2013-0058-EXEC to CIWQS, all previous spills were classified as either Category 1 or Category 2 SSO's

Grade: A-

Recommendation: Continue to uphold the goals as outlined above, because the primary cause contributing to spills was roots. The City is addressing roots through ongoing sewer mainline and lateral replacement CIP projects as well as through the City's sewer lateral inspection and rehabilitation program. Additionally, the number of Category 1 spills increased from the previous year from 1 to 3. Causes of the 3 Category 1 spills were related to grease, debris and construction activity.

3. Mitigate any unforeseen SSO's to minimize water quality and environmental impacts.

Discussion: Mitigating any unforeseen SSO's to minimize water quality and environmental impacts are achieved through various actions. Some of the actions the City employs to achieve this goal are:

- Storm Emergency Response Team – Before, during and after a storm event City staff visually inspects all major wastewater facilities to ensure all assets and infrastructures are operating under normal conditions and have not been affected by the storm event. Wastewater staff also use SCADA data, rainfall data and projected weather patterns to prepare a storm event. A recent example of the SERT Program working effectively occurred during the January 10, 2017 storm event.

- Inspect all above ground wastewater mains every 6 months – As of 2012 the City implemented inspection of all above ground wastewater mains. Implementing this procedure resulted in identifying an above ground wastewater main located near a creek that was overgrown with vegetation. After the initial inspection, the City worked with the State Parks and Recreation Department and the Department of Fish and Game to clear the vegetation that was located within close proximity to the above ground wastewater main.

- From July 1, 2015 through June 30, 2017 which was the third round of FSE inspections. The City inspected 85 of 356 FSE's within the City of Folsom. The City needs to continue to inspect FSE's on a 2 year cycle.

- In April of 2017, the City issued a Request for Proposals (RFP) for Sewer Lateral CCTV Inspection. This proactive program consists of closed circuit television (CCTV) inspection of all of the City owned laterals (approximately 22,000) over a three year period to proactively identify and repair lateral issues; effectively reducing the risk of sanitary sewer overflows. Once the laterals have been inspected, depending on the condition of the lateral, the City will repair the sewer lateral in house or put a list of laterals together as part of a Capital Improvement Project.

- Over the past two years (FY 15-17) 286 sewer laterals were repaired. 186 sewer laterals were repaired by the City's Utility Maintenance crew and the remaining 100 sewer laterals were repaired by an outside Contractor.

- Currently as part of the Folsom Zoo Sewer Replacement Project the City has identified three (3) manholes that will have Smart Covers install on them. Construction will begin in the summer of 2017. The addition of the smart covers at these three manholes will alarm City staff of potential surcharging in these SSMH's.

Grade: A

Recommendation: No action needed, the City will continue to uphold the goals as outlined above.

4. Ensure adequate sewer capacity to address the City's growth and storm flows.

Discussion: In order to ensure adequate sewer capacity to address the City's growth and storm flows, the City conducts an updated sewer capacity and assurance plan approximately every 3 to 5 years. Currently the City is in the process of conducting a new Sewer Evaluation and Capacity Assurance Plan (SECAP). There are eight (8) tasks that make up the SECAP study. The City is currently finalizing task 6 of 8, with an anticipated completion date of Fall 2017. The updated report will address the following:

- Dry Weather Flows
- Wet Weather Flows
- Total Peak Flow Comparison to Prior Years & Studies
- Areas of Hydraulic Capacity Concern
- Conclusions & Recommendations

Grade: A

Recommendation: Complete a System Evaluation and Capacity Assurance Plan by Fall 2017.

5. **Sustain aging sewer infrastructure by implementing asset management program to extend asset life cycle.**

Discussion: In order to sustain aging sewer infrastructure the City continues to implement its asset management program to extend the life of each asset. This is achieved through various methods. It begins with inspecting each of the assets such as manhole inspections, pipeline inspections (CCTV), flushing, cleaning, etc. Once the inspections have occurred and a priority rating has been assigned to each asset an action plan is developed based on that priority. Priorities are listed below:

- Priority 1 – Re-inspect within 5 years
- Priority 2 – Re-inspect within 2 years
- Priority 3 – Re-inspect within 6 months
- Priority 4 – Re-inspect within 1 month
- Priority 5 – Re-inspect within 2 weeks

Once the affected asset has been assigned a priority, different methods to rehabilitate the asset and extend its life are implemented. Some examples include:

- Clean and flush the sewer line to remove roots, debris, etc.
- Manhole Lining (Seals cracks and holes resulting in a reduction in Inflow and Infiltration)
- Cured in Place Pipe (Lining the inside of a sewer line to extend service life of pipe)

Grade: A

Recommendation: No action needed, the City will continue to uphold the goals as outlined above.

6. **Ensure adequate funding support and resources to sustain long-term asset management.**

Discussion: In order to ensure adequate funding support and resources for sustaining long-term asset management, the City develops a 5 year Capital Improvement Plan (CIP) along with a Wastewater Operations & Maintenance Budget. Each year this plan is approved and adopted by City Council. The City's annual wastewater budget typically ranges from $6 to $7 Million dollars. Of the $6 to $7 Million dollars, $1.8 to $2.2 Million dollars is set aside for rehabilitation and replacement projects which are consistent with the CIP Plan. The remaining balance is set aside for Wastewater Operations and Maintenance activities.

Grade: A

Recommendation: No action needed, the City will continue to uphold the goals as outlined above.

SSMP Section 2 - Organization

Responsible Person (RP):
Environmental & Water Resources Director

Summary:
Under the City's organizational structure, defined roles and responsibilities were established during the initial implementation of the City's SSMP. The Environmental & Water Resources (EWR) Department uses this organizational structure to assign tasks to individuals for each element of the SSMP.

1. Update City staff responsibilities of the SSMP elements once a year due to organizational changes.

Discussion: The City's organizational chart was updated in 2017. The organizational chart will continue to be updated on a yearly basis.

Grade: A

Recommendation: Continue to update the City's Department Organization chart and employees responsible for each SSMP element due to organizational changes.

SSMP Section 3 - Legal Authority

Responsible Person (RP):
Environmental & Water Resources Director

Summary:
The City must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:

- Prevent illicit discharges into its sanitary sewer system, including I/I from satellite wastewater collection systems and laterals, storm water, unauthorized debris, etc.
- Require proper design and construction of sewers and connections
- Ensure access for maintenance, inspection and repairs to publicly owned portions of laterals
- Limit the discharge of FOG and other debris that may cause blockages
- Enforce violations of its sewer ordinances

1. Prevent illicit discharges into the City's sanitary sewer system including I/I from satellite wastewater collection systems and laterals, storm water, etc.

Discussion: There are multiple areas in which the City strives to prevent illicit discharges. Folsom Municipal Code Title 13, Chapter 13.08 (Municipal Sewer System Regulations) provides the City with the legal authority to limit and enforce illicit discharges from upstream public and/or private satellite collection systems. Within the past two years the City has continued certain I/I reduction programs while implementing a number of new programs in order to help reduce I/I. Currently I/I reduction programs and procedures include:

- Continue the manhole inspection program. Over the past two years during the City's manhole inspection program the City identified 6 manholes that had I/I issues with a rating of a 3 or higher. The 6 SSMH need to be rehabilitated to reduce I/I. Manholes that cannot be rehabilitated by the City's Utilities Maintenance crew are placed on a CIP list.

- Continued communication efforts with the Folsom Prison (The City's satellite agency) staff in regards to the agreement set forth between the City and the Prison for ongoing maintenance, I/I reduction, etc.

- Over the past two years the City identified 282 sewer laterals that needed repair due to roots, structural issues, offsets, etc. 182 of the 282 sewer laterals were repaired by the City's Utility Maintenance Sewer Crew. The remaining 100 sewer laterals were placed on the City's Capital Improvement Program. On April 15, 2015 through Resolution No. 9546, the City Council approved Caggiano General Engineering to replace 100 sewer service line

laterals in order to rehabilitate existing sewer laterals and minimize SSO's. Repair of the 100 Sewer Service Laterals was completed on November 18, 2016.

- Over the past two years the City has continued to inspect sewer laterals and evaluate the condition of each lateral to determine if it needs to be rehabilitated. Once the lateral had been inspected, if it was in need of repair, the repair would be made in house by the City's Utility Maintenance Sewer Division or was rehabilitated through the City's Sewer Service Lateral Capital Improvement Project Program. However, in order to increase efficiency and perform inspection and condition assessment in a timely manner, in April of 2017, the City issued a Request for Proposals (RFP) for Sewer Lateral CCTV Inspection. This proactive program consists of closed circuit television (CCTV) inspection of all of the City owned laterals (approximately 22,000) over a three year period to proactively identify and repair lateral issues; effectively reducing the risk of sanitary sewer overflows. Once the laterals have been inspected, depending on the condition of the lateral, the City will repair the sewer lateral in house or put a list of laterals together as part of a Capital Improvement Project.

- The City typically smoke tests as a source to identify I/I. Prior to FY 15-17, the City performed smoke testing with West Yost Associates on 54 miles of pipeline within Basins 4, 7, 10, 13 and 14. The report and all results were finalized in November of 2015. However, repairing I/I from the report was not performed during FY 15-17. The City needs to focus on reducing I/I as outlined in the November 2015 West Yost Associates Infiltration and Inflow Reduction Study. Between 07/01/15 through 06/30/17, the City conducted smoke testing on approximately 5.1 miles of the City's sanitary collection pipelines within Basins 7 and 8. Future smoke testing and I/I reduction will be conducted based on recommendations from the System Evaluation Capacity and Assurance Plan (SECAP) and Inflow and Infiltration (I/I) studies. As of the most recent 2017/2018 SECAP study, I/I reduction efforts need to be focused in Basins 4, 6A Basin 6C and Basin 14.

- Since March 2016, the City has been working with Water Works Engineer's to update the City's Sewer Evaluation and Capacity Assurance Plan (SECAP). Currently, the City has received a draft Technical Memo outlining areas that need to be approved upon. The final SECAP study has an anticipated completion date of Fall 2017. Based on the draft Technical Memo, sewer basins 4, 6A, 6C and 14 have the highest Rain Derived Inflow and Infiltration and Groundwater Infiltration per In-Dia.-Mi of sewer system. CCTV inspection combined with smoke testing will be utilized to identify areas of I/I.

- The City has also implemented numerous CIP projects to help reduce I/I. These projects include:
    - Natoma Alley Sewer Rehabilitation Project (Design Phase)
    - Sewer Access Road Project (Design Phase)
    - Old Town Wastewater Rehabilitation Project (Complete)

- Sewer Service Lateral Project (Complete)
- Sewer Evaluation and Capacity Assurance Plan (Study)
- CCTV Sewer Lateral Inspection (Condition Assessment)

Grade: B-

Recommendation: Rehabilitate the 6 SSMH to reduce I/I. Rehabilitate/repair I/I related issues identified in the November 2015 West Yost I/I report. Begin working on reducing I/I through smoke testing and CCTV within Basins 4, 6A, 6C and 14 as identified in the 2017/2018 SECAP study. Continue to identify areas of I/I through CCTV, manhole inspections, lateral inspections, etc. Continue to perform sewer lateral inspection and repair to minimize SSO's.

2. Require proper design and construction of sewers and connections.

Discussion: Folsom Municipal Code Title 16, Chapter 16.08.010 (Definitions & Responsibilities) and Chapter 16.36 (Improvements), requires all sewers and connections to be properly designed and constructed. Specific design and construction of sewers is covered within the City of Folsom Design Standards and the City of Folsom Construction Standards. Also, representatives from both engineering and operations are involved in the plan check and plan review process to ensure all sewers are designed and installed properly. Last, the City of Folsom updated the design standards and construction specifications, which were approved by council in January 2014.

Grade: A

Recommendation: Continue to coordinate between engineering and operations for the plan check process to ensure proper design and installation.

3. Ensure access for maintenance, inspection and repairs to publicly owned portions of laterals.

Discussion: The Folsom Municipal Code Title 16, Chapter 16.32.010 (Dedication of streets, alleys and other public right-of-way or easements) states that, "as a condition of approval of a tentative map, the sub-divider shall dedicate or make an irrevocable offer of dedication of all parcels of land within the subdivision that are needed for streets and alleys, local transit facilities, public access easement, including access rights and abutters' rights, drainage, public greenways, bicycle paths, trans, open space easements, sunlight easements, landscape easements, scenic easements, public utility easement and other public easements…". Having this in place, allows the City to operate, maintain, inspect and fix any portion of the sewer system located within an easement. In addition, Folsom Municipal Code Title 13, Chapter 13.08 will be updated to clearly identify who owns and/or maintains the sewer service lateral from the building foundation to the property line (upper lateral portion) and who owns and/or maintains the sewer service lateral from the property line to the sewer main line (lower lateral portion).

Grade: A

Recommendation: No action needed, the City will continue to enforce the Folsom Municipal Code.

4. Limit the discharge of FOG and other debris that may cause blockages.

Discussion: The Folsom Municipal Code Title 13, Chapter 13.03 discusses the regulations to prohibit and control the discharge of Fats, Oils and Grease (FOG) into the Sanitary Sewer Collection System. The City continues to improve its FOG inspection program of all Food Service Establishments (FSE). The City recently completed its first round of inspecting all FSE's and the management of Fats, Oils and Grease. The inspection program collects data specific to each FSE, educates the FSE of FOG Best Management Practices (BMP's) and notes when an FSE has violated any part of the City's FOG Ordinance. The City also educated residents and the public about Fats, Oils and Grease through Best Management Practice tips via the City's website and through various community events such as City Works Day.

Grade: A

Recommendation: Continue to inspect FSE's on an annual basis.

5. Enforce violations of its sewer ordinances

Discussion: The City's ordinance provides the City with the proper authority to issue notices to correct and notices of violation through the Folsom Municipal Code Title 13, Chapter 13.03.170 and Folsom Municipal Code Title 1, Chapters 1.08, 1.09 and 1.10. The City inspected 85 of 356 Food Service Establishments (FSE's) during FY 15-17 in order to ensure each FSE is in compliance with the City's ordinance for minimizing FOG.

Grade: B+

Recommendation: Inspect all FSE's within a 2 year cycle. Continue to enforce violations of the City's sewer ordinances and educate FSE's on proper FOG handling procedures.

SSMP Section 4 - Operations & Maintenance Program

Responsible Person (RP):
Environmental & Water Resources Director

Summary:
Section 4 – Operations & Maintenance Program of the SSMP requires a variety of elements the each agency must comply with. These include:

I. Maintaining an up-to-date map of the sanitary sewer system
II. Routine operation and maintenance activities & Rehabilitation & Replacement Program
III. Training
IV. Equipment Inventory

I. Sewer System Mapping: The City of Folsom maintains a GIS map of the City's utility infrastructure, which includes the sanitary sewer collection system. The GIS map was generated from importing existing AutoCAD maps based on recorded as-built plans in order to create an inventory of utility infrastructure assets for the purpose of tracking and asset management.

1. **Update mapping system to reflect new development projects, CIP projects, asset corrections due to field investigation, etc**.

Discussion: As new development projects and CIP projects are completed, as-built information is given to the Utilities Engineering Technician to update the City's GIS system. The same process is used when field personnel find mapping errors. Corrections are drawn on a map and changes are made by the Utilities Engineering Technician in GIS. To date all projects and known map errors have been revised.

Grade: A

Recommendation: No action needed.

2. **Identify all sewer lines within the City that are not within the City's right of way and validate through documentation whether each of the sewer lines have dedicated sewer easements and whether the sewer is publicly or privately owned.**

Discussion: The City began working on this task in January of 2013. To date the City has identified 54 miles of sewer infrastructure that is located outside of the City's right of way. As of June 2015 all 54 miles of sewer infrastructure located outside of the City's right of way has been identified as either being private or public and mapped in GIS accordingly.

Grade: A

Recommendation: Continue to update the mapping system as new sewer infrastructure is constructed. Develop a plan and notification process to inform those that own the private sewers that they are responsible for all operations, maintenance, repairs and costs associated with the private sewer.

3. Continue to populate the GIS mapping system to include information such as age of infrastructure, development associated with sewer infrastructure, pipe type, pipe size, etc.

Discussion: The City began working on this task in 2004 when the City switched from AutoCAD to GIS. Listed below is a table identifying the assets that are complete and those assets that still need additional information and the timeline for completing each task.

	Complete (%)	Incomplete (%)
Pipe Material	91%	9%
Pipe Age	87%	13%
Manhole	100%	-
Development	100%	-
Pipe Size	100%	-

Grade: A

Recommendation: Continue to improve and update the City's GIS mapping system as it relates to pipe material, pipe age, pipe size, manholes, etc. through sewer inspections such as Sanitary Sewer Manhole Inspections.

II. Preventive Operation & Maintenance and Rehabilitation & Replacement Program: The Preventive Maintenance and Rehabilitation & Replacement Program outline routine sewer operation and maintenance activities that the City implements as part of the SSMP. The goal of the program is to:

- Develop and implement standard operating procedures (SOPs) such as CCTV, manhole inspections, flushing, smoke testing, etc.
- Perform routine pump station inspections
- Develop and implement emergency response procedures
- Develop a list of construction related projects that identifies and prioritizes system deficiencies by implementing a short-term and long-term rehabilitation program to address each deficiency and create a time schedule for developing and implementing the rehabilitation program.

1. Develop and implement standard operating procedures (SOPs) such as CCTV, manhole inspections, flushing, smoke testing, etc.

Discussion: The City first developed SOP's when it received an NPDES and Cease and Desist Order from the State Water Resources Control Board (SWRCB) in 2001. Since this time, new SOP's have been developed and modified as part of the City's SSMP required by the SWRCB Waste Discharge Requirements (WDR) Order No. 2006-003 that was implemented in 2006 and was formally adopted and approved by City Council in August of 2009. SOP's developed by the City include pump station inspections, manhole inspections, CCTV, flushing inspections etc. SOP's are updated on a continuous basis to account for staff changes, procedural changes and operational changes.

Grade: A

Recommendation: All SOP's are up to date and in place. Continue updating existing SOP's and creating new SOP's as necessary in order to comply with the SSMP.

2. Manhole Inspection, Flushing, CCTV, smoke testing, etc. is to be completed within a scheduled cycle.

Discussion: During the 2017 SSMP self-audit, the City identified the 5 year inspection of pipelines and Sanitary Sewer Manholes within its Preventive Operation & Maintenance Program as being deficient. Based on an August 30th, 2012 internal memo, the City began performing full CCTV inspection of the older section of sewer pipe (40 years old and greater) during its third five year cycle (2012-2016). Performing full CCTV inspection of sewer pipe resulted in preventing the City from completing flushing, CCTV and sanitary sewer manhole inspections within the 5 year cycle.

Based on the above results, it was determined by the Environmental & Water Resources Department that investing in an Envirosight jetscan, KEG Kleen sight camera nozzle or equal product will allow the City to meet its 5 year objective for CCTV, flushing and sanitary sewer manhole inspection. The Envirosight jet scan, KEG Kleen sight camera nozzle or equal allows the City to attach a camera/video to the jet nozzle and perform flushing and CCTV of sewer mains simultaneously. Performing this task simultaneously allows the City to flush and CCTV any pipe size from 6-inch in diameter to 24-inch in diameter more efficiently. It also allows the City to record and view footage to identify any defects such as sags, offsets, structural deficiencies, etc.

Currently in order to meet the 5 year cycle, the City would need to flush/CCTV an average of 25,000 lineal feet/week and perform an average 27 SSMH/Zoom Cam Inspections per week. In addition crews would be responsible for pump station checks three times a week, inspect all Food Service Establishment (FSE) for compliance with minimizing Fats, Oils and Grease (FOG) every 2 years, perform smoke testing in areas identified in the City's System Evaluation and Capacity Assurance Plan in order to reduce inflow and infiltration and continue ongoing training on a weekly basis such as safety training, SSO training, etc. Lastly, inspection of all 22,000 sewer laterals will be inspected via outside consultant over a period of three years (2018 – 2020).

Table 1 WASTEWATER INSPECTIONS (5 Year Cycle)

Priority	Basin	Miles	SSMH	Year	SSMH/Zoom (%)	Flush/CCTV (%)
1	4	12.6	306	2018		
2	7	13.33	301	2018		
3	10	8.93	220	2018		
4	3	11.73	271	2018		
5	13	12.2	334	2019		
6	1	19.59	638	2019		
7	5	0.561	10	2019		
8	12	20.98	513	2019		
9	8	46.79	1042	2020		
10	14	6.6	225	2020		
11	2	9.74	258	2021		
12	11	7.86	254	2021		
13	9	16.69	376	2021		
14	16	12.1	283	2021		
15	6	27.5	627	2022		
16	15	9.04	236	2022		
17	17	16.85	372	2022		

Notes:

1. FSE Inspections (approximately 350 FSE's) will occur every two years. All FSE's will be inspected within the City's Wastewater Collection Division.
2. Smoke Testing activities to reduce Inflow and Infiltration will occur within the City's Wastewater Collection Division or through an outside consultant. Smoke Testing activities will be prioritized based on recommendations from the SECAP study.
3. All 22,000 sewer lateral inspections will be performed through an outside consultant over the next three years (2018 – 2020).

Table 2 FSE FOG Inspections (2 Year Cycle)

PRIORITY	BASIN #	YEAR	FOG
1	4	2018	
2	7	2018	
3	10	2018	
4	3	2018	
5	13	2018	
6	1	2018	
7	5	2018	
8	12	2018	
9	8	2019	
10	14	2019	
11	2	2019	
12	11	2019	
13	9	2019	
14	16	2019	
15	6	2019	
16	15	2019	

Grade: C

Recommendation: Invest in an Envirosight jetscan, KEG Kleen sight camera nozzle or equal to allow the City to meet its 5 year objective for CCTV, flushing and sanitary sewer manhole inspection. The Envirosight jet scan, KEG Kleen sight camera nozzle or equal allows the City to attach a camera/video to the jet nozzle and perform flushing and CCTV of sewer mains simultaneously. Performing this task simultaneously allows the City to flush and CCTV any pipe size from 6-inch in diameter to 24-inch in diameter more efficiently. It also allows the City to record and view footage to identify any defects such as sags, offsets, structural deficiencies, etc. to meet the 5 year cycle, the City would need to flush/CCTV an average of 25,000 lineal feet/week and perform an average 27 SSMH/Zoom Cam Inspections per week.

In addition crews are responsible for pump station checks three times a week, inspection of all Food Service Establishment (FSE) for compliance with minimizing Fats, Oils and Grease (FOG) every 2 years, perform smoke testing in areas identified in the City's System Evaluation and Capacity Assurance Plan in order to reduce inflow and infiltration and continue ongoing training on a weekly basis such as safety training, SSO training, etc. Lastly, inspection of all 22,000 sewer laterals will be inspected via outside consultant over a period of three years (2018 – 2020). Follow the 5 year wastewater inspection table and the 2 year FSE Fog Inspection table as described above.

3. Perform routine pump station inspections

Discussion: Pump Station inspections are inspected on a weekly, monthly, semi-yearly and yearly basis. The scope of pump station inspection varies depending on the inspection interval. An SOP has been developed for each specific pump station and the necessary action items that field staff needs to follow based on the type of inspection (weekly, monthly, semi-annual or annual inspection). Inspections are recorded on Preventive Maintenance Templates and input by City staff in Lucity (The City's CMMS System). To date, all pump station inspections are on schedule.

Grade: A

Recommendation: No action needed, all pump station inspections are up to date and recorded in Lucity. Continue inspections and documentation.

4. Develop and implement emergency response procedures

Discussion: In addition to Standard Operating Procedures, the City has also developed Emergency Operating Procedures. The procedures include topics such as sewer force-main break, sewer main break, pump station failure, etc. The City has the ability to bypass pump at all pump stations within the City of Folsom in the event of a complete pump station failure. Emergency bypass pumping procedures have been written for each of these stations and the crews are trained regularly on performing bypass pumping as seen in the chart below.

Bypass Pump Station Training	
Pump Station	Date
Oak Ave PS	11/15/2016
PS No. 2	5/16/2017

The ability to bypass pumping capability at each of the stations reduces the risk of SSO's.

Grade: A

Recommendation: No action needed, continue to update and implement new emergency procedures as necessary and continue training on all emergency procedures such as bypass pumping.

5. Develop a list of construction related projects that identifies and prioritizes system deficiencies by implementing a short-term and long-term rehabilitation program to address each deficiency and create a time schedule for developing and implementing the rehabilitation program.

Discussion: During each of the inspections (manhole, CCTV, lateral inspections, etc.) performed by the City's Wastewater Department, an overall condition assessment is assigned as outlined below:

- Rating 1 – Noted and follow up inspection within 5 years
- Rating 2 – Noted and follow up inspection within 2 to 3 years
- Rating 3 – Replace within 6 months
- Rating 4 – Replace within 1 month
- Rating 5 – Emergency (Replace within 2 weeks)

If the asset rating is a 3 or higher, the asset is categorized into one of two areas. Once the inspection request is completed and a rating of 3 or higher is assigned to that asset, a work order is generated and scheduled for repair or replacement by the City's Utilities Maintenance Crew within the timeframe listed above. Typical repair or replacement projects performed by the Utility Maintenance Crew include: replacing cleanouts, repairing/replacing laterals, and repairing/replacing main lines. For FY 15-17, 182 sewer construction requests were made and 182 of the 182 (100%) were completed within the past two fiscal years (FY 15-17). In addition to the City's Utility Maintenance Crew performing sewer lateral repairs, the City also went out with a Capital Improvement Project for an outside Contractor to perform sewer lateral repairs. During the 2015-2017 audit period, 100 sewer service laterals were repaired by the Contractor.

Assets such as sewer pipelines with a rating of 3 or higher that are large enough in scope of work are placed on a CIP list. Listed below are the projects that were completed within the past two years and the projects that are currently in the design phase.

- Natoma Alley Sewer Rehabilitation Project (Design Phase)
- FY 13-14 Sewer Access Road Project (Design Phase)
- Old Town Wastewater Rehabilitation Project (Complete)
- Sewer Service Lateral Project (Complete)
- Sewer Evaluation and Capacity Assurance Plan (Study)
- Rowberry-Walden Odor Control Project (Complete)
- Pump Station No. 2 Odor Control Project (Design Phase)
- Pump Station No. 1 Basin Abandonment Project (Construction Phase)
- Pump Station Condition Assessment (Study)
- CCTV Sewer Lateral Inspection (Construction Phase)

Grade: A
Recommendation: Continue to proceed with Utility Maintenance repair/replacement work and CIP Projects.

6. Establish a more effective odor control program

Discussion: Currently the City of Folsom has three known locations that cause odor issues. The three areas are Oak Avenue Pump Station, Rowberry/Walden/Withers residential subdivision area, and Pump Station No. 2.

During the FY 15-17 audit period, upgrades to odor control were made at the City's Oak Avenue Lift Station. Prior to the Oak Avenue Pump Station upgrades, the City utilized Bioxide. Bioxide introduces nitrate oxygen into the wastewater stream and creates an environment in which certain naturally occurring bacteria thrive. These bacteria utilize the dissolved hydrogen sulfide which is present as a part of their metabolism, thereby effectively removing any dissolved hydrogen sulfide from the wastewater. Although bioxide was somewhat effective at reducing odors, the City was able to find two efficient and effective ways to reduce odors at the Oak Avenue Pump Station. Upgrades at the Oak Avenue Pump Station that have been effective in reducing odor including adding a pig launching station in order to clean the force main. Additionally, the City installed an odor control system constructed by ANUE Water Technologies. The ANUE system is installed in the wet well and runs continuously by creating surface agitation in the wet well that breaks up and prevents organic and bio-organic matter buildup. This system helps reduce odor and also eliminates the FOG mat that typically forms in wet wells.

Odor issues were also prominent in the Rowberry/Walden/Withers residential subdivision area. Odors in this area are a result of numerous factors that include: wastewater age, large sewer mains transporting significant amounts of wastewater flow within close proximity to the subdivision and abrupt changes in pipe alignment. In the fall of 2015, the City completed the construction of an 1,800 foot vent pipe that leads to a carbon scrubber to reduce the ambient sewer odors. This has resulted in a significant reduction of odor complaints in the surrounding Rowberry-Walden subdivision community.

During the FY 15-17 audit period the City of Folsom implemented Phase 1 of a 2 Phase approach to reduce odors around Pump Station No. 2. The City switched from using Vapex to control odors to the ANUE Water Technologies agitator system. Similar to the system set up at the Oak Avenue Pump Station, the agitator system installed at Pump Station 2 runs continuously by creating surface agitation in the wet well that breaks up and prevents organic and bio-organic matter buildup. This system helps reduce odor and also eliminates the FOG mat that typically forms in wet wells. Phase 2 to help reduce odor control at Pump Station No. 2 was also under way during FY 15-17. During FY 15-17 the City completed the design of a Carbon Scrubber to better control odors at Pump Station No. 2. Construction of the carbon scrubber will begin during Fiscal Year 17/18. Once construction is complete, the carbon scrubber will help reduce the ambient sewer odors surrounding the pump station site and the bike trail that runs adjacent to the station.

Grade: A

Recommendation: The City has completed odor improvements at both the Oak Avenue Pump Station as well as the Rowberry-Walden residential subdivision. Continue moving forward with the construction phase of installing the carbon scrubber at Pump Station No. 2.

III. Sewer System Operations and Maintenance Training: Training is a critical element to the SSMP. Training employees helps increase employee knowledge and operational know how. Ultimately, training staff on various elements of the SSMP is critical to reducing the number of SSO's. Training of City staff occurs in many different forms such as; tailgate meetings, formal meetings, seminars, educational classes, etc.

1. **Schedule and track attendance of all safety meeting as it relates to sewer operations.**

   Discussion: Training frequency and dates are logged and can be seen in the table listed below. Frequency of training depends on the importance of the topic. Some topics are reviewed whenever there is a new hire while other topics are reviewed on an ongoing or annual basis.

Environmental & Water Resources Training Log	Training Frequency	Training Dates	Scheduled 2017	
Accident Review and Investigation	A	Safety Training Forms\2014\2014 Accident Reporting.pdf		2017
Aerial Devices	N			
Asbestos Awareness	N/A			
Battery Handling & Maintenance	N			
Employee Wellness/Blood Borne Pathogens	N/A	Bloodborne pathogens_Aerosol Transmittable Diseases_10-7-2015		2017
Compressed Gas Safety	N			
Confined Space Entry	N/O	Confined Space Entry_Certs_4-27-17		2017
Confined Space Entry Quiz	N	Confined Space Entry Quiz_3-12-15		2017
CSON - Collection System Operations Notice Overview		CSON Training 7-24-2015		
Defensive Driving (staff who drive at work)	N	Defensive Driving_1/25/2017		2017
Electrical Safety	N	Safety Training Forms\2013\2013 Electrical Safety.pdf	7/26/2017	
Emergency Action/Fire Prevention	N/O			2017
Emergency Eye Wash	N			
Equipment Operation Safety (department specific)	N/O			
Ergonomics- Office	N			
Ergonomics- Back Injury Prevention/Safety	N	Back Injury Prevention_6-3-2015		2017
Excavation/Trenching/Shoring	N	2/11/2009		
Fall Protection	N	3/23/2017		2017
First Aid/CPR (designated staff)	N/ 2Year	4/11/2017		2017
Forklift	N/ 3Year	Employee Certification\Ed Reed\Certs\2015 Truck Mounted Aerial Lift Instructor.pdf		2018
Hazard Outdoors, Animals, Insects, Etc.	N/O	Safety Training Forms\2014\Outdoor Hazards.pdf		2017
Hearing Conservation	N/A	Hearing Protection_8-5-2015		2017
Heat Illness Prevention/UV Protection	A-SPRING	Heat Illness Prevention Safety_4/7/2017		2017
Hand Injuries	N	Safety Training Form 5/3/2017		2017
Housekeeping/Organize		Safety Training Forms\2015\Housecleaning_2/7/2017.pdf		2017
Hydro-Ranger Milltronics Training		Hydro Ranger Milltronics Training 3-4-15		2017
Injury & Illness Prevention Program	N/O	3/28/2017		2017
Ladder Safety	N	LadderSafety 11/4/2015		2017
Lead Awareness	N/O			
Lockout/Tag Out	N/O	6/8/2017		2017
New Employees Safety Orientation/Specific Job Hazards	N	N/A		
MSA Gas meter training	0	9/10/2014		2017
Oak Avenue Bypass Training	A	Oak Avenue Bypass_ 2-25-2015		2017
Outdoor Hazards (plants, animals, insects)	A-SPRING			
Personal Protective Equipment Requirements (PPE)	N/O	2/4/2015		2017
Pesticide Use Safety	N/O			
Rigging/Hoisting	N	2/22/2017		2017
Supervisor Safety Training (designated employees)	N/O	9/1/2014		
Tools-Hand & Power (department specific)	N/O			
Traffic Control & Flagger Training	N	6/14/2017		
Water Safety		Safety Training Forms\2015\Water Safety_ 3-16-2015.pdf		2017
Tree Work	N			
Welding & Cutting Safety/Fire Watch/Hot Work	N	Safety Training Forms\2013\2013 Welding and SSO CAT 1,2,3.pdf		2017
Workplace Violence/Evacuation Drills	N	Violence Prevention_8-5-2015	8/30/2017	2017
Chemical or Petroleum Surface Spill	A			
Mountain Oak SOP including Bypass	A			
Stress in the Work Place	A			
SSMP Overview	A	Safety Training Forms\2012\SSMP overview.pdf	8/1/2014	2017
Lake Forest SOP including Bypass	A	3/31/2014		
Del Norte SOP including Bypass	A	Safety Training Forms\2013\2013 Del Norte SOP-Bypass.pdf		
Hazards of Working in Hot Weather	A	5/8/2013		
Young Wo SOP including Bypass	A			
Orangevale Ave SOP including Bypass	A	Safety Training Forms\2013\Orangevale SOP.pdf		
6A-ARC SOP including Bypass	A			
SSO reporting /Spill Volume/ Refresher	Bi-A	2/7/2014		2017
Competent Person Training	N	Safety Training Forms\2013\2013 Competent Person Training 7-23-13.pdf		
Vac All Training	N	Safety Training Forms\2014\2017 Vac-All Day 1.pdf	1/13/2014	2017
Respirator Fit Test	A	3/12/2012		
GHS Hazard Communication (OHSA)		Safety Training Forms\2013\2013 GHS Hazard Communication.pdf		2017
ARC Flash/ 2 Day Class/ refresher	N/O	2/15/2013	10/8/2014	2017
Run. Hide. Fight. Surviving an Active Shooter Event		6/30/2017		
Safety Awareness: Real Accidents, Real Stories		4/19/2017		
Safe Operation and Use of Overhead Cranes		Overhead Crane Training 2-22-17.pdf		

Completed training for 2017

N= New Employee
A= Annual Training
Bi-A = Bi-Annual Training
O= Ongoing Training

Grade: A

Recommendation: Continue Training Efforts as outlined in the schedule above.

IV. Equipment & Replacement Parts Inventory: Maintaining an Equipment & Replacement Parts Inventory is critical to the operation of an agencies sewer system. During an emergency such as a pump failure it is important to have spare parts on hand to be able to react quickly to the emergency and minimize the down time due to a failure.

1. **Maintain and update an equipment and replacement parts inventory list.**

Discussion: As shown in the figure below, the City maintains a spreadsheet that lists all of the critical equipment relevant to the City's sewer system. Items such pump manufacturers, pump horse power, manufacturers of various items, serial numbers, generators, etc.

OAK AVENUE

Station Type:
Receives flow from:
Pumps it to:

EQUIPMENT NAME	TYPE	SERIAL NO.	MANUFACTURER	MODEL NO.	CAPACITY	SIZE (HP)	V/PH/Hz	SPEED	HEAD (TDH)	NOTES	RECOMMENDED PREVENTIVE MAINTENANCE*	FREQUENCY*
Pump #1	PUMP		PACO								Check semi-annually for stable and smooth operation. Check the unit running records for hourly usage vs. power consumption, vibration and pump output to determine if internal inspection is required.	6 mos 6 mos
PUMP-1 PACO Pumps U.S. Electric Motors	MOUNTED PUMP		PACO								1. Pull pumps twice a year for inspection and wash down with pressure hose. 2. Check bubbler switches. 3. Check the seal oil in the seal chamber yearly or when the seal alarm signal is given.	1. 6 mos 2. 3 mos 3. 12 mos
PUMP-1 PACO Pumps U.S. Electric Motors	MOUNTED PUMP		PACO								1. Pull pumps twice a year for inspection and wash down with pressure hose. 2. Check bubbler switches. 3. Check the seal oil in the seal chamber yearly or when the seal alarm signal is given.	1. 6 mos 2. 3 mos 3. 12 mos
BACKFLOW VALVE-1	VLV		Val Matic	301 BW						150 psi, w.p.	1. Check and clean as needed.	As needed
BACKFLOW VALVE-2	VLV		Val Matic	301 BW						150 psi, w.p.	1. Check and clean as needed.	As needed
BACKFLOW VALVE-3	VLV		Val Matic	301 BW						150 psi, w.p.	1. Check and clean as needed.	As needed
GENERATOR TURNOVER												Weekly
WET WELL	WELL										1. Clean grease from wet well.	6 mos/when needed
SUMP PUMP	PUMP		GOULD	V551IB		1/2		1725			1. Check sump pump for normal operation.	2 wks/when needed
COMPRESSOR (2)	COMP		INGRAM	HRIOW B2		60Hz						
HEATER	HVAC		DAYTON	VR4205M		5w				AIR PUMP	1. Check heater for normal operation in winter months.	Routine Inspection Vis
MOTOR-1	MOTOR									GAS	1. Inspect and grease as needed.	Routine Inspection Vis
MUFFIN MONSTER MOTOR	MOTOR	18065	JWC ENVIRONMENTAL	CMD		3DR5 HP	V-208/230/460 Ph-3 Hz-50/60	1725			1. Check motor and grease as needed.	Routine Inspection Vis
EMERGENCY GENERATOR	EGU	625004	KOHLER	135RZD			Ph-3 Hz-60	1800			1. Change oil and filter. 2. Tune up.	6 mos 12 mos
SNAP ARM VALVE	VLV		NO. 52SC								1. Inspect valve for normal operation. 2. Spray with oil.	Routine Inspection Vis Routine Inspection Vis
3-WAY VALVE	VLV										1. Inspect valve for normal operation.	Routine Inspection Vis
AUTO VALVE	VLV										1. Inspect valve for normal operation.	Routine Inspection Vis
REFRIGERATED AIR DRYER	HVAC										1. Check air dryer for normal operation.	Routine Inspection Vis
EXHAUST FAN	HVAC		JEN FAN CO.	CWD 100A		1/3	Ph-1 V-115/230	1800			1. Check fan for normal operation.	Routine Inspection Vis
SAFETY VALVE	INC										1. Inspect and crack open safety valve.	Weekly
TANK VALVE	VLV										1. Bleed out condensation.	Routine Inspection Vis
V-NOTCH CHLORINATOR			WALLACE & TIERNAN	SIOK								Daily
ACUTER 35 GAS DETECTION SYSTEM			WALLACE & TIERNAN	RJ150								Daily
EMERGENCY CHLORINE SCRUBBER SYSTEM			US FILTER									Weekly
EMERGENCY EYE WASH			GAURDIAN EQUIPMENT									Weekly
CHATTERBOX REMOTE MONITOR		4-4999	RACO									Daily
LIQ-5/30 PROGRAMABLE CONTROLLER			TESCO									Daily
HEATER (NATURAL GAS)			AEI CORP.									

Grade: A

Recommendation: No action needed, continue to update the spreadsheet as necessary.

SSMP Section 5 - Design & Performance Program

Responsible Person (RP):
Environmental & Water Resources Director

Summary:
Design and Construction Standards are important to help streamline the process for both design review and construction. It is important to recognize the close relationship between design and construction. These processes can best be viewed as an integrated system. Design is the process of creating something new like sewer system infrastructure, usually represented by detailed plans and specifications while construction is the process of identifying activities and resources required to make the design a physical reality.

1. **Maintain design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems.**

   Discussion: The City requires design engineers and contractors to adhere to the most recent version of the City of Folsom Standards. The City currently has the following documents:

   - Design Manual
   - Standard Specifications
   - Standard Details

   The last update to these documents was in January of 2014. In addition the City of Folsom conducts plan review meetings with both the engineering and operations division to ensure all sewers are properly designed and installed.

   Grade: A

   Recommendation: None, Continue to incorporate the new standards.

2. **Maintain procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.**

   Discussion: The City of Folsom adopted detailed standard construction specifications that all construction must adhere to. In addition, City inspectors oversee each aspect of the construction project including the installation and testing of new sewers, pumps, etc. The City updated the standard specifications and construction details in January 2014.

   Grade: A

   Recommendation: Ensure City inspectors are familiar with the new standards since they have been adopted.

SSMP Section 6 - Overflow Emergency Response Plan

Responsible Person (RP):
Environmental & Water Resources Director

Summary:
In the event of a Sanitary Sewer Overflow (SSO), it is of greatest importance to limit the liability, severity of damage, and protect the natural resources of the City of Folsom. The source of the SSO should be stopped and contained as soon as possible. In addition to cleanup procedures, the City is responsible for notification of affected residents, property owners, and agencies that could be impacted by an SSO. The City's Overflow Emergency Response Plan is intended to provide City staff with procedures to be followed for SSO response and notification. The City of Folsom's success in preventing the occurrence of sanitary sewer overflows is a key metric in gauging the overall success of several SSMP programs. Proper procedures, response & notification so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner are critical to an SSO event.

1. **Ensure the City's Sanitary Sewer Overflow Response Plan Flow Chart, Sanitary Sewer Overflow Report Form and the Sanitary Sewer Overflow Response Plan is up to date.**

   Discussion: Category 1, 2 and 3 Flow charts have been updated and revised. These revisions further clarified responsibility and procedures. Additionally, the SSO Report form and SSO Response Plan have been updated to reflect organization personnel changes.

   Grade: A

   Recommendation: No action needed.

2. **Review all SSO's within CIWQS for accuracy. Compare CIWQS SSO database to City's Excel SSO Database for consistency.**

   Discussion: Since the State Water Resources Control Board audit on October 3rd and 4th of 2012, the City of Folsom re-evaluated its QA/QC process when inputting spills into the California Integrated Water Quality System (CIWQS) database. After evaluating data input into the CIWQS system for the 2011-2013 Audit, the following areas were identified as needing improvement:

   - Category 1, Category 2 and Category 3 spill identification procedures
   - Latitude & Longitude
   - Spill Volume Recovered
   - Private or Public Spill
   - Estimated Operator arrival date/time
   - Comparing CIWQS database against the City's Excel SSO database

Over the two most recent Fiscal Years (07/01/2015 through 06/30/17) the City significantly improved its reporting accuracy and procedures between its SSO Excel Database and the CIWQS website during the 2015-2017 Audit. The only area found needing to be improved upon was the SSO Cause. During this time period, City staff only amended one spill report due to an SSO cause inaccuracy.

Grade: A-

Recommendation: Continue to improve upon inaccuracies between the City's SSO Excel Database and the CIWQS Database.

3. SSO History (Category 1, 2 and 3 SSO's)

Per the State Water Resources Control Board Order No. WQ2013-0058-EXEC, new spill categories, definitions and CIWQS reporting requirements took effect on September 9, 2013. The most significant change in the order reclassified SSO spill categories to include a Category 3 spill. Each of the spill Categories are defined below:

Category 1:
Discharges of untreated or partially treated wastewater of **any volume** resulting from an enrollee's sanitary sewer system failure or flow condition that:

- Reach surface water and/or reach a drainage channel tributary to a surface water; or
- Reach a Municipal Separate Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly.

Category 2:
Discharges of untreated or partially treated wastewater of **1,000 gallons or greater** resulting from an enrollee's sanitary sewer system failure or flow condition that **do not** reach surface water, a drainage channel, or a MS4 unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.

Category 3:
All other discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition.

3A. Number of Category 3 SSOs.

Discussion: Of the 38 spills that were reported, 35 were category 3 SSO's. As shown in the table below, the City is well below the Regional and State average.

2015-2017 Audit Period

Category 3 Spill Rate Indices (#spills/100mi/year)			
Agency	Mainlines	Laterals	Other
City of Folsom	1.73	0.43	0.43
State - Municipal - Average	5.34	17.3	1.86
Region - Municipal - Average	6.75	20.74	3.19

Grade: A

Recommendation: The City of Folsom is well below the regional and statewide average of Category 3 SSO spills. Additionally, the number of Category 3 spills decreased from 47 SSO's during FY 13-15 to 35 SSO's during FY 15-17. Continue to minimize the number of Category 3 spills.

3B. Number of Category 2 SSOs.

Discussion: Utilizing the data from the CIWQS website, of the 38 spills that occurred from 07/01/2015 through 06/30/2017, zero spills were classified as Category 2 SSOs. The number of spills per 100 miles per year within the City was compared against the State and Regional average. As shown in the table below, the City is well below the Regional and State average.

2015-2017 Audit Period

Category 2 Spill Rate Indices (#spills/100mi/year)			
Agency	Mainlines	Laterals	Other
City of Folsom	0	0	0
State - Municipal - Average	2.04	14.59	2.17
Region - Municipal - Average	2.84	3.37	3.97

Grade: A

Recommendation: The City of Folsom is well below the regional and statewide average of Category 2 SSO spills. The City had zero Category 2 SSO's during FY 15-17.

3C. Number of Category 1 SSOs.

Discussion: Utilizing the sewer asset database and the CIWQS website, there were 3 Category 1 SSOs occurring within the past two years. The spill was caused by grease deposition (FOG), debris,

and construction activity. The City continues to be well below the Regional and State average, however, the City needs to continue to work on reducing the number of Category 1 SSO's.

2015-2017 Audit Period

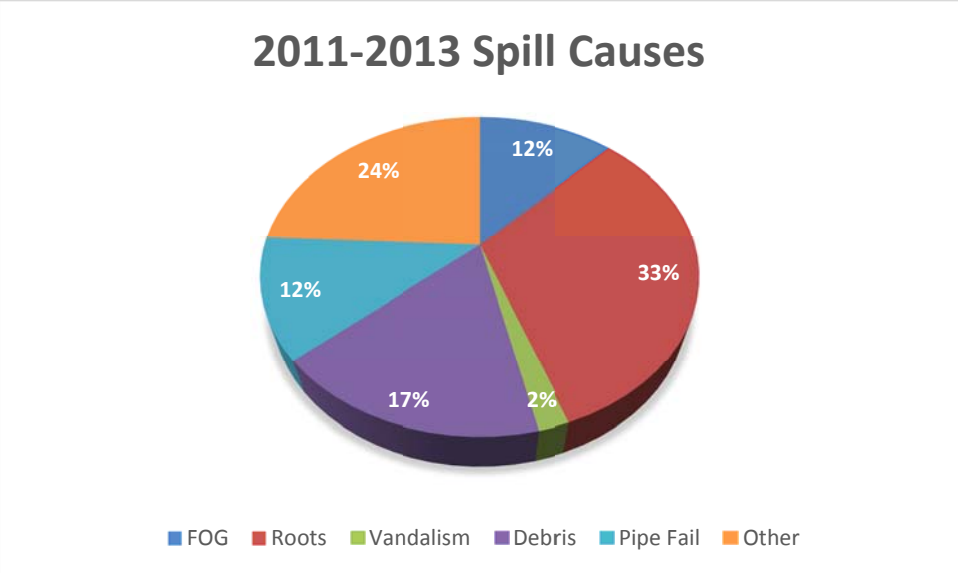
Category 1 Spill Rate Indices (#spills/100mi/year)			
Agency	Mainlines	Laterals	Other
City of Folsom	0.4	0	0.14
State - Municipal - Average	3.69	2.36	2.1
Region - Municipal - Average	5.07	1.93	5.44

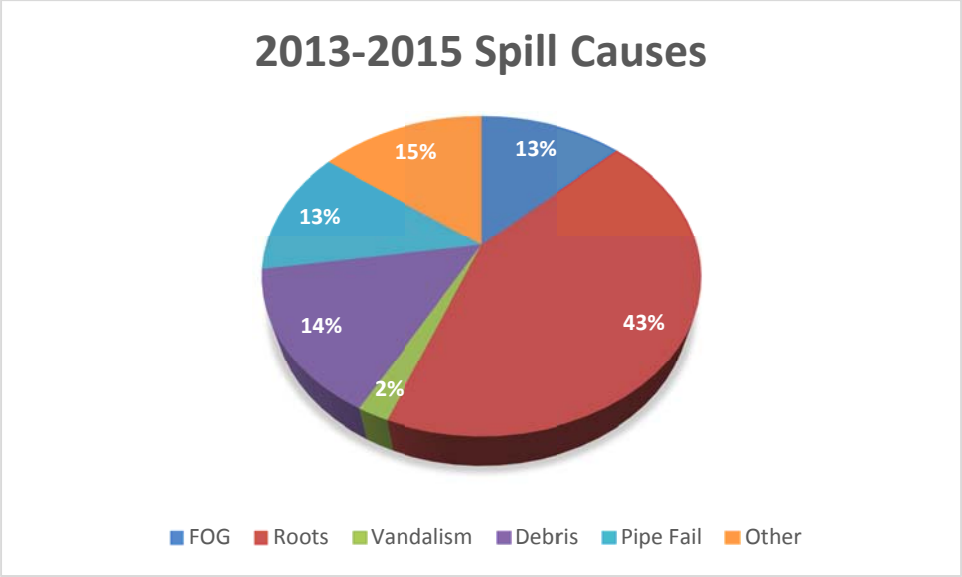
Grade: A

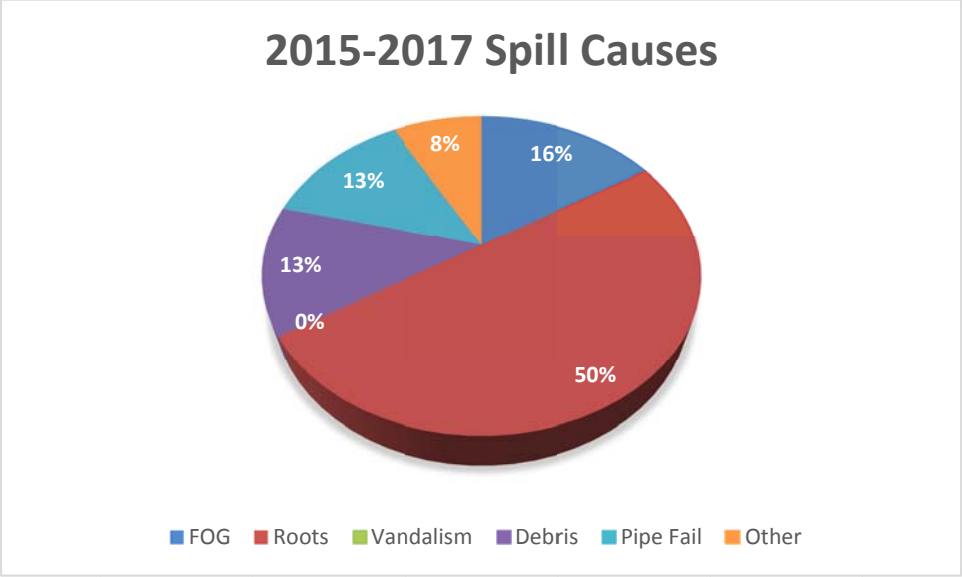
Recommendation: The City of Folsom is well below the regional and statewide average of Category 1 SSO spills and should continue to work to prevent Category 1 SSO's.

4.Category 1, 2 and 3 Spill Causes

Discussion: The chart below evaluates the cause of the 38 spills that occurred from 07/01/2015 through 07/01/2017 and compares the spill cause to those from the 2011-2013 and 2013-2015 SSMP self-audit.







The top 3 spill causes over the past two years were roots, grease, and pipe failure. When comparing the pie chart to previous Fiscal Year audits, overall, the number of SSO's has reduced by 10 since the last audit period, however the volume of SSO's increased from 1,100 gallons in total volume during FY 13-15 to 4,276 gallons during FY 15-17. However, this increase in volume was attributed to a single SSO that occurred on October 31st, 2015 near 140 Canyon Rim Drive in which approximately 3,000 gallons spilled. The remaining 37 SSO's had a total spill volume of 1,276 gallons.

Grade: A

Recommendation: Since most of the City's spills occur within the sewer lateral, the City began an aggressive proactive and progressive lateral inspection program to inspect all 22,000 sewer laterals

over the next 3 years in order to identify sewer lateral deficiencies with the goal of reducing spills and other potential overflow related spills such as roots, grease, and structural defects.

5. Average response time during normal business hours.

Discussion: The City had 17 spills during normal business hours between July 1, 2015 and July 1, 2017. The average response time of those 17 spills was 25 minutes.

Grade: A

Recommendation: Ensure staff members are thoroughly aware of spill response procedures in the event of future SSOs, per the requirement of the SSMP Section VI – Overflow Emergency Response Plan.

6. Average response time after normal business hours.

Discussion: The City had 21 spills after hours between July 1, 2015 and July 1, 2017. The average response time of those 21 spills was 25 minutes.

Grade: A

Recommendation: Ensure staff members are thoroughly aware of spill response procedures in the event of future SSOs, per the requirement of the SSMP Section VI – Overflow Emergency Response Plan.

SSMP Section 7 - FOG Control Program

Responsible Person (RP):
Environmental & Water Resources Director

Summary:
The purpose of the FOG Control Program is to control the discharge of FOG from City of Folsom facilities, such as food services establishments, apartments, single family homes, etc., in order to reduce the potential for FOG accumulation in the sanitary sewer collection system.

1. Necessary Legal Authority to prohibit discharges of FOG into the City's sanitary sewer system.

Discussion: On March 13, 2007, the City Council adopted Ordinance No. 1071 which addresses the prohibition and control of discharging fats, oils and grease into the City's Sanitary Sewer System. The ordinance can be found in Title 13, Section 13.03 of the City's Folsom Municipal Code. On August 25, 2015 through Ordinance No. 1233, City Council approved revisions to Section 13.03 of the Folsom Municipal Code to improve upon the regulations of fats, oils and grease

Grade: A

Recommendation: Continue to review the ordinance periodically to ensure the ordinance is still relevant and up to date.

2. Commercial FOG Requirements for the installation of grease removal devices such as traps or interceptors.

Discussion: Currently, the building department and community development department in conjunction with the Environmental & Water Resources (EWR) Department work together during the plan review process to ensure all food service establishments are installing the proper grease control device. Prior to 2012, most decisions were made through verbal discussions. To help streamline the process the EWR Department created a set of "Grease Control Device Guidelines" for the Building Department to refer to when reviewing plans. On August 25, 2015 through Ordinance No. 1233, City Council approved revisions to Section 13.03 of the Folsom Municipal Code to improve upon the regulations of fats, oils and grease.

Grade: A

Recommendation: Continue the plan review process as described above. Continue to review the ordinance periodically to ensure the ordinance is still relevant and up to date.

3. Maintain a Public Outreach Program

Discussion: The City developed numerous articles to help provide residents and business owners within the City of Folsom with the proper tools and knowledge to prevent sanitary sewer pipe blockages that cause backups and sanitary sewer overflows. The articles are posted on the City's website (www.folsom.ca.us) and include material such as:

Commercial FOG

- Why a FOG Program
- Proper Disposal of FOG BMP's
- Grease Removal Devices
- Grease Interceptor Maintenance
- Grease Trap Maintenance
- How To Recycle Kitchen Grease
- Selecting a Grease hauler
- Requirements for New & Remodeled FSE's
- Dumpster & Recycling Containers
- Equipment Cleaning
- Grease Interceptor Cleaning Record Form
- Employee FOG Training Log

Residential FOG

- Why a FOG Program
- The Do's and Don'ts of FOG

In addition, there is additional FOG outreach and educational materials listed on the website for residents and business owners to view.

Grade: A

Recommendation: Update the FOG material as necessary.

4. FOG Inspection of FSE's

Discussion: In April of 2013, the City began a more robust FOG inspection program to inspect all Food Service Establishments (FSEs). The inspection program collects data specific to each FSE, educates the FSE of FOG Best Management Practices (BMP's) and notes when an FSE has violated any part of the City's FOG Ordinance. Currently there are 356 active FSE's within the City of Folsom. During FY 15-17, 85 FSE's were inspected. This marks the third round of FSE inspection. The City needs to continue to inspect all FSE's on a 2 year cycle.

Grade: B+

Recommendation: Continue FSE inspections as scheduled, identify the remaining FSE's in violation, and have them corrected. Remove FSE's from the inspection list that do not require a grease control device.

5. FOG outreach

Discussion: In April of 2013, the City began a FOG outreach program. The program consists of FOG inspection SOP, checklists, ordinance, and outreach material. In addition to the FOG outreach for FSE's, the City also has hangers for when a FOG related SSO occurs in residential neighborhoods to educate the public how to prevent a potential blockage.

Grade: A

Recommendation: Continue to educate the FSE's and public on how to prevent FOG related buildup in the sewer system.

6. Lateral Inspections

Discussion: In April of 2017, the City issued a Request for Proposals (RFP) for Sewer Lateral CCTV Inspection. This proactive program consists of closed circuit television (CCTV) inspection of all of the City owned laterals (approximately 22,000) over a three year period to proactively identify and repair lateral issues; effectively reducing the risk of sanitary sewer overflows. Once the laterals have been inspected, depending on the condition of the lateral, the City will repair the sewer lateral in house or put a list of laterals together as part of a Capital Improvement Project.

Grade: B

Recommendation: Inspect all 22,000 sewer laterals within the next 3 years.

SSMP Section 8 - Sewer Evaluation and Capacity Assurance Plan

Responsible Person (RP):
Environmental & Water Resources Director

Summary:
The Environmental & Water Resources Department (EWR) uses Sewer InfoWorks to evaluate the hydraulic capacity of key portions of the City's sanitary sewer collection system which is broken up into 17 basins. The hydraulic capacity of these key portions of the system are compared to existing flow monitoring data to determine the potential for SSOs due to the capacity being exceeded during peak wet weather sewer flows. Additionally, the City analyzes flow monitoring data to quantify actual I/I rates experienced by the sanitary sewer collection system.

The City is currently updating their Sewer Evaluation and Capacity Assurance Plan. Specifics that have gone into the most recent study include using the largest storm during the monitoring period which was on January 7th – 11th, 2017 and totaled 6.3 inches of rain. This storm event was used as the sole benchmark to calibrate the wet weather model. The wet weather model was also updated to the City standard 10-year/6-hour design storm.

1. Determination of maximum hydraulic capacity in key sewer main lines.

Discussion: In 2017/2018, the City's Capacity Analysis Update identified areas of concern which is defined as areas where surcharging is occurring to within less than 5 feet from the surface of the upstream manhole, or where surcharging is greater than d/D=1 with respect to hydraulic capacity for the 10-year/6-hour design storm. The areas of concern included:

1. The Folsom Blvd 27" trunk has locations where pipe slope is minimal and the line is slightly under capacity at existing conditions. However, under the General Plan Update and under the Ultimate Buildout conditions, surcharging increases and is almost entirely driven by assumed growth in the Folsom State Prison flows. Current Prison flows are only at 70% of permitted Average Dry Weather Flow (ADWF) and 50% of permitted max Peak Dry Weather Flow (PDWF).

2. The 12 inch main on Blue Ravine is under capacity. Modeled flows are more than 2.1 mgd, but the pipe as designed has a capacity of 1.5 mgd at d/D=1. This is causing surcharging in the branching manhole B12-2161 next to the Blue Ravine/Bidwell bridge crossing.

3. Various 6 inch lines along Montrose Drive are under capacity due to flatter than recommended slopes. However, no action is recommended as surcharging is not anticipated to increase in future scenarios and a diversion weir at Montrose and School will control levels downstream.

Grade: A

Recommendation: Finalize the 2017/2018 SECAP study and begin working on design/construction projects related to key areas of concern identified in the 2017/2018 SECAP study.

2. **Determination of existing groundwater infiltration and rain dependent infiltration levels in the system.**

Discussion:
Determining the relative magnitude of observed Rain Derived Inflow and Infiltration (RDII) and Groundwater Infiltration (GWI) per In-Dia.-Mi of sewer system per Basin is a useful method of ranking actual basin performance. The Basins are ranked relative to each other based on different categories. A higher ranking (closer to zero) indicates a larger response to storm events, (i.e. "Leakier basin"). It is recommended that an overall I & I reduction program strategy focus on targeting high-ranked basins to solve specific capacity issues, particularly aiming and reducing I & I within Basins 4, 6A, 6C and 14.

A targeted basin I & I reduction program is anticipated to last several years, with Phase 1 being an investigation period to identify specific system rehabilitation CIPs, and Phase 2 being the construction of the rehab CIPs and confirmation of the rehab CIP effectiveness in reducing I & I.

Grade: B+

Recommendation:
Focus on reducing I/I through smoke testing and CCTV to address I/I within Basins 4, 6A, 6C and 14.

SSMP Section 9 - Monitoring, Measurement, and Program Modifications

Responsible Person (RP):
Environmental & Water Resources Director

Summary:
The WDR/SSMP Monitoring, Measurement, and Program Modification requirement specifies that each enrollee shall establish and prioritize appropriate SSMP activities.

1. Establish and prioritize appropriate SSMP activities.

Discussion: The following audit elements are used to help establish and prioritize appropriate SSMP activities:

- *Preventive, Corrective, and Emergency Work Order History* – These items are tracked, updated and input through the City's CMMS program (Lucity).
- *PM Schedules* – All PM are tracked through Lucity. A work order is generated for each item on the PM schedule. This includes routine flushing of trouble lines, pump station inspections, etc. All PM's over the past two years have been met.
- SSO History – All SSO's are reported through the California Integrated Water Quality System (CIWQS). Furthermore, the City keeps a copy of all SSO's categorized by year and address on the local City server. All spills as of 07/01/17 have been input into CIWQS and saved to the City's local server.
- *Performance Measures* – Performance Measures such as flushing, manhole inspections, CCTV, etc. are updated quarterly. All performance measures information is up to date as of 07/01/17.
- *Staff Training Records* – All training records are schedule and logged on the City's local server. All scheduled training as of 07/01/17 has been met.
- *Condition Assessment Data* – The condition of all assets such as manholes, pipes, etc. are logged within the City's CMMS (Lucity). Any asset with a priority rating of 3 or higher is scheduled for replacement within 6 months or sooner. All scheduled repairs are logged and kept track of via an Excel spreadsheet. As of July 1st, 2017 all scheduled maintenance has been met.
- *Program Improvements* – Program Improvements are assessed and implemented throughout each Calendar Year. The two most recent programs implemented to improve the effectiveness of the City's SSMP include the lateral inspection program and the FOG inspection program. In addition, the City has worked diligently over the past 4 years to address odor and grease issues throughout the City's sewer system (Oak Avenue Pump Station, Rowberry-Walden Odor Control Facility, Pump Station No. 2)

Grade: A

Recommendation: No Action needed. Continue to monitor, measure, and modify programs within the SSMP to improve the effectiveness of the SSMP.

SSMP Section 11 - Communications Program

Responsible Person (RP):
Environmental & Water Resources Director

Summary:
The City shall communicate on a regular basis with the public on the development, implementation and performance of its SSMP.

1. Communication with satellite agencies

Discussion: The City's only satellite agency is the Folsom State Prison (FSP). The City began more frequent ongoing communication with FSP starting in 2012. Meeting agendas between the City and FSP typically include:

- The City of Folsom and FSP Sewer Line Agreement
- Annual Operations and Maintenance of joint facilities
- Upcoming CIP projects that affect the joint facilities
- Sewer System Management Plan
- Meter Accuracy/Calibration
- Site Improvements

The City plans to hold annual meetings to continue ongoing communication with its satellite agency. Special meetings to address items such as updates to the Waste Discharge Requirements (WDR's) may occur more frequently.

The City also meets annually with the Sacramento Regional County Sanitation District whom which receives all of the waste water flows from the City of Folsom. The City and Regional San discuss:

- Wastewater Discharge Requirements
- Sanitary Sewer Management Plan
- FOG control efforts
- Legislative and Regulatory Affairs update

Grade: B

Recommendation: Continue meeting with the Folsom State Prison and Regional San on an annual basis to maintain communication compliance as outlined within the SSMP. The City should schedule additional meetings as necessary to address updates to the WDR.

2. Communication of the SSMP with the public.

Discussion: Communication with the public about the City's SSMP is accomplished through two avenues. First, communication is achieved through City Council meetings where the public has the opportunity to comment on any element of the City's SSMP at any of the scheduled City Council Meetings throughout the year. Second, the City developed a link on the City of Folsom website (www.folsom.ca.us) where the public can view and provide input on the City's SSMP. Comments are addressed and corrected accordingly. All applicable comments are taken into consideration during the annual audit and review process. Currently, the City of Folsom's website provides the following list of documents for public review:

- State Water Resources Control Board Order No. 2006-003
- State Water Resources Control Board Order No. 2008-002
- SSO on-line database (CIWQS)
- City of Folsom SSMP
- Resolution No. 8526 adopting the City's SSMP
- 2011 SSMP Self-Audit
- 2013 SSMP Self-Audit
- 2015 SSMP Self-Audit
- 2017 SSMP Self-Audit

Grade: A

Recommendation: Continue to update the City's website as necessary.

Appendix B – Inspection Records
(Due to the large file size, these records are available by request through contacting the City Clerk's Office at (916) 355-7270)