

City of Folsom

Environmental & Water Resources Department

2015 SSMP SELF-AUDIT

(July 1st, 2013 - June 30th, 2015)



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 348 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 fifteen pump stations. The City's ownership and responsibility of miles of sanitary sewer pipe decreased from 358 miles to 348 miles through additional QA/QC of the database. The City reclassified 10 miles of the sewer system as either being privately owned or owned by Sacramento Regional County Sanitation District (Regional San) 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	249 Miles
Miles of Sewer Force Mains	3 Miles
Miles of Sewer laterals (Lower Lateral)	96 Miles
Number of Pump Stations	15
Population Served (Includes Prison Population)	72,167

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 2015 self-audit report is the 3rd 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 (07/01/2013 – 06/30/2015) 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.



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Over the past two years (07/01/2013 through 06/30/2015/) the City of Folsom has responded to 48 Sanitary Sewer Overflows (SSO's). Of the 48 spills, 47 SSO's were classified as Category 3 SSO's, 0 were classified and Category 2 spills and 1 was classified as Category 1. Although mainline SSO's decreased when compared to the last SSMP audit period (FY 11-13), the total number of spills increased by 7. The primary cause of the additional 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.

2013 - 2015 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

* 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	0.52	0
State - Municipal - Average	3.5	23.27	1.8
Region - Municipal - Average	5.12	38.54	0.95

Category 2 Spill Rate Indices (#spills/100mi/year)

Agency	Mainlines	Laterals	Other
City of Folsom	0	0	0
State - Municipal - Average	1.66	0.35	0.76
Region - Municipal - Average	3.79	0.19	0.44

Category 3 Spill Rate Indices (#spills/100mi/year)

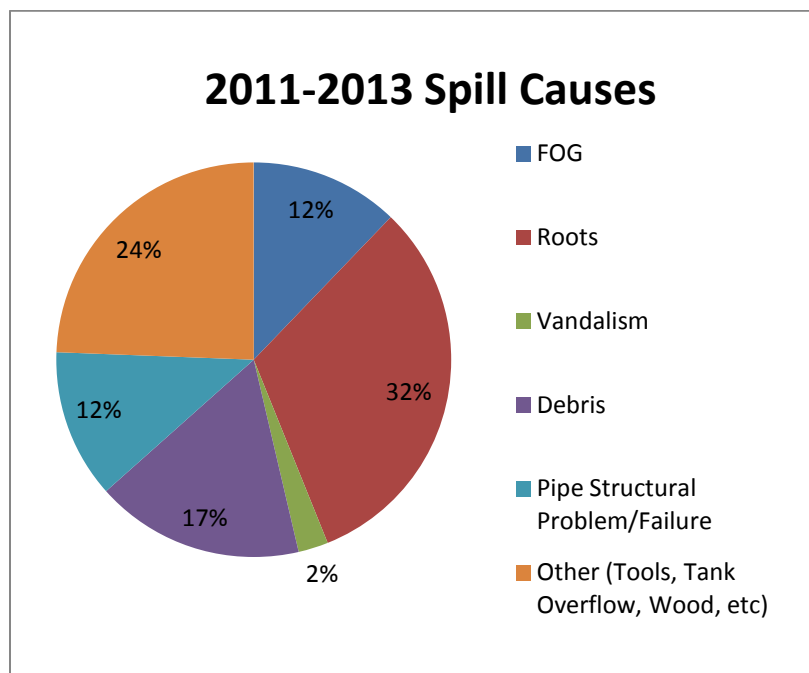
Agency	Mainlines	Laterals	Other
City of Folsom	2.04	15.20	0.88
State - Municipal - Average	6.03	32.12	2.23
Region - Municipal - Average	9.18	50.84	2.44

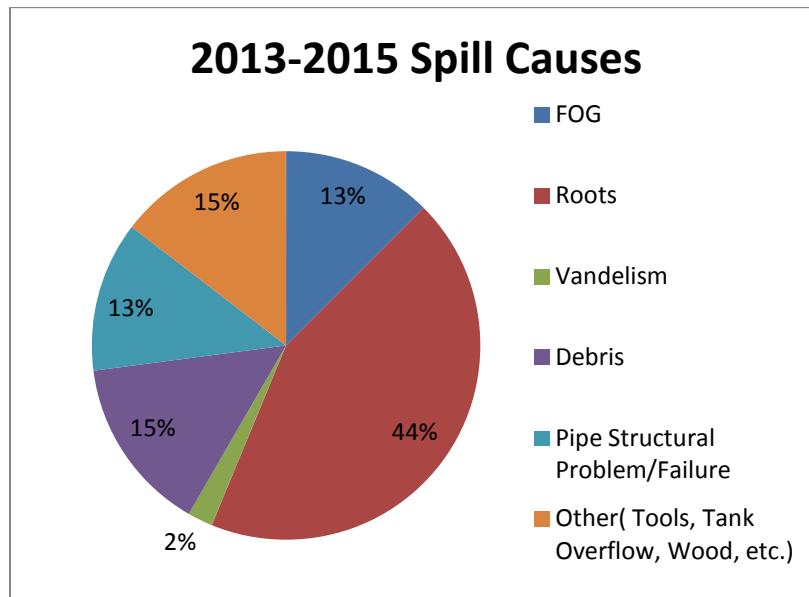


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Data for State and Regional Municipal average was taken from the CIWQS database (www.waterboards.ca.gov/ciwqs/).

The City also identified the cause of each spill that occurred from 07/01/2013 through 06/30/2015 and has categorized each spill type in the pie chart below. Additionally, the pie chart from the 07/01/2011 through 06/30/2013 was also included to compare which spill categories increased, decreased or remained the same.





When comparing the SSO causes between the 2013 Audit and 2015 Audit, all spill categories either decreased or remained relatively the same with the exception of root related SSO's. Over the past two years, root related SSO's increased by 12%. The City should continue to implement a proactive and progressive sewer lateral inspection and repair program with the goal of reducing spills over the next 2 years.

From the chart, the top 3 spill causes over the past two years were roots, other and debris. The "other" category represents items such as tools, wood or other foreign manmade objects that ended up in the sewer system most likely caused by new construction.

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 07/01/2013 and 06/30/2015 the City responded to 31 SSO's that occurred during business hours with an average response time of 20 minutes. The remaining 17 SSO's that occurred during non-business hours yielded an average response time of 27 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



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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 '11-'13	Grade '13-'15
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-	B
	4	Limit the discharge of FOG and other debris that may cause blockages	B	B
	5	Enforce violations of its sewer ordinances	B	B+
Operations & Maintenance	1.1	Update mapping system to reflect new development projects, CIP projects, asset corrections due to field investigation, etc.	A	A



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Program	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.	B	A
	II.2	Manhole Inspection, Flushing, CCTV, smoke testing, etc. is to be completed within a scheduled cycle.	N/A	B-
	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	B+
	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



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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.	C	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)	B	A
	3	Maintain a Public Outreach Program	C	B
	4	FOG Inspection of FSE's	B	B+
	5	FOG outreach	A	B
	6	Lateral Inspections	N/A	B
Sewer Evaluation and Capacity Assurance Plan	1	Determination of maximum hydraulic capacity in key sewer main lines	A	A
	2	Determination of existing peak flow in key sewer trunk lines	B	B
	3	Identification of necessary hydraulic capacity improvements	A	A



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	4	Determination of existing groundwater infiltration and rain dependent infiltration levels in the system	B	B+
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

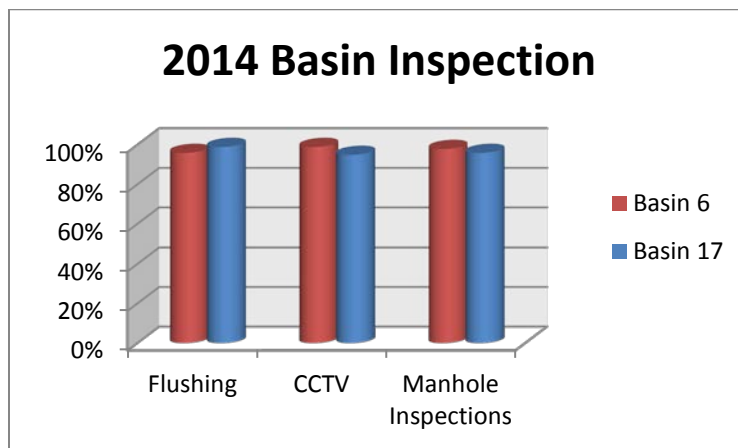


Evaluation of Performance Improvements identified in the 2013 SSMP Audit

The City identified the following items to address during the past two years (07/01/2013 – 07/01/2015). 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).

- Update the City's Department Organization chart as it relates to the SSMP
 - The City's organizational chart was updated in 2014 when the SSMP was re-certified and will be updated on a yearly basis.

- Basin 6 and Basin 17 were a priority for smoke testing and CCTV to reduce I/I as identified in the *2007-2012 Sewer Flow Data and Capacity Analysis Update*.
 - As identified in the *2007-2012 Sewer Flow Data and Capacity Analysis Update*, Basin 6 and Basin 17 were identified as priority for inspection. In 2014 both basins received CCTV inspections, manhole inspections, and flushing. The results of the inspections are illustrated in the table below. Additionally, Basin 6 was smoke tested in 2015. Currently the City is waiting for the final report to determine the amount of Inflow and Infiltration identified from smoke testing Basin 6. Based on the findings, the City will then assess the benefit to cost ratio for smoke testing Basin 17.

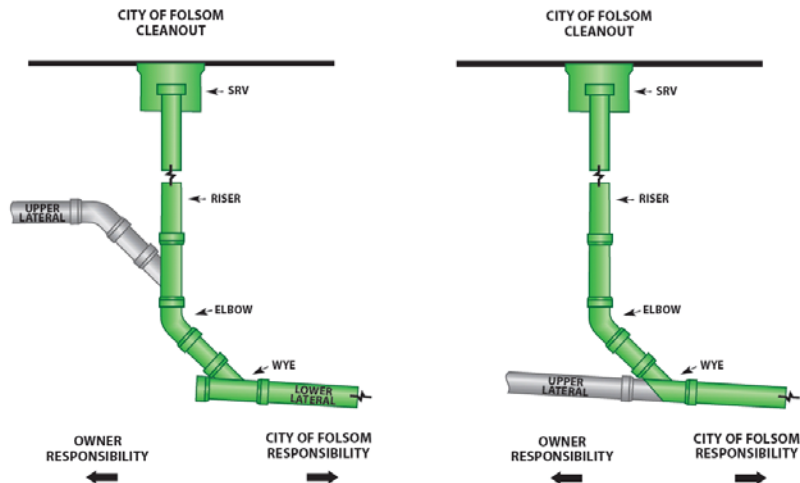


- Modify the City's sewer ordinance so that it clearly defines ownership of the sewer service lateral (upper and lower lateral).
 - Chapter 13.03 was revised to clearly define the upper and lower sewer lateral. The ordinance clearly defines ownership as well as who is responsible for maintaining and repairing the lateral. On July 28th, 2015 Ordinance No. 1233 will be presented to the City



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Council for the first reading. The second reading and adoption is scheduled for August 25th, 2015.



- Modify the City's sewer ordinance to require testing and inspection of the sewer service lateral upon remodeling, renovations or transfer of property. Also include language that specifically gives the City authority to inspect, maintain, clean, etc. within a sewer easement.
 - Chapter 13.03 was revised to specify that the property owner shall maintain in good working order the private sewer lateral so that it does not cause or contribute to any sewage overflow from either the private sewer lateral or the public sewer. It also states that the property owner shall have the private sewer lateral inspected by a licensed plumber upon the receipt of written notice from the City that an inspection is required.
 - On July 28th, 2015 Ordinance No. 1233 will be introduced to the City Council for the 1st reading. The second reading and adoption is scheduled for August 25th, 2015.
- Develop a flow chart or SOP outlining the necessary steps to take when a Food Service Establishment (FSE) is found to be in violation after an FSE failed to correct the areas of non-compliance from verbal warning issued by the City's FOG inspector.
 - An SOP was created for the inspection of FSE's after the discovery of non-compliance of a violation and has been incorporated in the City's SSMP. The SOP also includes an information FOG packet and a link with additional FOG information that is provided to the FSE's upon inspection.
- Complete the identification process of determining whether sewer lines located outside of City right-of-way are publicly or privately owned.



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- The City has identified 100% of the sewer lines located outside of the City right of way and has mapped each of these sewer lines within the City’s GIS system.
- Complete population of the GIS database as it relates to sewer pipe material, age, etc.
 - 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 (%)	%/year	Complete by
Pipe Material	91%	9%	100%	2016
Pipe Age	84%	16%	-	2015
Manhole	90%	10%	-	2015
Development	90%	10%	-	2015
Pipe Size	100%	-	-	2015

- Roots and debris were the primary causes of SSO’s over the past two years. The City should continue to implement a proactive and progressive sewer lateral inspection and repair program with the goal of reducing spills over the next 2 years caused by roots, FOG, structural defects, etc.
 - When SSO’s related to roots, FOG, structural defects, etc. are categorized as 3 or higher, it is scheduled to be repaired or replaced.
- Work collaboratively with the Building Department to implement Grease Control Device Guidelines to help streamline the plan review process for the Building Department.
 - The Environmental & Water Resources Department worked with the Building Department to revise chapter 13.03 of the Folsom Municipal Code to improve the Grease Control Device procedures. On July 28th, 2015 Ordinance No. 1233 will be introduced to the City Council for the 1st reading. The second reading and adoption is scheduled for August 25th, 2015.
- Pursue improvements to the existing flow metering infrastructure as noted in the 2007-2012 Sewer Flow Data and Capacity Analysis Update.
 - As a result of the Sewer Flow Data and Capacity Analysis Update, the City implemented a Sewer Flow Meter Replacement Capital Improvement Project. The existing sewer flow meters were approaching the end of their serviceable life. The Sewer Flow Meter Replacement Project included relocating two meter sites, construction of a new meter site, modification to 3 existing meter sites, replacing all existing flow metering equipment at the remaining 17 meter sites, and modifications to the City’s existing SCADA system. Updating the City’s flow monitoring system to obtain reliable and



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accurate data was critical for day to day sewer operations as well as to maintain compliance with the City's Sewer System Management Plan. Data collected by the City is used for:

- Assessing incoming and outgoing flows at pump stations
- Monitoring sewer flows throughout the City during dry and wet weather conditions
- Monitoring Inflow and Infiltration
- Critical to updating the City's Capacity Assurance Plan.

This project was completed in August of 2015. .

- Continue to improve the FOG outreach program (i.e. education & outreach material, updates to the website)
 - FOG outreach material was created to teach FSE employee's the proper disposal of FOG, the different types of Grease Control Devices (grease interceptors, grease traps, and hydro mechanical grease control devices) and how to recycle kitchen grease. In addition, educational material was created for the Owner/Operators of FSE's that includes information on why a FOG program is important, FOG BMP's, information related to grease removal devices, grease interceptor/trap maintenance, and recycling of kitchen grease. Additionally, data sheets are provided to each FSE to inform them of local grease haulers, requirements for remodeling, and even an employee quiz. The City also updates their website regularly with public outreach information related to FOG mitigation. FSE inspections and plan checks are also performed regularly through our FOG inspection program.
- Continue to improve upon the new FOG Food Service Establishment Inspection Program recently implemented
 - Inspections by the City's Wastewater Department of all FSE's occur every 2 years. A typical inspection of an FSE will include identifying Best Management Practices (BMP's), identifying and inspecting the type of grease control device and its condition, and inspecting training logs and waste hauler log records. In addition, during inspection, the City provides each FSE with FOG outreach and educational material.
- Continue to pursue odor control improvements, specifically at PS No. 2, Oak Ave, and Rowberry/Walden/Withers residential subdivision area.
 - Oak Avenue Pump Station odor control improvements:
 - Installed a Pig Launching Station (2014)
 - Cleaned Force Main on March 26th, 2015
 - Cleaned Wet Well on December 2014



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- Installed Wet Well agitators (ANUE Technology) which help break apart the FOG mat in the sewer wet well and reduce odors.
- Rowberry/Walden/Withers improvements:
 - Installed 1800' of vent pipe leading to a Carbon Scrubber as of July 2015
 - Carbon Scrubber and odor control system is scheduled to be installed and operational by September 2015.
- PS No. 2 improvements:
 - The City is still monitoring and assessing the effectiveness of the Wet Well agitator (ANUE Technology) installed at Oak Avenue Pump Station. If the ANUE system is determined to be effective and breaking apart the FOG mat and reducing odors, City staff will proceed with a similar installation at Pump Station No. 2.



Future Performance Improvements

The City will address the following items over the next 2 years (07/01/2015 –06/30/2017). 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).

- Continue to pursue odor control improvements, specifically at Pump Station No. 2, and the Rowberry/Walden/Withers residential subdivision area.
- Continue to improve upon the new lateral inspection program recently implemented.
- Continue to improve the utility maintenance sewer division database (Lucity) for SSO related repair and replacement work.
 - Evaluate and implement an SOP for the entry and logging of data on Lucity.
- Continue to implement a proactive and progressive sewer lateral inspection and repair program with the goal of reducing spills over the next 2 years.
- Work toward reducing SSO's over the next 2 years.
- Update the City's Operations and Maintenance schedule for smoke testing, CCTV, flushing, FOG inspections, lateral inspections and sanitary sewer manhole inspections.
- There were 29 manholes identified within the past 2 years as having Inflow & Infiltration (I/I). The City needs to rehabilitate the 29 manholes to reduce I/I.
- 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).

SSMP Modifications not tied to performance identified in (07/01/2013 – 07/01/2015) audit

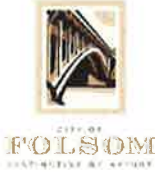
Below is a list of proposed SSMP modifications that were identified in the (07/01/2013 – 07/01/2015) audit that were implemented and are now in place.

- Improve Standard Operating Procedures for checking sewer assets after storm events by establishing a written document outlining all procedures



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- The city has developed an SOP for the evaluation of the sewer system after a storm event. The SOP identifies the equipment and staffing required as well as listing responsible parties for various field investigation tasks.
- Improve Standard Operating Procedures for checking above ground sewer lines by establishing a written document outlining all procedures.
 - The city has developed a SOP for the evaluation of above ground sewer lines. The SOP identifies the equipment and staffing required as well as listing responsible parties for various field investigation tasks.
- Improve the visual and audible alarm system on all Pump Stations for intrusions, pumps failures, site security, etc.
 - Currently Oak Ave, Lake Forest, and P.S. No. 2 have been upgraded with additional features to improve the monitoring of the pump stations. These features are generally implemented with CIP projects. Any new pump station will have these features incorporated into its standard design. Existing pump stations requiring improved visual and audible alarm are typically upgraded when the station is schedule for rehabilitation within the City's Capital Improvement Program.
- Develop a force main maintenance program
 - The city regularly inspects its sewer force mains every 6 months. Any new force main whose material is ductile iron pipe will be required to install cathodic protection. Currently only the Oak Ave pump station has a pig launching station, however, the design and installation of pig launching stations is now standard practice on all new pump stations.
 - Example: Easton Valley Parkway pump station designed for the South of HWY 50 development will have a pig launching station incorporated into its design.
- Map actual GPS coordinates for all sewer pump stations
 - The mapping of pump stations GPS locations has been completed within the last audit period.
- Evaluate the City's response time for individual pump station failure based on the holding volume of each wet well during average day and peak day dry and wet weather seasons.
 - All of the City's pump stations have been analyzed to determine the holding volume. The City is currently performing upgrades to its SCADA system. Upon completion of the SCADA upgrades, the City will obtain average day, peak dry weather flow and peak wet



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weather flows in order to determine each stations holding volume and response time before a pump station failure.

- Implement additional pre-cautionary measures for pump stations located within 100 feet of the surface water or 20 feet of a D.I. in the event of an SSO.
 - Currently the city crews are trained to place swales in front of DI's to prevent SSO's from entering the storm drain system. An SOP has been incorporated into the pump station bypass SOP's for pump stations located within 100' of surface water as well as more specific procedures for the handling of SSO's within 20 feet of a DI.

SSMP Modifications not tied to Performance for (07/01/2015 – 06/30/2017) Audit

- Perform a Sewer System Evaluation and Capacity Assurance Plan Update by 2017.
- Continue replacing old sewer infrastructure through CIP's.
- Continue to establish an effective sewer lateral inspection and repair program.
- Improve upon PS No. 2 odor control.

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		10/8/15



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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 Department 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, require 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 an emergency. PD then proceeds to contact on-call wastewater personnel, the wastewater employee identifies the problem and proceeds to be on-site investigating the emergency within 60 minutes. Non-emergency voicemails are addressed first thing the next morning. As of October of 2012 the Wastewater Department recently transitioned to tracking all calls through the City's intranet as shown in the Figure below.

Figure 1 – Call Log

Created	Created By	Caller	Phone	Est Start Date/Time	Address	Desc	Responder	Responder2	Cell	Est Spill	Vol	Est I
5/28/2013 8:54 AM	Kristina Eicher	Jan	916-834-1002	5/28/2013 8:55 AM	606 Mormon Street	Tenant called landlord and stated that debris was coming out of s/o in the alley. GB and GB went immediately to the address.	Greg Buletti	Glen Caldwell		unk		unk
5/20/2013 11:00 AM	Kristina Eicher	Joseph Cunningham	7072061858	5/17/2013 1:05 PM		Phoned an odor complaint in. We ran the line sprayed disinfectant and odor chemicals.	Greg Buletti	N/A				
5/20/2013 10:59 AM	Kristina Eicher	Joanne Patercki	9169833767	5/20/2013 9:05 AM	109 Coralie	She asked us to come check the line. She saw a sewer construction crew across the street working and said it reminded her that we were supposed to check her line.	Ed Reed	Jeff Davis				
5/20/2013 10:58 AM	Kristina Eicher	Stefanie Flores	916-952-2252	5/20/2013 8:00 AM	9942 Inwood Road	Received a call from Stefanie Flores that sewer was backed up and spilling.	Ed Reed	N/A		unk		unk
5/17/2013 10:41 AM	Kristina Eicher	Pete Dawson	530-306-3564	5/17/2013 9:05 AM	831 Willow Creek Drive	Sewer backup. His c/o is filled with water. Responsibility check	Greg Buletti	N/A				
5/17/2013 10:29 AM	Kristina Eicher	David Books	916-987-7492	5/17/2013 8:10 AM	113 Canyon Run Drive	His c/o lid was off. He wants to know if we were doing work. Mike Hen was there and called the homeowner.	Mike Hen	N/A				
5/17/2013 10:37 AM	Kristina Eicher	Jack	916-984-5151	5/13/2013 6:55 AM		Call came from RD at 6:57am. Sewer spilling from c/o	N/A	N/A				
5/7/2013 9:20 AM	Kristina Eicher	Eileen Rodell	916-984-4600	5/6/2013 4:20 PM	1997 Larkhall Circle	Her driveway is sinking where the sewer c/o lid is and water is leaking up from the cracks. She isn't sure if it is a sewer issue or an irrigation issue.	Ed Reed	Scott Vestal				
5/6/2013 7:58 AM	Kristina Eicher	Rick Shaw	916-813-7358	4/30/2013 10:10 AM		Sewer gas odor	N/A	N/A				
5/6/2013 7:57 AM	Kristina Eicher	Natalie Taylor	916-989-3643	4/29/2013 9:05 AM	206 Cascade Falls	Odor complaint. Sewer gas smell coming from a rarely used shower.	Greg Buletti	N/A				

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, requires wastewater crews to be 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 (07/01/2013 through 06/30/2015/) the City of Folsom has responded to 48 Sanitary Sewer Overflows (SSO's). Of the 48 spills, 47 SSO's were classified as Category 3 SSO's, 0 were classified and Category 2 spills and 1 was classified as Category 1. Although mainline SSO's decreased

when compared to the last SSMP audit period (FY 11-13), the total number of spills increased by 7. The primary causes of the additional 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.

2013 - 2015 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

* 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, however, because spills increased from the previous audit period by 7 SSOs, and the primary cause contributing to spills was roots, the City needs to look at establishing an effective root control program.

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 November 29th, 2012 storm event. During this storm event when 4.22 inches of rain fell over a 66 hour period.
- 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.
- As of June 2015, the City completed its first round of inspections of all FSE's. Refer to SSMP Section 7 – FOG Control Program for more detail.

- In 2015 the City worked with the State Parks and Recreation Department and the Department of Fish and Game to remove 4 riparian trees that were located within close proximity to an above ground sewer that crosses over a water stream that is tributary to the American River. All four trees were growing against or leaning over the existing sewer line along the 100 foot section of the unnamed tributary to the American River. Removal of the four trees was a proactive approach to mitigate the risk of any unforeseen SSO's in the event that one of the 4 trees could have fallen on the pipe and cause an SSO. The result of this project allowed the City to minimize the risk to both water quality and the environment.

- In April of 2013, the City began a Lateral Inspection Program. The lateral inspection program is comprised of a two man crew that locates sewer cleanouts, maps all missing cleanouts, and CCTV's all sewer laterals to assess the condition. The City is continuing to assess all sewer laterals. In addition, the City has also contracted with outside Contractors to help inspect and repair City sewer laterals. Refer to SSMP Section 4 – Operations & Maintenance for more detail.

- The City is also performing upgrades to the City's sewer SCADA system to be able to better monitor sewer flow data Software upgrades are currently in progress and scheduled to be completed by August of 2015.

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 4 years. The most recent Sewer Evaluation and Capacity Assurance Plan was conducted in April of 2013 and addresses the following items:

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

The City is planning on performing another System Evaluation and Capacity Assurance Plan by 2017.

Grade: A

Recommendation: Perform a System Evaluation and Capacity Assurance Plan by 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 is \$6 Million dollars. Of the \$6 Million dollars, \$2 Million dollars is set aside for rehabilitation and replacement projects which are consistent with the CIP Plan. The remaining \$4 Million 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 2014 when the SSMP was re-certified. The organizational chart will 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 29 manholes that had I/I issues. Of those 29, 0 manholes were identified as needing I/I repair.
- Manholes that cannot be rehabilitated by the City's Utilities Maintenance crew are placed on a CIP list. Once the list reaches between 20 and 30 manholes needing I/I rehabilitation, the City will go out for a Manhole Rehabilitation CIP Project to repair all I/I.
- 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.
- Began a lateral inspection program in April of 2013. As of 06/30/2015 the City has inspected 631 laterals of its 22,624 sewer laterals. The City plans to take a more proactive approach in regards to lateral inspections by inspecting all 22,624 sewer laterals over the

next 5 years. In order to accomplish this task, the City's Utility Maintenance Sewer Division will shift its top priority from sewer repairs to sewer inspections. In order to stay on track with sewer repairs, the City will implement a team effort for fixing repairs by utilizing both in house staff as well as contracting out. The City's plan is to inspect 33 laterals per week using 2 crews. Laterals with a rating of 3 or 4 will be fixed by an outside contractor, while laterals with a rating of 5 will be repaired by city crews.

- The City typically smoke tests as a source to identify I/I. Although no smoke testing was conducted during 07/01/11 through 07/01/13, the City conducted smoke testing on approximately 50 miles (20%) of the City's sanitary collection pipelines in 2014 and 2015. Future smoke testing will be conducted based on recommendations from the System Evaluation Capacity and Assurance Plan (SECAP) and Inflow and Infiltration (I/I) studies.
- In April of 2013, Water Works Engineers updated the City's Sewer Capacity Analysis and Assurance Plan by reviewing all sewer flow data from 2007 through 2012. The report found that of the 17 sewer basins within the City, Basin 6 ranked the highest in both R-value and peaking factor analysis. Water Works recommended that Basin 6 be the next target for the City's I/I reduction program using CCTV inspection combined with smoke testing to identify areas of I/I. Since then, Basin 6 has under gone smoke testing along with annual flushing, CCTV, and manhole inspections.
- The City has also implemented numerous CIP projects to help reduce I/I. These projects include:
 - FY 13-14 Natoma Alley Sewer Rehabilitation Project (Design Phase)
 - FY 13-14 Hinkle Creek Sewer Rehabilitation Project (Complete)
 - FY 13-14 Sewer Access Road Project (Design Phase)
 - FY 13-14 Old Town Wastewater Rehabilitation Project (Design Phase)
 - FY 15-16 Sewer Service Lateral Project (Design Phase)
 - FY 15-16 Crestridge Sewer Project (Design Phase)
 - FY 14-15 Basin 6 Phase 2 Project (Complete)

Grade: B+

Recommendation: Smoke test only when recommended by SECAP study and evaluation of SSO's. Fix the 29 manholes identified with I/I issues. Continue to identify areas of I/I through CCTV, manhole inspections, lateral inspections, etc. Continue to hold ongoing meeting between the City and its satellite agency (Folsom State Prison). Begin entering all sewer lateral inspections through the City's CMMS program (Lucity). Continue to improve upon the City's sewer lateral inspection program.

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 Public 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. Although the modifications to the FOG inspection program of Food Service Establishments (FSEs) are relatively new (began in April 2013) the City has inspected 344 Food Service Establishments (FSE's). and given verbal warnings to 16 FSE's that were out of compliance with the City's FOG ordinance.

Grade: B+

Recommendation: 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. As shown in the table below the City has populated 84% of the database for pipe age. The remaining 16% is unknown due to the age of the existing infrastructure and unavailability of existing documentation.

	Complete (%)	Incomplete (%)	%/year	Complete by
Pipe Material	91%	9%	100%	2016
Pipe Age	84%	16%	-	2015
Manhole	90%	10%	-	2015
Development	90%	10%	-	2015
Pipe Size	100%	-	-	2015

Grade: A

Recommendation: Complete the remaining 9% of pipe material through sewer inspections such as Sanitary Sewer Manhole Inspections.

II. Preventive Operation & Maintenance and Rehabilitation & Replacement Program: The Preventive Maintenance and Rehabilitation & Replacement Program outlines 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.

In addition to maintaining SOP's, the City also tracks performance of the SOP's critical to maintaining sewer infrastructure. In the past the City has typically inspected SSMH, CCTV, flush, smoke testing, FOG, etc. every 5 years. However, during the 13-15 SSMP Audit City staff recommended changing the audit cycle to become more effective at maintaining its sewer system while reducing SSO's. The proposed plan and schedule will be brought before the city council for approval. The table below tracks all wastewater inspections that have occurred over the last two years:

Wastewater Inspections

PRIORITY	BASIN #		YEAR	CCTV	ZOOM	MANHOLE	SMOKE	FLUSH
1	3		2012	n/a	100%	100%	100%	100%
2	4		2012	n/a	100%	100%	0%	100%
3	7		2012	n/a	100%	100%	100%	100%
4	10		2012	n/a	100%	100%	0%	100%
5	13		2013	n/a	100%	100%	50%	100%
6	14		2013	n/a	100%	100%	0%	100%
7	6		2013	99%	n/a	98%	0%	96%
8	17		2014	95%	n/a	96%	0%	99%
9	12		2014	83%	n/a	93%	0%	96%
10	15		2015	0%	n/a	0%	0%	0%
11	1		2015	6%	n/a	0%	0%	93%
12	11		2015	0%	n/a	0%	0%	0%
13	2		2016		n/a			
14	9		2016		n/a			
15	8		2016		n/a			
16	16		2016		n/a			
17	5		2016		n/a		n/a	

Wastewater Inspections Cont'd

PRIORITY	BASIN #	YEAR	FOG	Laterals
1	3	2013	100%	53%
2	2	2013	100%	18%
3	1	2013	100%	0%
4	16	2014	100%	0%
5	9	2014	97%	0%
6	6	2015	96%	0%
7	4	2015	85%	
8	15	2015	100%	
9	13	2016	95%	
10	14	2016	100%	
11	11	2016	100%	
12	8	2016	100%	
13	7	2017	100%	
14	10	2017	100%	
15	12	2017	100%	
16	17	2017	100%	

Grade: A

Recommendation: All SOP's are up to date and in place.

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

Discussion: 2012 marked the third five year cycle of inspections (2012 – 2016). The City planned to CCTV a majority of the older sections (40 years old and greater) of the City's wastewater system during this five year cycle. However, beginning in 2012 the City's CCTV ability was limited because of the camera age and increase in frequency of camera repairs. At this point in time, the City relied on zoom cam inspection while working on procuring new CCTV camera equipment. The new camera was delivered to the City in May 2012 and has been used extensively to aid in current CIP Projects. Full CCTV started in Basin 6 (as recommended by Water Works from their 2013 Sewer Capacity Analysis and Assurance Plan by September 2013. CCTV work will continue based on prioritizing those basins with high Inflow & Infiltration, infrastructure age, and frequent repair & replacement work orders.

In April of 2013, the City began a lateral inspection program to inspect all sewer laterals. The lateral inspection program is comprised of a two man crew that locates sewer cleanouts, maps all missing cleanouts, and CCTV's all sewer laterals to assess the condition. Laterals with a priority of a 3, 4 or 5 that is related to FOG, is placed on a work order and sent to the City's Wastewater Division for flushing and cleaning within either a two week, 1 month or 6 month time frame . From July of 2013

through June 30th, 2015 the City has inspected 631 of the 22,624 laterals, 47 laterals inspected had FOG issues with a priority rating of 3 or higher and 49 laterals inspected had structural issues with a priority of 3 or higher. The 96 laterals have been placed on the Utility Maintenance list and are scheduled for repair. Based on the number of laterals and the time required to inspect each lateral, the City began contracting out a portion of the sewer lateral inspections. Currently the City has worked with an outside contractor to locate 300 lower laterals, raise 200 existing lower laterals, and repair approximately 250 lower laterals.

Grade: B-

Recommendation: Since the new camera has been purchased, the City has been CCTVing starting in Basin 6 and moving to the next worst basin as identified in the Sewer Flow Data and Capacity Analysis Update report. The City needs to continue to CCTV as recommended in the SECAP study. Additionally, the City needs to revise its sewer inspection program and present that program to City Council for approval. Last, the City needs to continue contract out sewer lateral inspections.

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
Del Norte Vista PS	9/4/2013
Lake Forest PS	3/31/2014
Oak Ave PS	2/25/2015

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 13-14 & FY 14-15, 183 sewer construction requests were made and 183 of the 183 (100%) were completed within the past two fiscal years (FY 13-14 & FY 14-15).

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.

- FY 13-14 Natoma Alley Sewer Rehabilitation Project (Design Phase)
 - Replace approximately 4,000 feet of sewer lines
- FY 13-14 Hinkle Creek Sewer Rehabilitation Project (Complete)
 - Slip line approximately 3,500 feet of sewer lines and 5 manholes
- FY 13-14 Sewer Access Road Project (Design Phase)
 - Build an access road to the public sewer system for maintenance and inspection
- FY 13-14 Old Town Wastewater Rehabilitation Project (Design Phase)
 - Replace approximately 3,000 feet of sewer lines
- FY 15-16 Sewer Service Lateral Project (Design and Construction Phase)
 - Repair approximately 250 laterals and install or modify 500 lower lateral cleanouts.
- FY 15-16 Crestridge Sewer Project (Design Phase)
 - Review options to repair approximately 200 feet of sewer main within a private HOA development.
- FY 14-15 Basin 6 Phase 2 Project (Complete)
 - Replaced service laterals from two commercial developments and replaced approximately 100 feet of 12-inch sewer main.

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.

Oak Avenue Lift Station utilizes 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 is effective at reducing odors, the City is currently looking at alternative methods to reduce odors more effectively. Recently the City conducted a pilot study with ANUE Technologies to

evaluate its effectiveness in reducing odors. As a result of the pilot study, ANUE agitators have been implemented in the Oak Avenue Pump Station wet wells to reduce odors and break apart the FOG material in the wet well. Additionally in 2015 the City installed a pig launching device to clean the sewer force main and help reduce odors downstream of the force main. The cleaning of the force main was completed on March 26th, 2015.

Odor issues are 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. Currently under construction is 1,800 feet of vent pipe that leads to a carbon scrubber to reduce the ambient sewer odors. This project is scheduled to be completed by Fall of 2015.

Pump Station No. 2 currently utilizes Vapex. Vapex is the process of combining ozone with a rapid application of micron-size water particles to create a hydroxyl radical fog that is dispersed throughout the entire odorous air space. Currently, vapex is applied within the wet well space of Pump Station No. 2. Although vapex is effective at reducing odors it also creates corrosion issues. The City is currently evaluating the effectiveness of the ANUE wet well agitators at Oak Avenue Pump Station. Once the City has confirmed that the system works properly, the City will look at installing the ANUE wet well agitators at Pump Station No. 2.

Grade: A-

Recommendation: The City is currently evaluating the effectiveness of the ANUE wet well agitators at Oak Avenue Pump Station. Once the City has confirmed that the system works properly, the City will look at installing the ANUE wet well agitators 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 Services Training Log			
Legend: N=New Employee A=Annual Training O=Ongoing Training	Training Frequency	Training Dates	Scheduled 2015
Accident Review and Investigation	A	<u>6/25/2014</u>	
Aerial Devices	N		
Asbestos Awareness	N/A		
Battery Handling & Maintenance	N		
Employee Wellness/Blood Borne Pathogens	N/A	<u>4/16/2013</u>	10/7/2015
Compressed Gas Safety	N		
Confined Space Entry	N/O	<u>3/12/2015</u>	3/12/2015
CSON – Collection System Operations Notice Overview		<u>7/24/2015</u>	
Confined Space Entry Quiz		<u>3/12/2015</u>	3/12/2015
Defensive Driving (staff who drive at work)	N	<u>5/7/2015</u>	5/6/2015
Electrical Safety	N	<u>7/12/2013</u>	
Emergency Action/Fire Prevention	N/O		9/2/2015
Emergency Eye Wash	N		
Equipment Operation Safety (department specific)	N/O		
Ergonomics- Office	N		
Ergonomics- Back Injury Prevention/Safety	N	<u>6/3/2015</u>	6/3/2015
Excavation/Trenching/Shorting	N	<u>2/11/2009</u>	
Fall Protection	N	<u>11/8/2012</u>	11/4/2015
First Aid/CPR (designated staff)	N/ 2Year	<u>1/1/2015</u>	1/1/2015
Forklift	N/ 3Year	<u>6/10/2015</u>	6/10/2015
Hazard Outdoors, Animals, Insects, Etc.	N/O	<u>5/28/2014</u>	
Hearing Conservation	N/A		8/5/2015
Heat Illness Prevention/UV Protection	A-SPRING	<u>4/8/2015</u>	4/8/2015
Heavy Equipment Operations	N/O		
Hand Injuries	N	<u>3/13/2014</u>	
Housekeeping/Organize		<u>1/14/2015</u>	1/4/2015
Hydro-Ranger Milltronics Training		<u>3/4/2015</u>	3/4/2015
Injury & Illness Prevention Program	N/O		12/2/2015
Ladder Safety	N	<u>10/2/2013</u>	11/4/2015
Lead Awareness	N/O		
Lockout/Tag Out	N/O	<u>8/14/2014</u>	
New Employees Safety Orientation/Specific Job Hazards	N	N/A	
MSA Gas meter training	O	<u>9/10/2014</u>	
Oak Avenue Bypass Training	A	<u>2/25/2015</u>	2/25/2015
Outdoor Hazards (plants, animals, insects)	A-SPRING		
Personal Protective Equipment Requirements (PPE)	N/O	<u>2/4/2015</u>	2/4/2015
Pesticide Use Safety	N/O		
Rigging/Hoisting	N	<u>11/8/2012</u>	
Supervisor Safety Training (designated employees)	N/O	<u>9/1/2014</u>	
Tools-Hand & Power (department specific)	N/O		

Traffic Control & Flagger Training	N	<u>8/21/2013</u>	
Water Safety		-	3/4/2015
Tree Work	N		
Welding & Cutting Safety/Fire Watch/Hot Work	N	<u>9/18/2013</u>	-
Workplace Violence/Evacuation Drills	N	<u>8/7/2013</u>	7/1/2015
Chemical or Petroleum Surface Spill	A		
Mountain Oak SOP including Bypass	A		
Stress in the Work Place	A		
SSMP Overview	A	<u>9/12/2012</u>	
Lake Forest SOP including Bypass	A	<u>3/31/2014</u>	
Del Norte SOP including Bypass	A	<u>9/4/2013</u>	
Hazards of Working in Hot Weather	A	<u>5/8/2013</u>	
Young Wo SOP including Bypass	A		
Orangevale Ave SOP including Bypass	A	<u>5/28/2013</u>	
6A-ARC SOP including Bypass	A		
SSO reporting /Spill Volume/ Refresher	Bi-A	<u>2/7/2014</u>	
Competent Person Training	N	<u>7/23/2013</u>	
Vac Con Training	N	<u>1/14/2014</u>	
Respirator Fit Test	A	8/12/2012	
GHS Harzard Communication (OHSA)		<u>11/14/2013</u>	8/5/2015
ARC Flash/ 2 Day Class/ refresher	N/O	<u>2/15/2013</u>	

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												
Notes: 810												
COMPONENT NAME	TYPE	SIGNAL NO.	MANUFACTURER	MODEL NO.	CAPACITY	SIZE	YIP/PH	SPEED	HEAD	NOTES	RECOMMENDED PREVENTIVE	FREQUENCY
Pump #1	PUMP		FACO								Check valve annually for stable and smooth operation.	1 time
											Check for oil leakage monthly and hourly on oil pressure consumption, vibration and pump output to determine if normal operation is required.	1 time
PUMP-1	MOUNTED PUMP		FACO								1. Full pump to have a pre for inspection and wash down with pressure hose.	1. 6 mos
											2. Check holder matches.	2. 3 mos
											3. Check the seal oil in the seal chamber yearly or when the seal oil level is low.	3. 12 mos
PUMP-2	MOUNTED PUMP		FACO								1. Full pump to have a pre for inspection and wash down with pressure hose.	1. 6 mos
											2. Check holder matches.	2. 3 mos
											3. Check the seal oil in the seal chamber yearly or when the seal oil level is low.	3. 12 mos
BACKFLOW VALVE 1	RV		VALMATE	301EV						80 psi, up	1. Check and clean as needed.	As needed
BACKFLOW VALVE 2	RV		VALMATE	301EV						80 psi, up	1. Check and clean as needed.	As needed
BACKFLOW VALVE 3	RV		VALMATE	301EV						80 psi, up	1. Check and clean as needed.	As needed
GENIE FOR LIFTING												As needed
WELL WELL	WELL										1. Check gas level from vent work.	4 months needed
GENERATOR	GENERATOR										1. Check for gas for normal operation.	2. 6 months needed
COMPRESSOR	COMPRESSOR										1. Check for gas for normal operation.	As needed
HEATER	HEATER										1. Check for gas for normal operation.	As needed
MOTOR 1	MOTOR										1. Check for gas for normal operation.	As needed
MUFFIN MONITOR	MOTOR	8005	JVC ENVIRONMENTAL	EMD							1. Check motor and grease as needed.	As needed
EMERGENCY GENERATOR	GEN	42504	HOKLER	100020							1. Change oil and filter.	6 mos
											2. Tune up.	12 mos
											3. Inspect valve for normal operation.	As needed
SNAP ARM VALVE	RV		MD TSC								2. 3/4 inch oil.	As needed
3-WAY VALVE	RV										1. Inspect valve for normal operation.	As needed
AUTO VALVE	RV										1. Inspect valve for normal operation.	As needed
REGULATED AIR	HVAC										1. Check air filter for normal operation.	As needed
EXHAUST FAN	HVAC		GENFANCO	CVD 88A							1. Check fan for normal operation.	As needed
SAFETY VALVE	RV										1. Inspect and check open safety valve.	Weekly
SAFETY VALVE	RV										1. Bleed out condensation.	As needed
WATER CONDENSATOR			WALLACE	6								Daily
FACTORY IS GAS			TRIPPO									Daily
ELECTRIC SYSTEM			WALLACE	6								Daily
EMERGENCY CHARGE			TRIPPO									Daily
RECHARGE SYSTEM			TRIPPO									Daily
EMERGENCY EYE WASH			SARGENT									Daily
CHATTERBOX REMOTE		4499	FACO									Daily
MONITOR			FACO									Daily
PLC FOR PROGRAMMABLE			FACO									Daily
CONTROLLER			FACO									Daily
HEATER (NATURAL GAS)			NECOPP									Daily

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 lays out a detailed standard construction specification 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 has 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: All documents listed above are up to date.

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: Based on an audit conducted by the State Water Resources Control Board 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 vs. Category 2 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 past two years the City significantly improved its reporting accuracy and procedures between its SSO Excel Database and the CIWQS website. During the 2013-2015 Audit, the only area found needing to be improved upon was the Spill Volume Quantity. During this time period, City staff only amended 2 spill reports due to spill volume quantity inaccuracies.

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 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.

3A. Number of Category 3 SSOs.

Discussion: Since the 2013 Audit, CIWQS has added a third classification of spills called Category 3 SSO's. Of the 48 spills that were reported, 47 were category 3 SSO's. With the addition of reporting Category 3 spills, the number of Category 2 spills has dropped. Since the majority of the SSO's in the City are Category 3, having tables for all 3 categories will help better identify SSO's and identifying infrastructure that needs repair. As shown in the table below, the City is well below the Regional and State average.

Category 3 Spill Rate Indices (#spills/100mi/year)

Agency	Mainlines	Laterals	Other
City of Folsom	2.04	15.20	0.88
State - Municipal - Average	6.03	32.12	2.23
Region - Municipal - Average	9.18	50.84	2.44

2013 - 2015 Audit comparison

Year	Category 1	Category 2	Category 3	Total
Audit 11-13	2	39	-*	41
Audit 13-15	1	0	47	48

* On (date) Added Category 3 spills to CIWQS, all previous spills are counted in Category 2

Grade: A

Recommendation: The City of Folsom is well below the regional and statewide average of Category 3 SSO spills. However, in the 2015 audit we had 7 more spills identified than the 2013 audit period; however the volumes released have been significantly reduced from approximately 9,600 gallons to 1,100 gallons. The primary causes for the additional SSO's are roots. It is recommended that a root control program is developed to reduce SSO's. As shown in the tables above, the City is well below the Regional and State average for Category 1, Category 2, and Category 3 SSOs.

3B. Number of Category 2 SSOs.

Discussion: Utilizing the data from the CIWQS website, of the 48 spills that occurred from 07/01/2013 through 06/30/2015, 0 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.

2011-2013 Audit Period

Category 2 Spill Rate Indices (#spills/100mi/year)			
Agency	Mainlines	Laterals	Other
City of Folsom	3.22	9.57	0.76
State - Municipal - Average	5.06	23.46	5.26
Region - Municipal - Average	6.73	27.66	8.63

2013-2015 Audit Period

Category 2 Spill Rate Indices (#spills/100mi/year)			
Agency	Mainlines	Laterals	Other
City of Folsom	0	0	0
State - Municipal - Average	1.66	0.35	0.76
Region - Municipal - Average	3.79	0.19	0.44

Grade: A

Recommendation: The City of Folsom is well below the regional and statewide average of Category 2 SSO spills. However, as you can see from the chart, the City's main cause of SSO's is roots and debris. The City should look into a root control problem to help reduce SSOs.

3C. Number of Category 1 SSOs.

Discussion: Utilizing the sewer asset database and the CIWQS website, there was 1 Category 1 SSOs occurring within the past two years. The spill was caused by grease deposition (FOG). 1 gallon entered the storm drain retention basin. Once it was determined that the 1 gallon entered the storm drain retention basis, City staff followed the protocols established for Category 1 SSO's including pulling water samples from the retention basin. However, there wasn't 100% certainty that the 1 gallon was contained within the retention basins and could have entered into Willow Creek, City staff decided to error on the side of caution and report the spill as category 1 SSO. The number of Category 1 SSO's has reduced from 2 in the last audit to 1 as shown in the tables below, the City is well below the Regional and State average.

2011-2013 Audit Period

Category 1 Spill Rate Indices (#spills/100mi/year)			
Agency	Mainlines	Laterals	Other
City of Folsom	0.38	0	0
State - Municipal - Average	2.57	5.18	2.85
Region - Municipal - Average	3.86	0.22	5.60

2013-2015 Audit Period

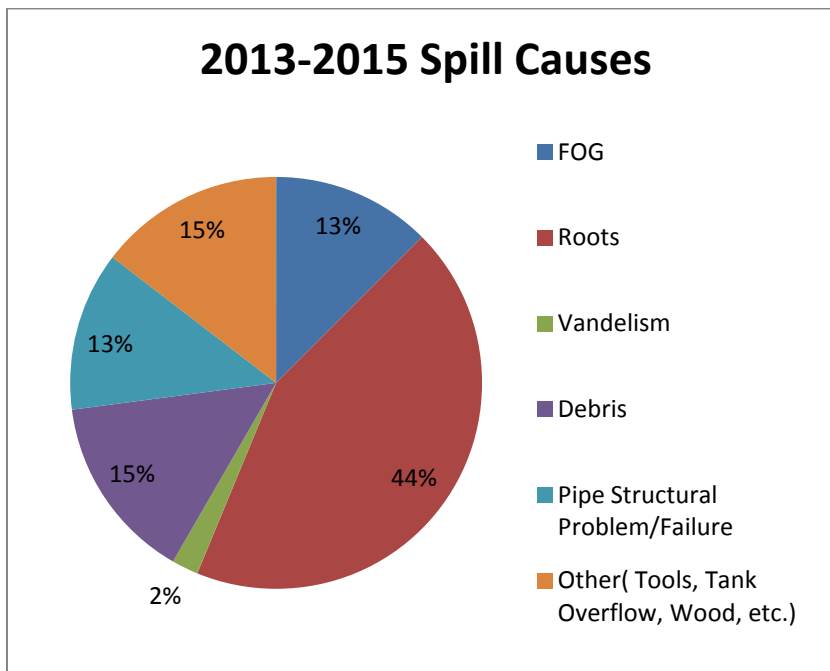
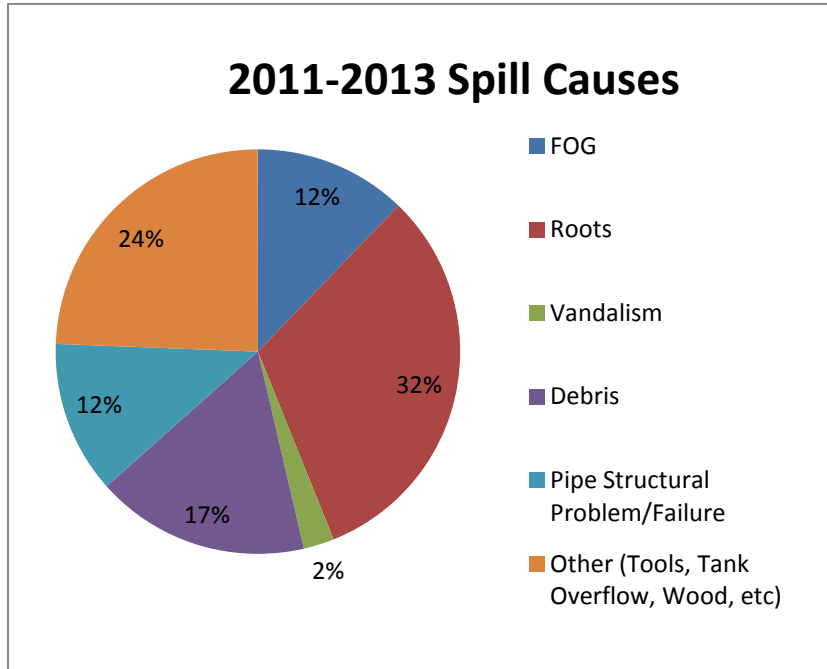
Category 1 Spill Rate Indices (#spills/100mi/year)			
Agency	Mainlines	Laterals	Other
City of Folsom	0	0.52	0
State - Municipal - Average	3.50	23.27	1.80
Region - Municipal - Average	5.12	38.54	0.95

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 48 spills that occurred from 07/01/2013 through 07/01/2015 and compares the spill cause to those from the 2011-2013 SSMP self-audit.



As you can see from the pie chart, the top 3 spill causes over the past two years were roots, other and debris. The “other” category represents items such as tools, wood or other foreign manmade

objects that ended up in the sewer system most likely caused by new construction. However, spills due to roots have increased by 12% in the last 2 years where other and debris have decreased.

Overall, the number of SSO's has reduced by 7 since the last audit period, however the volume released has been significantly reduced from approximately 9,600 gallons to 1,100 gallons.

Grade: A

Recommendation: Since most of the City's spills occur within the sewer lateral, the City should continue to implement a proactive and progressive lateral inspection program with the goal of reducing spills over the next 2 years, and other potential overflow related spills such as FOG, structural defects, etc.

5. Average response time during normal business hours.

Discussion: The City had 31 spills during normal business hours between July 1st, 2013 and July 1st, 2015. The average response time of those 31 spills was 20 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 17 spills after hours between July 1st, 2013 and July 1st, 2015. The average response time of those 17 spills was 27 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 13th, 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 July 28th, 2015 through Ordinance No. 1233 the City will revise Section 13.03 of the Folsom Municipal Code to improve upon the regulations of fats, oils and grease. The second reading and adoption of Ordinance No. 1233 is planned to be approved by City Council on August 25th, 2015.

Grade: A

Recommendation: City Council to adopt Ordinance No. 1233 which amends Section 13.03 of the Folsom Municipal Code. 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 has created a set of "Grease Control Device Guidelines" for the Building Department to refer to when reviewing plans. Additionally On July 28th, 2015 through Ordinance No. 1233 the City will revise Section 13.03 of the Folsom Municipal Code to improve upon the regulations of fats, oils and grease. The second reading and adoption of Ordinance No. 1233 is planned to be approved by City Council on August 25th, 2015.

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. There are a total of 344 FSE's within the City of Folsom. From April 2013 through June 30th, 2015 the City inspected 344 FSE's within Folsom. Of the 344 FSEs

inspected, 113 have grease traps, 86 have grease interceptors and 3 have both a trap and interceptor. Of the remaining 142, only 29 have not been inspected because they were newly established businesses that will be inspected during the next two year cycle. The remaining 113 FSE's were found either needing some type of grease control device or the FSE food preparation consisted of pre-packaged food that was sold and not prepared on site. On August 25th, 2015, the City Council will adopt FMC 13.08 which gives the City the authority to require any FSE not in compliance of a proper GCD, to comply.

Grade: A-

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 2013, the City began a lateral inspection program to inspect all sewer laterals. As of 06/30/2015 the City has inspected 631 laterals of its 22,624 sewer laterals. The City plans to take a more proactive approach in regards to lateral inspections by inspecting all 22,624 sewer laterals over the next 5 years. In order to accomplish this task, the City's Utility Maintenance Sewer Division will shift its top priority from sewer repairs to sewer inspections. In order to stay on track with sewer repairs, the City will implement a team effort for fixing repairs by utilizing both in house staff as well as contracting out. The City's plan is to inspect 33 laterals per week using 2 crews. Laterals with a rating of 3 or 4 will be fixed by an outside contractor, while laterals with a rating of 5 will be repaired by city crews.

Grade: B

Recommendation: Inspect all 22,624 sewer laterals within the next 5 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.

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

Discussion: In 2008, the City's Capacity Analysis Update listed 4 primary areas of concern with respect to hydraulic capacity for the 10-year design storm. The areas of concern included:

1. Blue Ravine Road from Oak Avenue to Flower Drive: The most recent hydraulic model (2005-2006 data) included the diversion of Basin B07 to the Oak Avenue Lift Station, however, still showed some surcharging, but within acceptable limits.
2. Folsom Prison Interceptor: The most recent hydraulic model (2005-2006 data) showed surcharging within acceptable limits. More significant surcharging has been observed when the interceptor is not cleaned and debris accumulates, which can be heavy at times from the Prison.
3. Folsom Boulevard 27" Interceptor: Capacity concerns were addressed in 2010 via construction of the Basin B06 diversion project.
4. Basin B17/B10/Lexington Area: The most recent hydraulic model showed surcharging in the 15" main connecting B17 to B10. The previous Capacity Analysis Updated recommended that this area be monitored further, but otherwise recommended no infrastructure improvements.

In 2013, Water Works Engineers reviewed sewer depths of flow from 2007 through 2012, particularly during the November 29th, 2012 storm to verify that no significant surcharging that would indicate capacity restrictions had occurred. The November 29th, 2012 storm event represents approximately a 5-year 48-hour event, and was almost two back-to-back, 2-year 24-hour return period events. The results of analyzing this storm generally corroborate the conclusions regarding the areas of capacity concern identified in the 2008 Capacity Analysis update:

1. Metering site B06-3432 (B06B) on Blue Ravine just downstream of the area of concern shows a low peak d/D ratio.

2. The Folsom Prison interceptor was flowing full or slightly surcharging during the November 20th, 2012 storm, but was within acceptable limits.
3. The 27" Interceptor did not experience surcharging following the B06 diversion project.
4. No surcharging was observed at metering site B10-3208 (B17), the flow monitor within the area of concern.

Grade: A

Recommendation: Perform an updated Sewer Capacity and Assurance Plan that will utilize the new sewer flow meters and data within FY 15 – FY 17.

2. Determination of existing peak flow in key sewer trunk lines.

Discussion: The table below compares peak flows from the previous Capacity Analysis Update (winter 2005-2006 data) and from the 2007-2012 data analysis. It should be noted that peak flows in the 27" and 33" sheds for the March 23rd, 2011 and November 29th, 2012 storms are considered estimates given potential calibration issues at the sewer interceptor Palmer-Bowlus flume sites.

Peak Flow Comparison

	Previous Study Existing Conditions 10-Yr Storm Peak (MGD) [3.3"/24 hrs]	Previous Study Future 10-Yr Storm Peak (MGD) [3.3"/24 hrs]	December 29th 2005 Storm Peak (MGD) [3.4"/61 hrs]	March 23rd 2011 Storm Peak (MGD) [2.3"/87 hrs]	November 29th 2012 Storm Peak (MGD) [4.22"/66 hrs]
27" Shed	12.1	12.2	11.1	8.4	9.3
33" Shed	13.5	13.5	12.3	8.6	10.4
FE3 Shed	6.2	8.9	6.5	5.1	6.7
City Total	31.8	34.6	29.9	22.1	26.4
SRCS D Monitor	N/A	N/A	N/A	N/A	26.4

Total City flows for the two largest storm events from 2007-2012 were lower than the largest storm experienced in the Winter 2005/2006 study, and lower than the projected 10-year design storm flows from the previous study. The November 29th, 2012 storm event had more rainfall in a comparable period to the December 29th, 2005 event, and produced less peak flow. 2012 was the only year in which consistent data was available from SRCS D metering site on the 54" FE2 interceptor downstream of the City's service area, which indicated the 26.4 MGD peak flow during the November 29th, 2012 storm event.

Flow in the City's 27" sewer Shed showed a decrease following the Basin 06 Diversion Project, which diverted a significant portion of the original Basin 06 flow off of the 27" Sewer Shed and into the 33" Sewer Shed. This project was the major recommendation of the previous Capacity Analysis, which predicted that peak flows following the diversion would be reduced to approximately 10.2 MGD at the 10-year design storm, and reduces surcharging in the 27" interceptor to acceptably minimal levels. The observed flow on the November 29th, 2012 storm was 0.9 MGD lower than the modeled peak flow after the Basin 06 Diversion improvements in the previous study.

Despite the additional flow due to the Basin 06 Diversion, the 33" Sewer Shed showed lower peak flows in the November 29th, 2012 storm than in the December 29th, 2005 storm event.

Although peak flows were identified in all key trunk sewer lines, Water Works recommended pursuing improvements to the existing flow metering infrastructure since most of the meters are approaching the end of their serviceable life. Along with replacing the sewer flow meters, Water Works also recommended obtaining a minimum of one more year of winter flow monitoring data with the improved infrastructure prior to completing an update to the City's hydraulic model in 2014-2015.

Grade: B

Recommendation: Improvements to the sewer flow meters are complete. Perform an updated Sewer Capacity and Assurance Plan that will utilize the new sewer flow meters and data within FY 15 – FY 17. Continue to collect good reliable flow data.

3. Identification of necessary hydraulic capacity improvements.

Discussion: No hydraulic capacity improvements were deemed necessary based on the *2007-2012 Sewer Flow Data and Capacity Analysis Update* Report. Additional flow data and invert elevation data will increase the accuracy of these calculations but the conservative estimates indicate that the hydraulic capacity is not a concern at this time.

Grade: A

Recommendation: Continue to refine analysis of peak wet weather flow versus hydraulic capacity through ongoing data collection and improving metering data quality. Perform an updated Sewer Capacity and Assurance Plan that will utilize the new sewer flow meters and data within FY 15 – FY 17.

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

Discussion: For the 2007-2012 data, R-values for the storm events that produces the larges peak flows (03/23/11 and 11/29/12 storms), and one other even that produced the next largest R-value for each basin were chosen. The averages of all the available R-values for each basin were determined, and then basins were ranked in order of average R-value as shown in the Table below:

Basin	Current Priority	Previous Study Priority
B13/B13S	1	1
B10	2	1
B06A	3	2
B06B	4	2
B12	5	3

The results for B12 and B13 are questionable, as the analysis is affected by problematic data from the 33” Palmer Bowlus flume site (B13-9183). Basin 10 and Basin 6 are the best candidates for future targeted CCTV inspection work to identify major sources of leakage in the system.

The table listed below summarizes storm event peak flows from the Winter 2005/2006 Study, and select storm events from the 2007-2012 data. For the 2007-2012 data, peaking factors for the storm events that produced the largest peak flows (03/23/11 and 11/29/12 storms), and one other event that produced the next larges peaking factor for each basin were chosen. The basins were ranked in order of the largest single peaking factor recorded among the analyzed storms.

Basin	Current Priority	Previous Study Priority
B06B	1	8
B13/B13S	2	1
B17	3	3
B15	4	11
B12	5	N/A

The results for B12 and B13 are questionable, as the analysis is affected by problematic data from the 33” Palmer Bowlus flume site (B13-9183). Basins 6 and 17 showed the most pronounced peak flows during the largest storm events and are the best candidates for smoke testing to identify major sources of inflow in the system.

Also, the City is currently working with Water Works Engineers to develop a more robust SCADA program that will allow the Wastewater Department to monitor Inflow and Infiltration in more detail.

Grade: B+

Recommendation: Based on the above recommendations Basin 6 and Basin 17 should be smoke tested, zoom-cam, and CCTV'd as outlined in the table below:

Activity	Inspection Date
Basin 6 Smoke Testing	2013/2014
Basin 6 Zoom Cam	2013
Basin 6 CCTV	2013/2014
Basin 17 Smoke Testing	2014
Basin 17 Zoom Cam	2014
Basin 17 CCTV	2014

Once the SCADA program work is complete, the City will utilize the new program to monitor Inflow and Infiltration in more detail. The goal of the program is to continuously monitor I/I within each wastewater basin and identify those basins during storm events that have significant I/I issues. Once areas showing significant I/I are identified, a work order will be generated for the Utilities Maintenance Crew to repair the I/I. I/I repairs include installing cleanout caps, repairing manholes to reduce I/I, replacing mainline and later lines where offset joints occur and are a potential sources of I/I, etc.

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 07/01/15 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 07/01/15.
- *Staff Training Records* – All training records are schedule and logged on the City’s local server. All scheduled training as of 07/01/15 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, 2015 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.

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. At the meeting that was held on November 12th, 2014, the City and FSP discussed and clarified the following outstanding items:

- 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.

Grade: A

Recommendation: Continue meeting with the Folsom State Prison 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 Audit
- 2013 SSMP Audit
- 2015 SSMP Audit

Grade: A

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



CITY OF
FOLSOM
DISTINCTIVE BY NATURE

2015 SSMP Self-Audit
Environmental & Water Resources Department

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)



Appendix C – Revised SSMP Documentation

Item List:

1. Sewer Ordinance
2. Confined Space Program
3. SOP – Evaluation of the sewer system after a storm event
4. SOP – Evaluation of the above ground sewer lines
5. SOP – Pump Station Bypass Pumping Procedures
 - a. Added a section for Spill Mitigation
 - i. SOP modified for the following stations:
 - ii. Pump Station No. 2
 - iii. Orangevale Ave Pump Station
 - iv. Oak Ave Pump Station
 - v. Mountain Oak Pump Station
 - vi. De I Norte Vista Pump Station
 - vii. Pump Station No. 6A
 - viii. Young Wo Pump Station
 - ix. Pump Station No. 3