

# **2011 SSMP Audit Report**

**City of Madera, Public Works Department**

**November 17, 2011**

Table of Contents

Summary ..... 3  
    Introduction ..... 4  
Audit of the SSMP ..... 5  
1. Audit of Goals – State Order D.13.i..... 6  
2. Audit of Organization – State Order D.13.ii ..... 7  
3. Audit of legal Authority – State Order D.13.iii ..... 8  
4. Audit of Operation and Maintenance Program – State Order D.13.iv ..... 9  
5. Audit of Design and Performance Provisions – State Order D.13.v..... 10  
6. Audit of Overflow Emergency Response Plan – State Order D.13.vi..... 11  
7. Audit of Fats, Oil and Grease (FOG) Control Program – State Order D.13.vii..... 12  
8. Audit of the System Evaluation and Capacity Assurance Plan – State Order D.13.viii ..... 13  
9. Audit of the Monitoring, Measurement, and Program Modification – State Order D.13.ix ..... 14  
10. Audit of the SSMP Program Audits – State Order D.13.x ..... 15  
11. Audit the Communication Program – State Order D.13.xi ..... 16  
SSMP Audit Certification ..... 17

## Summary

The California State Water Resources Control Board's (SWRCB) Wastewater Discharge Requirements (WDR) adopted in May 2, 2006 requires that owners of wastewater collection systems with more than a mile of pipeline have in place a Sewer System Management Program (SSMP) to reduce the number and severity of Sanitary Sewer Overflows (SSOs) and the program to be audited every two years. This audit is the first one after the SSMP was adopted and conducted to meet the biennial audit requirements.

This biennial audit of the City of Madera's SSMP consisted of sufficiency rankings on all 11 sections of the SSMP requirements. The ranking is explained in the *Audit of the SSMP* section and is based on information available referenced to the WDR requirements. Nine (9) sections were found to be in *compliance* in the sufficiency ranking while two (2) sections were found to be in *substantial compliance*.

While Section 6 was found to be substantially compliant, the audit noted that the SSMP did not address how staff was trained in regards to SSO mitigation, communication and safety. The auditor recommended that the section be updated to include current training practices regarding these issues.

Additionally, Sections 7 was found to be substantially compliant. While the SSMP lists a public outreach program in regards to Fats, Oils and Grease (FOG), no program was currently found to be in existence. The auditor recommended that the FOG Public Outreach Program be implemented in a timely manner.

The findings of this audit will be used to gauge the performance of the next biennial SSMP.

## Introduction

On May 2, 2006, the California State Water Resources Control Board adopted Order No. 2006-0003 (State Order) to create an equitable statewide mechanism to manage all publicly owned wastewater collection agencies with more than a mile of pipeline, to reduce the number and severity of Sanitary Sewer Overflows (SSOs), and to set up a central depository for online reporting of SSOs when they do occur.

A principal element of the State Order is the requirement that the collection agencies adopt and maintain a management plan for the system, referred to as a Sewer System Management Plan or SSMP.

The City of Madera, after conducting a public hearing, adopted the SSMP on April 15, 2009, in accordance with the State Order.

The State Order establishes the following goals:

- The SSMP must document the organization's legal authority to achieve the goals of the SSMP as demonstrated through City of Madera's ordinances, agreements and other legally binding instruments.
- The SSMP must identify the City of Madera organization and staff responsible for implementing and maintaining the SSMP.
- The SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the City of Madera wastewater conveyance system.

Additionally, the State Order requires City of Madera staff perform periodic internal audits of the SSMP focusing on evaluating the effectiveness of the SSMP and staffs' compliance with its requirements, as shown in Section D-13 of the State Order. The internal audits must be performed at least every two (2) years with the audit report kept on file at City of Madera. Due date for this audit is November 18, 2011.

The SSMP must be updated every five (5) years, must contain any significant program changes, and be re-certified by the City of Madera. To complete the re-certification process, City of Madera staff must enter the information on the Online SSO Database and mail a hard copy to the State Water Resources Control Board. The due date for re-certification of the SSMP is November 18, 2014.

In general, the State's audit requirements of the SSMP are extremely complex with many overlapping topics. As described below, there are 11 major categories in the SSMP and over three dozen subcategories. Additionally, a comprehensive audit program includes evaluation elements such as document control, training, objectives, data management, audit procedures, and results approach outcomes.

This is the first internal audit of the SSMP. No action is required by the City of Madera. After reviewing and sharing the contents of the audit report, staff will create a list of proposed remedies if deficiencies were found to exist, file the report, and begin working to correct the deficiencies, if any.

## Audit of the SSMP

As specified in the State Order, the SSMP is comprised of eleven (11) sections or subsets of Section D. 13 of the State Order, as follows:

- D.13.i Goals
- D.13.ii Organization
- D.13.iii Legal Authority
- D.13.iv Operation and Maintenance Program
- D.13.v Design and Performance Provisions
- D.13.vi Overflow Emergency Response Plan
- D.13.vii FOG (fats, oils, grease) Control Plan
- D.13.viii System Evaluation and Capacity Assurance Plan
- D.13.ix Monitoring, Measurement and Program Modifications
- D.13.x SSMP Program Audits
- D.13.xi Communication Program

This internal audit is focused on the above eleven categories as required by the State Order. Compliance ranking has been based on State Order audit guidelines and sufficiency. A recommendation has been provided when there is enough information to support it.

The format for audit reporting is as follows:

- State Order Section/Subsection
- Sufficiency Ranking
  - Complies,
  - Substantial Compliance,
  - Partial Compliance,
  - Marginal Compliance, and
  - Not in Compliance
- Findings
- Reference Information
- Recommendation when appropriate

## 1. Audit of Goals – State Order D.13.i

*Review the SSMP to determine if it complies with the State Order by having a goal to provide a plan to manage, operate, and maintain all parts of the City of Madera System.*

Sufficiency: Complies.

Findings: The City of Madera has established a list of goals in its SSMP that complies with the goals established in the State Order and are as follows;

1. Minimize sanitary sewer overflows;
2. Prevent public health hazards;
3. Minimize inconveniences by responsibly handling interruptions in service;
4. Maintaining adequate capacities and extending useful life of the collection system;
5. Prevent unnecessary damage to public and private property;
6. Efficient use of funds for sewer operations;
7. Convey wastewater to treatment facilities with a minimum of infiltration, inflow and ex-filtration;
8. Provide adequate capacity to convey peak flows;
9. Perform all operations in a safe manner;
10. Implement regular, proactive maintenance of the system to remove roots, debris, and fats, oils and grease in areas prone to blockages that may cause sewer backups or SSOs
11. Uphold the City's Standards and Specifications on newly constructed public and private sewers.

Reference: City of Madera SSMP

Recommendation: None. The City of Madera is in compliance with the *Goals* requirement of the State Order.

## 2. Audit of Organization – State Order D.13.ii

*Review the SSMP to determine if it complies with the State Order by having the names of authorized representatives published and updated in the SSMP.*

Sufficiency: Complies.

Findings: The City of Madera has identified and kept updated the names of its authorized representative, management, administration, and maintenance personnel and has shown the chain of communication for reporting SSOs.

Reference: City of Madera Organizational Chart, City of Madera SSMP, Page 6.  
Description of General Responsibilities, City of Madera SSMP, Page 6-7  
SSMP Element Responsibilities, City of Madera SSMP, Page 7-9.

Recommendation: None. The City of Madera's Organization and Chain of Command is a "living document" and updated periodically. This document is also available on the IEUA website.

### 3. Audit of legal Authority – State Order D.13.iii

*Review the SSMP to determine if it complies with the State Order by having ordinances and agreements in place and updated to prevent illicit discharges, provide for proper design of upstream facilities, provide right of way and access to the system, and enforce City regulations.*

Sufficiency: Complies.

Findings: The City of Madera currently has in place several municipal codes in place which prevent, require, ensure, limit and enforce specific features and operations required by the Order. The City of Madera SSMP currently lists the applicable City and County ordinances that provide the proper legal authority.

IEUA has in place pretreatment agreements with each of its RCAs which require that significant industrial users (SIU) be properly permitted and required to meet Federal, State and local limits.

Additionally, The City of Madera maintains files that document the City's right to access easements.

Reference: Legal Authority, City of Madera SSMP, Table 3-1, Page 10.  
List of additional City of Madera Ordinances, City of Madera SSMP, Page 11-12  
Easement Documents.

Recommendation: Look at the possibility of incorporating the Easement Documents with GIS.



#### 4. Audit of Operation and Maintenance Program – State Order D.13.iv

*Review the SSMP and activities of staff, consultants and contractors to determine compliance with the State Order by having (a) an up to date collection system map that shows all pipe reaches, manholes, siphons, diversion structures, and pump stations, if any, (b) a routine preventative maintenance program and operations program, (c) rehabilitation and replacement program, (d) operations and maintenance training program, and (e) part inventory program including identification of critical replacement parts.*

Sufficiency: Complies

Findings: The City of Madera maintains and updates GIS mapping and data tables for the system's pipe reaches and manholes. AutoCAD is used for mapping and printing the City wide underground utility maps. The City sewer map is divided into 60-sections. The maps display streets along with sewer assets and are referenced for maintenance activities.

The Master AutoCAD sewer file contains the following layers; manholes, mainlines (gravity mainlines and force-mains), and the location of sewer pumping stations.

The City of Madera recently converted all of its sanitary sewer assets into a GIS system, which is utilized for storage/retrieval of asset information.

The City of Madera systematically and routinely CCTV lines and clean as needed, some known problem areas more often than others. Pipeline condition information is conveyed to engineering if repairs and/or replacements are needed, from which CIPs are generated. The CIP is a five (5) year plan that is updated annually based on need.

In addition to mandatory standard trainings and certifications, The City's training programs include Virtual Trainings, which consist of series of digital video files, and safety training when new equipment is acquired. The Public Works Department maintains a training activities log.

The City of Madera utilizes FAS Gov Asset Inventory to track all asset inventory.

Reference: High Maintenance Sewer Lines, City of Madera SSMP, Table 4-1, Page 16-22  
Capital Improvement Program, City of Madera SSMP, Table 4-2, Page 25

Recommendation: No recommendation at this time

## 5. Audit of Design and Performance Provisions – State Order D.13.v

*Review the SSMP to determine if it complies with the State Order by having design and construction standards and specifications for installation of new facilities, including coverage for testing of new facilities prior to acceptance.*

Sufficiency: Complies

Findings: The SSMP contains reference to the City of Madera's Standards and Specifications for new or upgrading facilities, placing the element in compliance. In addition, reference is made to other approved testing methods, such as FAT (Factory Acceptance Testing), to ensure that the infrastructure meets the design and performance provisions.

Legal requirements for construction and major repair projects are documented in the "boiler plate" sections of the specifications and are made a part of all construction contracts and require that the work is not placed into service and accepted by the City until inspection and testing is completed.

Reference: City of Madera Standard Plans and Specifications  
Design Requirements for Sewage Lift Stations, City of Madera  
SSMP, Page 26  
Pumping Station Design Criteria, City of Madera SSMP, Page 29

Recommendation: None.

## 6. Audit of Overflow Emergency Response Plan – State Order D.13.vi

*Review the SSMP to determine if it complies with the State Order by having an overflow emergency response plan that includes (a) proper notification procedures, (b) a program that assures proper response to all overflows, (c) procedures that ensure prompt notification of regulatory agencies and other affected entities, (d) proper training for staff and contractors named in the response plan, (e) procedures to address traffic control and crowd control, and, (f) implementation of steps to prevent SSOs from reaching waters of the United States.*

Sufficiency: Substantial Compliance.

Findings: The City of Madera SSMP currently complies with all requirements of this State Order.

- (a) An Overflow Field Response Chart and response forms are included in order for staff to follow proper notification procedures, and;
- (b) to ensure the proper response to all overflows.
- (c) Additionally, the SSMP details the proper response and notification procedures during and after normal working hours in order to ensure prompt notification to regulatory agencies and other affected entities.
- (d) The SSMP currently does not clarify what proper training staff and named in the response plan receive.
- (e) The SSMP contains the proper procedures to address traffic and crowd control, and;
- (f) the proper steps to implement in order to contain SSOs.

From January 2009 to November 2011, there were zero (0) SSOs within the City of Madera service area:

Regional: 0 SSO  
Locations: None Reported

Average SSO duration: 0 minutes,  
Average response time: 0 minutes,  
Average SSO volume: 0 gallons,  
Average SSO volume recovered: 0 gallons,  
Average of actual SSO spill: 0 gallons,

Reference: *Sanitary Sewer Overflow Emergency Response Plan, City of Madera SSMP, Page 40-56*  
SSO Field Response Flow Chart, City of Madera SSMP, Table 6-1, Page 41  
SSO Complaint Form, City of Madera SSMP, Attachment 6-2, Page 43  
Operator Sewage Spill Report, City of Madera SSMP, Attachment 6-3, Page 51

Recommendation: Update the SSMP to include a section regarding proper training on SSO mitigation, communication and safety.

## 7. Audit of Fats, Oil and Grease (FOG) Control Program – State Order

### D.13.vii

*Review the SSMP to determine if it complies with the State Order by having a FOG Control plan with (a) a public education element, (b) FOG disposal facilities identified, (c) ordinances, rules and regulations to prevent FOG, (d) requirements to install FOG traps together with standard drawings for traps, owner maintenance requirements, owner record keeping requirements and owner reporting requirements, (e) inspection authority and staffing, (f) identification of sanitary sewer sections impacted by FOG, and (g) a source control plan for NRWS reaches currently impacted by FOG.*

Sufficiency: **Substantial Compliance.**

Findings:

- (a) While the City of Madera SSMP currently includes a plan for Public Outreach for FOG control, at the time of this audit, the public outreach program has not been implemented.
- (b) The City of Madera SSMP details the proper disposal of FOG waste as detailed by ordinance of Madera County's Environmental Health Department.
- (c) As a result, the SSMP details the City Municipal Codes and County Ordinances that grant authority to; limit types of waste discharged to public sewers, installation of grease interceptors in accordance to Madera County standards, require routine inspections, and maintenance of grease interceptors.
- (d) The SSMP details the construction and maintenance standards as set forth by Madera County.
- (e) The Inspection of grease interceptors is handled by Madera County's environmental health department.
- (f) As stated in the SSMP, the City has identified 109 high maintenance; 103 of these high maintenance areas are related to FOG.
- (g) High maintenance spots are cleaned on a monthly basis. Field staff is currently responsible for identifying FOG blockages during normal cleaning of the sewer lines.

Reference: Legal Authority, City of Madera SSMP, Page 58  
Grease Removal Devices, City of Madera SSMP, Page 58

Recommendation: Implementation of a FOG Public Outreach Program as identified in the City of Madera SSMP.

## 8. Audit of the System Evaluation and Capacity Assurance Plan – State Order D.13.viii

*Review the SSMP to determine if it complies with the State Order by having a Capital Improvement Plan (CIP) that considers (a) Evaluation of those portions of the system that is experiencing SSO discharges due to hydraulic deficiency, (b) Design Criteria commensurate with the system, (c) Capacity Enhancement Measures and steps to address short term and long term CIP goals and an implementation schedule, and (d) Schedule for completion of the necessary things-to-do that were developed in items D.13.viii (a) - (c) above.*

Sufficiency:       Complies.

Findings: The City of Madera complies with the requirements of the State Order by operating a computer model for its System Evaluation and Capacity Assurance Plan. The primary component of the plan, as directed in the State Order is its Capital Improvement Program (CIP). The other major element of the plan is the Design Criteria addressed in Section 5 above (State Order D.13.v).

The City of Madera SSMP contains each project identified as necessary to increase the capacity of portions of the system. Project priorities and proposed construction stages have been developed based on the relative severity of existing and projected system deficiencies and the anticipated timing of future developments in various areas.

Additionally, the City of Madera operates a hydraulic model of the sewer system. The model contains 170 miles of pipeline and 2,639 manholes. The capacity of the Madera sewer system was evaluated using a computer hydraulic model of the major trunk and interceptor sewer. The hydraulic model can be operated to test impacts of new discharges to the system and evaluates average dry weather flow, peak dry weather flow and peak wet weather flow. The hydraulic model is updated as needed to reflect changes in the collections system and is GIS based for up to date mapping capability. Specific scenarios can be considered, such as increases in flow to determine potential, future bottlenecks in the system and physical improvements needed prior to encountering those future flows.

Reference:       City of Madera hydraulic computer model, City of Madera SSMP, Attachment 8-1, Page 62.  
Sewer CIP, City of Madera SSMP, Table 8-4, Page 70

Recommendation:       None.

## 9. Audit of the Monitoring, Measurement, and Program Modification – State Order D.13.ix

*Review the SSMP to determine if it complies with the State Order by (a) maintaining relevant information that can be used to establish and prioritize appropriate SSMP activities, (b) monitoring the implementation and, where appropriate, measure the effectiveness of each element of the SSMP, (c) assessing the success of the preventative maintenance program, (d) updating program elements, as appropriate, based on monitoring or performance evaluations, and (e) identifying and illustrating SSO trends, including frequency, location and volume.*

Sufficiency: Complies.

Findings:

- (a) The City of Madera currently maintains complaint and blockage records in hardcopy and spreadsheet formats, maintains cleaning logs and other preventative maintenance activity logs, and records problems identified through regular maintenance activities.
- (b) The City has developed a sewer inventory, mapping and maintenance database to efficiently track and utilize records related to any segment of the system.
- (c) With the information available, staff is able to generate statistical data similar to the CIWQS, such as:
  - duration of SSO
  - response time
  - volume of SSO
  - volume recovered
  - volume actually spilled
  - flow type
  - pipe size, material, and age
  - cause of SSO
- (d) The information made available is used to determine the effectiveness of the SSMP, and;
- (e) track performance indicators in regards to the system.

Reference: City of Madera Database

Recommendation: None.

## 10. Audit of the SSMP Program Audits – State Order D.13.x

*As a part of the SSMP, IEUA shall conduct periodic audits. At a minimum these audits must occur every two years and a report must be prepared and kept on file. These audits shall focus on the effectiveness of the SSMP, compliance with State Order requirements, identification of any deficiencies and steps to correct them.*

Sufficiency: Complies.

Findings: The City of Madera has embarked on this audit of its SSMP with timeliness to allow the auditor adequate time to investigate, gather evidence, analyze and then report sufficiency and findings, and finally, to make recommendations when appropriate. The audit is due by November 18, 2011. The next audit will be due by November 18, 2013. The SSMP must be re-certified by May 2, 2014 after updating the SSMP with elements recommended by the 2011 and 2013 audits together with any program changes implemented by IEUA.

Reference: This is the first audit of the City of Madera SSMP. This audit will become a reference for the May 2013 audit.

Recommendation: None.

## 11. Audit the Communication Program – State Order D.13.xi

*Review the activities of staff to determine if they have complied with the State Order by (a) communicating the performance of the SSMP with the public and with IEUA member agencies, and (b) providing the public and the member agencies the opportunity to provide input.*

Sufficiency: Complies.

Findings: State Order requirements are complex and developing the first SSMP required comments and input from many stakeholder. After the adoption, the SSMP was uploaded to the IEUA website for general public review.

With the completion of each audit, City staff will share the audit findings with interested parties and make the report available to the general public by posting on the City's website. As noted in the State Order the SSMP Audit is the mechanism to be used to measure SSMP performance and the best document for communicating performance.

The member agencies and general public will have an opportunity to provide input with the completion of each audit every two years and certification every five years as required by the Brown Act (public notice requirements).

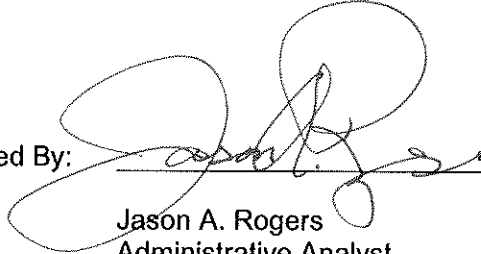
Reference: SSMP, City of Madera Web Page

Recommendation: It is recommended after each audit that, City staff develop an implementation plan to address any deficiencies identified during the audit. Progress can then be acknowledged with the next audit or certification.



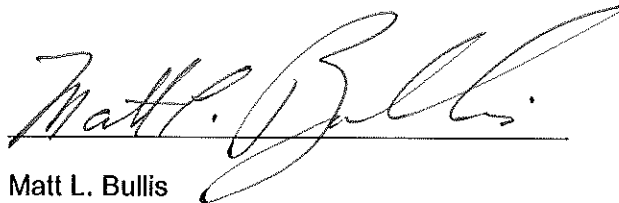
### SSMP Audit Certification

SSMP Audit Prepared By:



Jason A. Rogers  
Administrative Analyst  
City of Madera, Public Works Department

SSMP Audit Approved By:



Matt L. Bullis  
Public Works Operations Director  
City of Madera, Public Works Department