

APPENDIX H

SSMP AUDITS

1. Audit for CY 2012-2013
2. Audit for CY 2014-2015

**City of Mountain View
2012-2013 Biennial Sewer System Management Plan (SSMP)
Audit Report**

The purpose of the Annual SSMP Audit is to evaluate the effectiveness of the City of Mountain View's SSMP and to identify whether updates are needed. This document was designed to meet the requirement of State Water Resources Control Board Order No. 2006-003DWQ as revised by Order No. WQ 2013-0058-EXEC. Documents of SSMP audits are kept on file at City of Mountain View and an indication is made in the California Integrated Water Quality System (CIWQS) database that the audit was completed.

Directions: Please check **YES** or **NO** for each question. If **NO** is answered for any question, describe the updates/changes needed and the timeline to complete those changes in the "*Description of Scheduled Updates/Changes to the SSMP*" section on Page 5 of this form.

		YES	NO
ELEMENT 1 – GOAL			
A.	Are the goals stated in the SSMP still appropriate and accurate?	X	<input type="checkbox"/>
ELEMENT 2 -- ORGANIZATION			
A.	Is the Public Works Services Key Staff Telephone List current?	X	<input type="checkbox"/>
B.	Is the Sanitary Sewer Overflow Responder Telephone List current?	X	<input type="checkbox"/>
C.	Is the SSMP Organization Chart current?	X	<input type="checkbox"/>
D.	Does the SSMP identify position responsible for SSMP activities?	X	<input type="checkbox"/>
E.	Is the SSMP's description of the "Chain of Communication for Reporting and Responding to SSOs" accurate and up-to-date?	X	<input type="checkbox"/>
ELEMENT 3 – LEGAL AUTHORITY			
Does the SSMP contain excerpts from the City of Mountain View Municipal Code documenting the City's legal authority to:			
A.	Prevent illicit discharges?	X	<input type="checkbox"/>
B.	Require proper design and construction of sewers and connections?	X	<input type="checkbox"/>
C.	Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the City?	X	<input type="checkbox"/>
D.	Limit discharges of fats, oil and grease?	X	<input type="checkbox"/>

		YES	NO
E.	Enforce any violation of its sewer ordinances?	X	<input type="checkbox"/>
ELEMENT 4 – OPERATIONS AND MAINTENANCE			
Collection System Maps			
A.	Does the SSMP reference the current process and procedures for maintaining the City’s wastewater collection system maps?	X	<input type="checkbox"/>
B.	Are the City’s wastewater collection system maps complete, current, and sufficiently detailed?	X	<input type="checkbox"/>
Resources and Budget			
C.	Does the City allocate sufficient funds for the effective operation, maintenance and repair of the wastewater collection system and is the current budget structure documented in the SSMP?	X	<input type="checkbox"/>
Prioritized Preventive Maintenance			
D.	Does the SSMP describe current preventive maintenance activities and the system for prioritizing the cleaning of sewer lines?	X	<input type="checkbox"/>
E.	Based upon information in the Annual SSO Report, are the City’s preventive maintenance activities sufficient and effective in minimizing SSOs and blockages?	X	<input type="checkbox"/>
Scheduled Inspections and Condition Assessments			
F.	Is there an ongoing condition assessment program sufficient to develop a capital improvement plan addressing the proper management and protection of infrastructure assets? Are the current components of this program documented in the SSMP?	X	<input type="checkbox"/>
Contingency Equipment and Replacement Inventory			
G.	Does the SSMP list the major equipment currently used in the operation and maintenance of the collection system and document the procedures of inventory management?	X	<input type="checkbox"/>
H.	Are contingency equipment and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance?	X	<input type="checkbox"/>
Training			
I.	Are collection system employees properly trained?	X	<input type="checkbox"/>
J.	Does the SSMP document current training expectations and programs?	X	<input type="checkbox"/>
Outreach to Plumbers and Building Contractors			
K.	Does the SSMP document current outreach efforts to plumbers and building contractors?	X	<input type="checkbox"/>

		YES	NO
ELEMENT 5 – DESIGN AND PERFORMANCE STANDARDS			
A.	Does the SSMP contain current design and construction standards for the installation of new sanitary sewer systems, pump stations and other appurtenances and for the rehabilitation and repair of existing sanitary sewer systems?	X	<input type="checkbox"/>
B.	Does the SSMP document current procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and the rehabilitation and repair of existing sewer lines?	X	<input type="checkbox"/>
ELEMENT 6 – OVERFLOW AND EMERGENCY RESPONSE PLAN			
A.	Does the City’s Sanitary Sewer Overflow and Backup Response Plan establish procedures for the emergency response, notification, and reporting of sanitary sewer overflows (SSOs)?	X	<input type="checkbox"/>
B.	Are City staff and contractor personnel appropriately trained on the procedures of the Sanitary Sewer Overflow and Backup Response Plan?	X	<input type="checkbox"/>
C.	Considering performance indicator data in the Annual SSO Report, is the Sanitary Sewer Overflow and Backup Response Plan effective in handling SSOs in order to safeguard public health and the environment?	X	<input type="checkbox"/>
ELEMENT 7 – FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM			
A.	Does the Fats, Oils, and Grease (FOG) Control Program include efforts to educate the public on the proper handling and disposal of FOG?	X	<input type="checkbox"/>
B.	Does the City’s FOG Control Program identify sections of the collection system subject to FOG blockages, establish a cleaning schedule and address source control measures to minimize these blockages?	X	<input type="checkbox"/>
C.	Are requirements for grease removal devices, best management practices (BMP), record keeping and reporting established in the City’s FOG Control Program?	X	<input type="checkbox"/>
D.	Does the City have sufficient legal authority to implement and enforce the FOG Control Program?	X	<input type="checkbox"/>
E.	Is the current FOG program effective in minimizing blockages of sewer lines resulting from discharges of FOG to the system	X	<input type="checkbox"/>
ELEMENT 8 – SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN			
A.	Does the City’s Sewer Master Plan evaluate hydraulic deficiencies in the system, establish sufficient design criteria and recommend both short and long term capacity enhancement and improvement projects?	X	<input type="checkbox"/>
B.	Does the City’s Capital Improvement Plan (CIP) establish a schedule of approximate completion dates for both short and long-term improvements and is the schedule reviewed and updated to reflect current budgetary capabilities and activity accomplishment?	X	<input type="checkbox"/>

		YES	NO
ELEMENT 9 – MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS			
A.	Does the SSMP accurately portray the methods of tracking and reporting selected performance indicators?	X	<input type="checkbox"/>
B.	Is the City able to sufficiently evaluate the effectiveness of SSMP elements based on relevant information?	X	<input type="checkbox"/>
ELEMENT 10 – SSMP AUDITS			
A.	Will the SSMP Audit be submitted with the SSO Annual Report to the Regional Water Board by March 15 th of the year following the end of the calendar year being audited?	X	<input type="checkbox"/>
ELEMENT 11 – COMMUNICATION PROGRAM			
A.	Does the City effectively communicate with the public and other agencies about the development and implementation of the SSMP and continue to address any feedback?	X	<input type="checkbox"/>

Description of Scheduled Updates/Changes to the SSMP

Directions: For each NO answer, please describe the planned revision. Reference the SSMP element and question number with each explanation.

Element 3B - Legal Authority – Proper design and construction

Corrective Action: The City Code was revised in March 2013 to include necessary requirements that new and rehabilitated sewers and connections be properly designed, constructed, inspected, and tested.

Element 3C – Legal Authority – Access for maintenance, repair, and inspection for portions of the lateral owned.

Corrective Action: The City Code was updated in September, 2013 to clarify legal authority: The SSMP has been updated to reference the appropriate sections of the Municipal Code and Standard Provisions which indicate sewer lateral maintenance responsibilities.

Element 4D – Scheduled inspection and condition assessment

Corrective Action: The SSMP was updated to identify the start and end year for the next 8-year CCTV inspection cycle, and operational budgets and staff resources that will be used to perform sewer main condition assessments.

Element 4I -Are collection system employees properly trained?

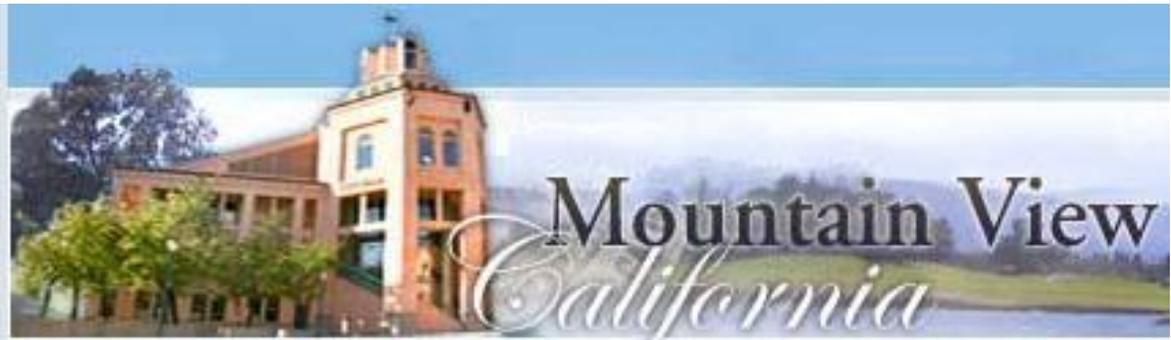
Corrective Action: The SSMP was updated to include California Water Environment Association (CWEA) certifications acquired by City staff or the requirements for certification included in job descriptions.

Element 7 Fats Oil and Grease FOG Control Program

Corrective Action: The SSMP was updated to include a description of the City's FOG program.

Final SSMP Audit Report

City of Mountain View SSMP Audit



Sewer System Management Plan

2014 SSMP Audit

March 13, 2015

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Appendices

Appendix A: 2014 SSMP Audit Checklist

List of Abbreviations

CY	Calendar Year
GWDR	General Waste Discharge Requirement
RWQCB	Regional Water Quality Control Board
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SWRCB	State Water Resources Control Board

2014 SSMP Audit

1 Introduction

The intent of the audit is to determine whether the SSMP complies with Region 2 and State GWDR requirements, whether the SSMP reflects current City of Mountain View Wastewater (City) practices, and whether the SSMP is effective in reducing SSOs. The audit fulfills the SSMP Audit requirements of both the RWQCB (Element 10) and the SWRCB GWDR (Element 10). This FSSD SSMP audit covers CY 2011-2014. The 2014 SSMP Audit is due by March 15, 2015 along with the Annual Report of SSOs. Annual audits will be kept on file at the City for five years.

2 Regulatory Requirements for SSMP Audits

The summarized requirements for SSMP Audits element of the SSMP are:

RWQCB Requirement:

The City shall conduct an annual audit of its SSMP which includes any deficiencies and steps to correct them (if applicable), appropriate to the size of its system and the number of overflows, and submit a report of such audit along with its annual report by March 15th of the following year.

SWRCB Requirement:

As part of the SSMP, the City shall conduct periodic internal audits, appropriate to the size of its system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the District's compliance with the SSMP requirements, including identification of any deficiencies in the SSMP and steps to correct them.

3 2014 SSMP Audit

The City conducts an biennial audit of its SSMP. The goal of the audit is to determine whether the SSMP complies with current requirements of the GWDR, whether the SSMP reflects current practices, and whether the SSMP is effective in reducing SSOs.

Program effectiveness is evaluated by a review of performance indicators and discussion of SSMP and sewer system improvements.

Program compliance is evaluated by review of SSMP elements using the Audit Checklist. The Audit Checklist includes comments regarding recently completed program updates and recommendations for future actions.

4 SSMP Effectiveness

Performance indicators, collected as part of Element IX (Monitoring, Measurement, and Program Modifications) have been reviewed to identify patterns and trouble areas needing improvement. Performance indicators for 2014 are summarized in Table 1. A history of SSOs is shown in Table 9-1, SSOs by cause are shown in Table 9 2 and spill volume history is shown in Figures 9-2 and 9-3.

5 SSMP Compliance

The Audit Checklist is used to demonstrate the City's compliance with Region 2 and State GWDR requirements for sanitary sewer systems. The audit checklist indicates whether each SSMP element is compliant, describes recent revisions or updates and recommends future actions to maintain effective

SSMP elements that reflect current District practices. The Audit Checklist, completed for CY 2011-2014, is included in **Appendix A**.

6 Purpose

The purpose of this document is to report the results of the Sewer System Management Plan (SSMP) Audit conducted for the City of Mountain View (City) covering Calendar Year (CY) 2014. This report was prepared and is being submitted pursuant to the requirements included in the State Water Resources Control Board Order No. 2006-0003 – Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (GWDR) and San Francisco Bay Regional Water Quality Control Board's SSMP requirements and revised as revised by Order No. WQ 2013-0058-EXEC.. The audit requirements are:

SWRCB WDR SSMP Audit Requirement: *“As part of the Sewer System Management Plan (SSMP), the Enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the Enrollee’s compliance with the SSMP requirements identified in this subsection (D.13), including identification of any deficiencies in the SSMP and steps to correct them.”*

SF Bay RWQCB SSMP Audit Requirement: *“Each wastewater collection system agency shall conduct an annual audit of their SSMP which includes any deficiencies and steps to correct them (if applicable), appropriate to the size of the system and the number of overflows, and submit a report of such audit.”*

7 Background

The City operates a sanitary sewer system serving a population of 76,000 in a 12 square mile area. The sewer system consists of 158 miles of gravity sewers, 1 mile of 42-inch diameter force main, and two pump stations. The gravity sewer mains range in diameter from 4 inches to 42 inches.

There are approximately 16,000 sanitary sewer laterals connecting to the City’s sewer system. The City does not own any portion of the sewer laterals. Maintenance and repair of the sewer laterals is the responsibility of the property owner; however, the City provides maintenance and repair services for the portion of the lateral located within the public right-of-way upon request and as a courtesy service to customers.

This audit reviewed the current version of the SSMP which was last updated on April 2014. The SSMP was originally certified as completed on August 19, 2008.

8 SSMP Audit

This audit covers from January 1, 2011 through December 31, 2014 and assesses the current SSMP, identifies deficiencies, and recommends corrective actions. In addition the audit provides an evaluation of SSMP effectiveness. The City intends to use the audit results to improve how the City manages, operates, and maintains the sanitary sewer system to reduce and prevent SSOs, as well as mitigate any SSOs that do occur.

The City conducted the audit through a series of meetings with City staff involved with implementation of SSMP activities. The City Audit Team members and City staff supporting the audit interviews and audit process are identified and organized in alphabetical order by first name).

Table 8-1: City of Mountain View Audit Team Members

Name	Title
Alison Turner	Utilities Services Manager
Carrie Sandahl	Water Environment Specialist
Eric Anderson	Urban Runoff Coordinator
Jim Baldinger	Utility Systems Supervisor
Mike Mulhearn	Wastewater Supervisor
Paul Culazzo	Utilities Worker III

SSMP audit meetings were performed on January 20, 2015 and February 10, 2015. The order of the audit interviews, SSMP element audited, and City staff interviewed is documented in Table 8-2.

Table 8-2: SSMP Audit Interviewees

GWDR Provision Section	Topics	Interviewees
D.13 (iv), D.13 (vi), D.13 (vii)	Operation and Maintenance Program – Mapping and Sewer Cleaning Overflow Emergency Response Plan FOG Control Program Plan – Sewer Cleaning	Alison Turner Jim Baldinger Mike Mulhearn Paul Culazzo Phill McNern
D.13 (iv), D.13 (v), D.13 (viii)	Operation and Maintenance Program – Inspection, Rehabilitation Plan, and Funding Design and Performance Provisions System Evaluation and Capacity Assurance Plan	Alison Turner
D.13 (vii)	FOG Control Program Plan – Source Control	Eric Anderson Carrie Sandahl
D.13 (i), D.13 (ii), D.13 (iii), D.13 (ix), D.13 (x), D.13 (xi)	Goal Organization Legal Authority Monitoring, Measurement, and Program Modifications SSMP Program Audits Communication Program	Alison Turner Mike Mulhearn

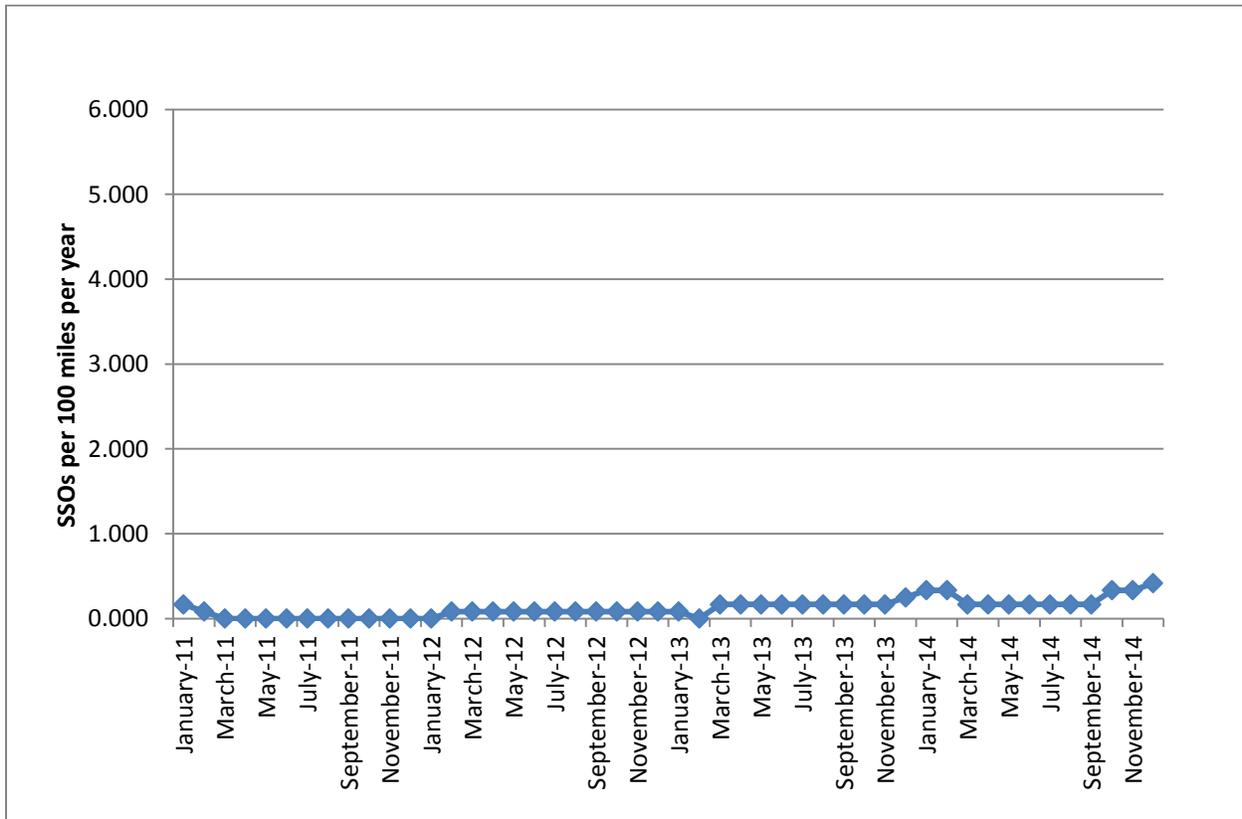
9 Analysis of SSO Trends

The primary measure of the effectiveness of the SSMP is sewer overflow performance. The overall program for managing the sewer system has been effective at maintaining a very low SSO rate of less than 1 SSO per 100 miles of sewer pipelines per year (on average) between Calendar Year (CY) 2008 and CY 2014 and achieving zero (0) SSOs from the sewer system in CY 2011. An SSO rate of less than 1 SSO per 100 miles of pipeline per year is considered a high-performing sewer system.

9.1 Number and Size of SSOs

During the period between January 1, 2008 and December 31, 2014, the City experienced 16 SSOs with all 16 SSOs occurring during dry weather conditions. Figure 9-1 shows the 12-month rolling average of SSOs per 100 miles of pipelines per year from January 2011 through December 2014.

Figure 9-1: 12-Month Rolling Average of SSOs per 100 Miles of Sewer Pipelines



In the past four years there were no spills that exceeded 1000 gallons. Table 9-1 shows the number and size of all SSOs occurring in the City of Mountain View sewer system between CY 2008 through CY 2014. Of the three (3) SSOs larger than 1,000 gallons, one (1) occurred in 2009 and two (2) in 2010.

Table 9-1: Number and Size of All SSOs from CY 2011 through CY 2014

Size of SSO (gallons)	2011	2012	2013	2014	TOTAL	TOTAL 2008-10
Greater than 10,000	0	0	0	0	0	0
From 1,000 to 9,999	0	0	0	0	0	3
From 100 to 999	0	0	1	2	3	8
From 10 to 99	0	0	1	3	4	4
From 1 to 9	0	0	1	0	1	3
Total	0	0	3	5	8	16

In the past four years, the City has contained and recovered 100 percent of the sewage spilled. In CY 2010, the City has experienced one (1) SSO which spilled to surface waters. This was the only SSO which has spilled to surface waters in the last seven years. Figure 9-2

Figure 9-2: Volume of Sewage Contained and Discharged to Surface Waters from CY 2008 through CY 2014

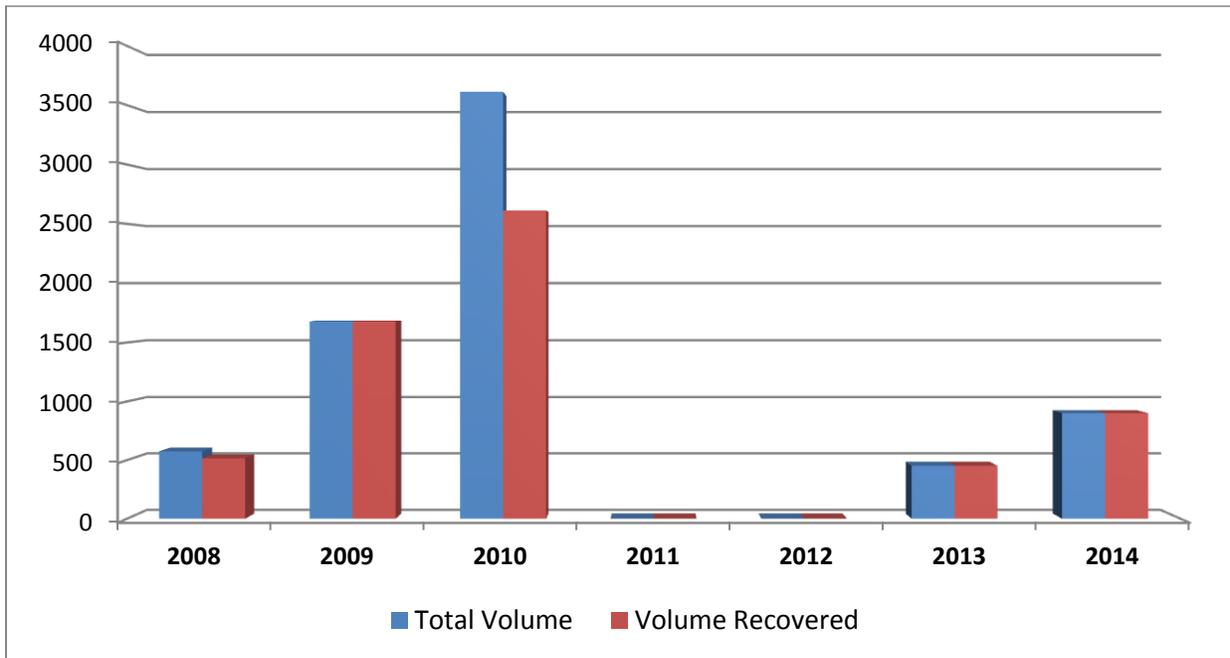
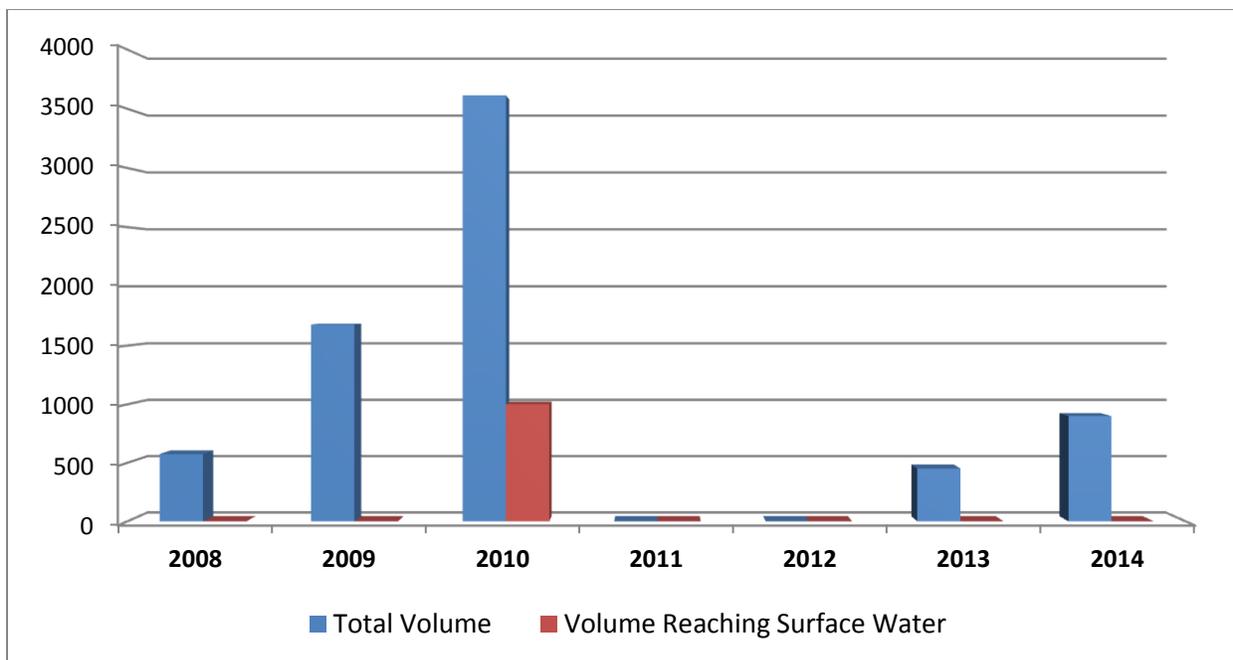


Figure 9-3: Total Volume of Sewage of Sewage vs Volume Discharged to Surface Waters from CY 2008 through CY 2014



9.2 Causes of SSOs

SSOs caused by roots (2), grease (2), debris (2) and multiple causes accounted for 1000 percent of SSOs occurring between January 1, 2011 and December 31, 2014 as shown in Table 9-2. .

Table 9-2: Causes of SSOs from CY 2008 through CY 2014

Cause of SSO	CY 2008	CY 2009	CY 2010	CY 2011	CY 2012	CY 2013	CY 2014	4-Year Total	Percent of 4-Year Total
Blockage:									
Roots	3	2	1	0	0	1	1	2	25.0%
Grease	1	0	2	0	0	1	1	2	25.8%
Debris	3	1	1	0	0	1	1	2	25.0%
Vandalism	0	0	0	0	0	0	0	0	0.0%
Construction Debris	0	0	0	0	0	0	0	0	0.0%
Multiple Causes	0	0	0	0	0	0	2	2	25.0%
Subtotal for Blockage	7	3	4	0	0	3	5	8	100.0%
Operator Error	0	0	0	0	0	0	0	0	0.0%
Infrastructure Failure	0	0	1	0	0	0	0	0	0.0%
Inflow and Infiltration	0	0	0	0	0	0	0	0	0.0%
Electrical Power Failure	0	0	0	0	0	0	0	0	0.0%
Flow Capacity Deficiency	0	0	0	0	0	0	0	0	0.0%
Contractor Error	0	0	0	0	0	0	0	0	0.0%
Cause Unknown	0	0	1	0	0	0	0	0	0.0%
TOTAL (ALL)	7	3	6	0	0	3	5	8	100%

10 Strengths and Implementation Accomplishments

Documenting the strengths and implementation accomplishments of the SSMP is as important as determining the deficiencies and corrective actions. The City should both recognize the areas of strength in sewer system management as well as continue building upon success in these areas. Table 10-1 includes some of the strengths and implementation accomplishment that were identified during the audit.

Table 10-1: Strengths and Implementation Accomplishments

WDR Provision	Strengths and Implementation Accomplishments
D.3 Feasible steps to eliminate SSOs	The City experienced few sanitary sewer overflows occurred in the City's sewer system.
D.7 Feasible steps and remedial actions	The City had only one SSO reaching public waters from Calendar Year 2008 through Calendar Year 2014.
D.8 System operators adequately trained; D.13 (iv)(d) O&M Program;	City job descriptions require some level of CWEA Collection System Maintenance certification and all collection system operations and maintenance employees have achieved certification at or above the level required. On September 23, 2014, staff conducted a training exercise within a creek.
D.13 (iii)(b) Legal Authority	The Municipal Code Section was updated September 17, 2013 to clarify legal authority: The SSMP has been updated to reference the appropriate sections of the Municipal Code and Standard Provisions which indicate sewer lateral maintenance responsibilities.
D.13 (iii)(c) Legal Authority	Updated City code The City to ensure access for maintenance, inspection, or repairs for portions of the service lateral owned or maintained by the City.
D.13 (iv)(d) O&M Program – Training	Updated SSMP to include description of the current training of City staff for sewer maintenance is not up-to-date and does not discuss the CWEA certifications achieved by City staff or the requirements for certification included in job positions.
D.10 Provide adequate capacity; D.13 (viii) SECAP	The City has experienced no capacity-related SSOs have occurred since CIWQS reporting began (May 2007).
D.13 (iv)(b) O&M Program	City sewer cleaning crews have access to a lateral push camera to inspect a sewer main prior to cleaning. This gives the City direct evidence of whether the sewer is clear and provides information to the City to update the sewer cleaning frequency.
D.13 (iv)(c) O&M Program – Rehabilitation and Replacement Plan	The City has commenced a well-defined pump station condition assessment inspection process for identifying rehabilitation and replacement projects for pump station assets.

WDR Provision	Strengths and Implementation Accomplishments
D.13 (vi) OERP; D.13 (xi) Communication Program	The City communicates with neighboring agencies and has mutual aid agreements with the Palo Alto, Sunnyvale, and Los Altos.
D.13 (vi) OERP	The City responds to customer requests for assistance with lateral sewer overflows and utilizes the response as a training opportunity for spill containment and recovery.
D.13 (vi) OERP	The City has an average response time of less than 30 minutes during working hours and less than 45 minutes during non-working hours.
D.13 (viii) SECAP	The Sewer Master Plan completed in 2010 was based on flow monitoring, hydraulic modeling, and projections of future land uses. The Master Plan identified a limited number of potential capacity deficiencies which are being prioritized for incorporation into the City's CIP. A new general plan was adopted and hydraulic model determined future improvements.
D.13 (ix) Monitoring, Measurement, and Program Modifications	The City reviews the Overflow Emergency Response Plan annually as part of a safety meeting and completes updates as needed.

11 SSMP Deficiencies and Corrective Actions

Several deficiencies were identified during the audit. These deficiencies are described in this Section along with recommended corrective actions. Deficiencies were divided into three categories and coded with a letter. The deficiency categories and codes are defined as follows:

Table 11-1: Deficiency Definitions

Deficiency Code	Deficiency Type	Deficiency Definition
A	Non-Compliance	A process or outcome resulting in the SSMP not currently being in compliance with the WDR/SSMP requirements.
B-major	Major Non-Conformance	Moderate to high risk that a statement in the SSMP is not fully conformed. Moderate to high risk to the success of the SSMP.
B-minor	Minor Non-Conformance	Low risk that a statement in the SSMP is not fully conformed. Low risk to the success of the SSMP.

Table 11-2: Major and Minor Non-Conformance Deficiencies and Recommended Corrective Actions

WDR Provision	Identified Deficiency	Recommended Corrective Action	Deficiency Type
D.13 (a) O&M Program - Mapping	The City updated maps to GIS and is transitioning to use of the new maps. The older maps are still relied upon by field crews for some information that did not get transferred to the new GIS maps. The older maps appear to be more reliable for locating some system assets. The newer maps have the most up-to-date manhole identification numbers for newer manholes which are not shown on the older maps.	Use the newer GIS maps as the primary source of data for identifying the asset name of sewer system assets. Identify the reason the older maps are referenced to provide additional information and update the GIS maps to include information available on older maps if feasible.	B-minor
D.13 (c) O&M Program – Regular inspection	The SSMP states a goal of inspecting the sewer system on an 8-year cycle. The SSMP does not include a plan and schedule for performing the next 8-year cycle of CCTV inspection.	Update the SSMP to identify the start and end year for the 8-year CCTV inspection program.	B-minor
D.13 (c) O&M Program – System for ranking condition of sewers	The City currently employs to utilize CCTV data to identify and address pipelines with severe maintenance and structural issues through either preventive maintenance, sewer repair, or sewer rehabilitation. The City has not documented the methodology utilized to perform sewer main condition assessment and has not defined the staffing needed to perform timely condition assessment once CCTV data is collected.	Document the methodology utilized to perform condition assessment and assign the staff required to perform timely sewer main condition assessment once data is collected.	B-minor
D.13 (viii)(d) SECAP implementation schedule	The City has not taken the final results of the Sewer Master Plan and incorporated into the Capital Improvement Program plan.	Incorporate sewer capacity projects into the capital improvements program plan as needed to appropriately address project priorities.	B-minor

12 Other Findings and Opportunities

This section includes other findings and opportunities for improvements not linked directly to issues of compliance or conformance with the GWDR. These are ideas that resulted from the audit and are presented for the City's consideration.

Table 12-1: Other Findings and Opportunities

WDR Provision	Finding	Opportunity
D.13 (iv) O&M Program	An asset register listing all of the assets within the sewer pump stations has not been created. An asset register is helpful for clearly communicating asset maintenance and repair needs as well as for quantifying risk associated with specific assets.	Develop an asset register. Define and populate key asset attribute fields. Scope of Condition and Risk assessment is to develop a
D.13 (b) O&M Program – System to track activities	Although the City utilizes the Hansen computerized maintenance management system (CMMS) to track routine customer service requests, the City has found it difficult to use the system to plan, schedule, and track sewer system preventive maintenance activities. Due to this, preventive maintenance activities are currently tracked utilizing a paper-based system. Although the paper-based system has proven to be effective at tracking maintenance activities performed, historical sewer cleaning crew feedback regarding the type and severity of the material found and removed during cleaning is not easily analyzed using this paper-based system, which is making it difficult to use this data to optimize maintenance frequencies.	As soon as practicable, the City should move forward with implementing an electronic means to store work order data collected by field crews for activities performed, especially for tracking the date sewer segments cleaned and the type and severity of material found during cleaning. This information should then be analyzed periodically and used as a basis for increasing or decreasing sewer preventive maintenance cleaning.
D. 13 (iv) O&M Program	The City currently utilizes a lateral push camera to perform CCTV inspection on sewer mainlines to troubleshoot sewer mainline issues in a timely manner. The City also employs a contractor to perform CCTV inspection to investigate operational issues as needed.	Consider purchasing a CCTV truck and associated CCTV equipment (i.e., tractor-driven pan and tilt CCTV camera) enabling in-house CCTV crews to perform NASSCO PACP CCTV inspection and condition assessment. This will enable the City to collect higher quality inspection data and the ability to begin performing system-wide inspection and condition assessment utilizing in-house crews. This capability can also be used to perform CCTV inspection in lieu of sewer cleaning (i.e., sewer inspection to determine cleaning needs instead of the next scheduled cleaning) to support optimizing sewer cleaning activities.

WDR Provision	Finding	Opportunity
D.13 (iv) O&M Program	The City inspected the entire system at least once since 1987 yet this data was not utilized to create a condition-based inspection frequency for sewer mains monitor defects found and not addressed on an appropriate monitoring schedule.	Analyze the data collected from previous inspections performed and assign an asset-specific and condition-based inspection frequency to all sewer mains. Update the SSMP to incorporate this approach to system-wide sewer inspection and condition assessment.
D.13 (iii) Legal Authority; D.13 (iv) O&M Program	The City’s policy of providing services to customers to address sewer lateral issues is not consistent. In the case of a lateral deficiency identified during the Development Review process, a property owner is fully responsible for lateral repair and replacement if the City identifies a deficiency in the lateral. In the case of a customer having a sewer overflow, the City will respond and will clean, inspect, and repair the lateral if required as a courtesy service.	Create a consistent policy for providing courtesy service for lower lateral maintenance and repair.
D.13 (iv) O&M Program	The City developed a prioritization methodology during the Sewer Master Plan yet this did not appear to translate into an overall approach and methodology for prioritization of on-going maintenance, inspection, repair, and capital improvements.	Consider developing and implementing a risk-based approach to maintenance, inspection, repair, and CIP prioritization. Apply the methodology to all assets in the sewer system and use the results to identify maintenance and CIP program priorities as well as the need for contingency planning.
D.9 Adequate Resources; D.13 (iv)(c) O&M Program – Developing funds needed	The City is currently investing approximately \$1.3 million annually into the sewer system through capital improvement projects. This includes sewer rehabilitation, replacement and capacity improvement projects. This also includes the rehabilitation and replacement of all lower laterals on sewer mains which are rehabilitated or replaced. It is not clear whether this is an adequate level of investment for the sewer system.	Utilize available inspection data and condition assessment results to project the near-term and long-term sewer repair, rehabilitation, and replacement needs of the entire system to justify current funding levels. If the analysis indicates current funding is not adequate, build the required funding into the rate structure as feasible. Create a placeholder in the long-term capital improvements program plan to address the projected long-term rehabilitation and replacement needs of the sewer system.

WDR Provision	Finding	Opportunity
<p>D.13 (viii) SECAP</p>	<p>The City’s methodology to quantify and simulate I/I flows in the hydraulic model is not well documented and could underestimate design peak wet weather.</p>	<p>Best modeling practice is to:</p> <ol style="list-style-type: none"> 1) model rainfall-dependent I/I as a hydrograph related to a specific rainfall event, 2) calibrate the model by simulating the flows from an actual observed rainfall event and comparing the model-simulated flows to the actual measured flows, and 3) use a design storm that includes a high short-duration (e.g., 1-hour) rainfall intensity that could have a more significant impact on peak wet weather flows. 4) Consider updating the model to incorporate best practices or model development. 5) If possible, to further validate the model results, consider running the model using rainfall data for actual observed large storm event(s) and comparing the model-predicted flows and levels to actual monitored flows from existing permanent flow meters. 6) Consider installation of flow meters to confirm model-predicted flows in key areas of the system that were identified in the Master Plan as potential capacity deficiencies. 7) Consider observing flow levels (or installing level meters or surcharge monitors) at key locations that are suspected or predicted by the Master Plan to surcharge during large storm events.

Appendix A: 2014 SSMP Audit Checklist

Element	Title	Requirement	Compliant	Current	Comments
I	Goals	Reduce, prevent, and mitigate SSOs	Y	Y	No changes recommended.
II	Organization	Designate Legally Responsible Official (LRO)	Y	Y	No changes recommended
		Organization Chart	Y	Y	Updated to reflect 2014 staff changes.
		Names and phone numbers for key personnel	Y	Y	Updated to reflect 2014 staff changes.
		Chain of communication for reporting SSOs	Y	Y	Review and update in 2014
III	Legal Authority	Prevent illicit discharges to sanitary sewer system	Y	Y	No changes recommended.
		Require sewers and connection be properly designed and constructed	Y	Y	No changes recommended.
		Ensure access for inspection, maintenance, and repairs	Y	Y	No changes recommended.
		Limit discharge of FOG and debris that may cause blockages	Y	Y	No changes recommended.
		Ability to inspect FOG producing facilities	Y	Y	No changes recommended.
		Enforce violations of the District ordinances	Y	Y	No changes recommended.
IV	O&M Program	Maintain up-to-date maps of the sanitary sewer system	Y	Y	Maps are continually updated. CCTV inspection data is used to improve quality of GIS data. Current maps include District and satellite city sewers.

Element	Title	Requirement	Compliant	Current	Comments
	O&M Program (cont'd)	Adequate planning, resources and budget to support effective sewer system management and long term goals	Y	Y	No changes recommended.
		Describe routine preventive maintenance program	Y	Y	Review in 2014 and revise as needed.
		Document completed preventive maintenance	Y	Y	No changes recommended.
		Adequate I/I monitoring	Y	Y	No changes recommended.
		Rehabilitation and replacement plan that identifies and prioritizes sanitary sewer system defects	Y	Y	.No changes recommended
		Provide regular technical training for sewer system staff	Y	Y	Collections Crew attended CWEA training, attends BACWA-CS regularly.
		Require contractors to provide training for their workers who work in the City's sewer system facilities	Y	Y	No changes recommended.
		Maintain equipment inventory	Y	Y	No changes recommended.
		Maintain critical spare part inventory	Y	Y	No changes recommended.
		Outreach to plumbers and contractors	Y	Y	No changes recommended
V	Design and Performance Provisions	Design and construction standards for new sanitary sewer system facilities	Y	Y	No changes recommended

Element	Title	Requirement	Compliant	Current	Comments
		Design and construction standards for repair and rehabilitation of existing sanitary sewer system facilities	Y	Y	No changes recommended.
		Procedures for the inspection and acceptance of new sanitary sewer system facilities	Y	Y	Good standards in place as well as inspectors trained in inspection procedures.
		Procedures for the inspection and acceptance of repaired and rehabilitated sanitary sewer system facilities	Y	Y	Good standards in place as well as inspectors trained in inspection procedures.
VI	Overflow Emergency Response Plan (OERP)	Procedures for the notification of primary responders	Y	Y	No changes recommended.
		Procedures for the notification of regulatory agencies	Y	Y	All call-out lists recently updated and distributed to City departments and satellite cities.
		Program to ensure appropriate response to all SSOs	Y	Y	Recommend review and update of procedure and flowcharts as needed.
		Proper reporting of all SSOs	Y	Y	Recommend review and update of procedure and flowcharts as needed.
		Procedure to ensure City staff are aware of and follow OERP	Y	Y	Updated SSMP to reflect new SSO Category designations .
		Procedure to ensure District staff are trained in the OERP procedures	Y	Y	No changes recommended.

Element	Title	Requirement	Compliant	Current	Comments
	OERP (cont'd)	Procedure to ensure contractor personnel are trained in the OERP procedures	Y	Y	No changes recommended.
		Procedures to address emergency operations such as traffic and crowd control	Y	Y	No changes recommended.
		Program to prevent the discharge of sewage to surface waters	Y	Y	No changes recommended.
		Program to minimize or correct the impacts of any SSOs that occur	Y	Y	No changes recommended.
		Program of accelerated monitoring to determine the impacts on surface waters of any SSOs that occur	Y	Y	No changes recommended.
VII	FOG Control Program	Identification of "hot spots" with FOG-related problems	Y	Y	No changes recommended.
		Public outreach program that promotes the proper disposal of FOG	Y	Y	No changes recommended.
		Plan for the disposal of FOG generated within the District's service area	Y	Y	No changes recommended.
		Demonstrate that the District has allocated adequate resources for FOG control	Y	Y	No changes recommended.

Element	Title	Requirement	Compliant	Current	Comments
	FOG Control Program (cont'd)	Program of preventive maintenance for sanitary sewer system facilities that have FOG-related problems	Y	Y	No changes recommended.
VIII	System Evaluation and Capacity Assurance Program (SECAP)	Identification of elements of the sanitary sewer system that experience or contribute to SSOs caused by hydraulic deficiencies	Y	Y	No changes recommended.
		Established design criteria that provide adequate capacity	Y	Y	Master Plan ensures that sewer system capacity is adequate to serve existing and future development.
		Short term CIP that addressed known hydraulic deficiencies	Y	Y	No changes recommended.
		Long term CIP that provides for future capacity needs	Y	Y	No changes recommended.
		Procedures that provide for the analysis, evaluation, and prioritization of hydraulic deficiencies	Y	Y	No changes recommended.
		The short and long term CIPs include schedules for the correction of each identified hydraulic deficiency	Y	Y	Commenced an RFP for Shoreline Sewage Lift Station Condition and Risk Assessment and Alternate Trunk Sewer Alignment Study Project 14-32 .

Element	Title	Requirement	Compliant	Current	Comments
IX	Monitoring, Measurement, and Program Modifications (MMPM)	Maintain relevant information to establish, evaluate, and prioritize SSMP activities	Y	Y	No changes recommended.
		Monitor implementation of the SSMP	Y	Y	No changes recommended.
		Measure, where appropriate, performance of the elements of the SSMP	Y	Y	. No changes recommended
		Assess success of the preventive maintenance program	Y	Y	No changes recommended.
		Update SSMP program elements based on monitoring or performance	Y	Y	No changes recommended.
		Identify and illustrate SSO trends	Y	Y	No changes recommended.
X	SSMP Program Audits	Conduct periodic audits	Y	Y	No changes recommended.
		Record results of the audit in a report	Y	Y	No changes recommended.
		Record changes made and/or corrective actions taken	Y	Y	Audits are performed bi-ennially.
XI	Communications Program	Communicate with the public regarding the preparation of the SSMP	Y	Y	No changes recommended.
		Communicate with the public regarding SSMP performance	Y	Y	No changes recommended.

Element	Title	Requirement	Compliant	Current	Comments
		Communicate with satellite sewer systems	Y	Y	The City communicates regularly with satellite cities.