

# A Guide for Developing and Updating Sewer System Management Plans (SSMPs)

**DRAFT**



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## List of Acronyms

APWA	American Public Works Association
ASCE	American Society of Civil Engineers
BACWA	Bay Area Clean Water Agencies
BMP	Best Management Practice
CASA	California Association of Sanitation Agencies
CCTV	Closed-Circuit Television
CIP	Capital Improvement Program
CIWQS	California Integrated Water Quality System
CMMS	Computerized Maintenance Management System
CMOM	Capacity, Management, Operations, and Maintenance
CPC	California Plumbing Code
CSUS	California State University Sacramento
CVCWA	Central Valley Clean Water Association
CWEA	California Water Environment Association
FOG	Fats, Oils, and Grease
FSE	Food Service Establishments
GRD	Grease Removal Device
I/I	Infiltration and Inflow
LRO	Legally Responsible Official
MOP	Manual of Practice
MRP	Monitoring and Reporting Program effective 9/9/13
MS4	Municipal Separate Storm Sewer System
NACWA	National Association of Clean Water Agencies
NASSCO	National Association of Sewer Service Companies
NGO	Non-Government Organization
NOI	Notice of Intent
NOV	Notice of Violation
O&M	Operations & Maintenance
OERP	Overflow Emergency Response Plan
OES	Office of Emergency Services, State of California
PACP	Pipeline Assessment & Certification Program
PLSD	Private Sewer Lateral Discharge
PM	Preventive Maintenance
POTW	Publicly Owned Treatment Works
QA/QC	Quality Assurance/Quality Control
R/R	Rehabilitation or Repair/Replacement
RWQCB	Regional Water Quality Control Board
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SSS WDR	Statewide General WDR for Sanitary Sewer Systems
SWRCB	State Water Resources Control Board
UPC	Uniform Plumbing Code
USEPA	United States Environmental Protection Agency

WDR Waste Discharge Requirements  
WWTP Waste Water Treatment Plant

## Glossary of Terms

**Collection System** – Generic term for any system of pipes or sewer lines used to convey wastewater to a treatment facility.

**Enrollee** – A public entity that owns or operates a sanitary sewer system and has submitted a complete and approved application for coverage under the SSS WDR.

**Lateral (also called Service Lateral)** – A segment of pipe that connects a home or building to a sewer main, which may be located beneath a street or easement. The responsibility for maintaining a lateral can be solely that of the Enrollee or the private property owner; or it can be shared between the two or more parties. Local communities dictate lateral responsibility and the basis for a shared arrangement, if it applies. See Lower Lateral and Upper Lateral definitions.

**Lower Lateral** – That portion of a lateral usually from the property line or easement line to the sewer main. Enrollees may or may not be responsible for maintenance of this portion of the lateral. If not, the lower lateral is owned and maintained by the property its serves.

**Miles of Gravity Sewer** – Amount of gravity sewer lines/pipes in an Enrollee’s sanitary sewer system, expressed in miles.

**Miles of Publicly-Owned Laterals** – Amount of laterals in an Enrollee’s sanitary sewer system that the Enrollee is responsible for maintaining, expressed in miles.

**Miles of Pressure Sewer** – Amount of pressurized sewer lines/pipes in an Enrollee’s sanitary sewer system, expressed in miles or portions thereof.

**Miles of Private Laterals** – Amount of private laterals tributary to an Enrollee’s sanitary sewer system that private property owners are responsible for maintaining, expressed in miles or portions thereof.

**Percent Reached Surface Water** – Volume of sewage discharged from a sanitary sewer system or private lateral or collection system estimated to have reached surface water divided by the total volume of sewage discharged.

**Percent Recovered** – Volume of sewage discharged that was disposed of properly, divided by the total volume of sewage discharged.

**Private Lateral** – Privately owned sewer service lateral.

**Private Lateral Sewage Discharge (PLSD)** – Sewage discharges caused by blockages or other problems within privately owned laterals or collection systems that are tributary to the reporting Enrollee’s sanitary sewer system. Reports of these events may be submitted by Enrollees on a voluntary basis, but are not the Enrollee’s responsibility unless caused by issues in the main line or because of other Enrollee activity. Normally, this type of sewage discharge is the responsibility of the private lateral or collection system owner.

**Sanitary Sewer Overflow (SSO)** – Any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:

- i. Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;
- ii. Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States ; and
- iii. Wastewater backups into buildings and on private property caused by blockages or flow conditions within the publicly-owned portion of a sanitary sewer system.

**Sanitary Sewer System** – Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a WWTP head works and which is comprised of more than one mile of pipes and sewer lines, used to collect and convey wastewater to a publicly owned treatment facility.

**Service Lateral** – See Lateral.

**SSO Category 1** – All discharges of sewage resulting from a failure in an Enrollee’s sanitary sewer system that resulted in a discharge to a drainage channel and/or surface water.

**SSO Category 2** – All discharges of sewage resulting from a failure in an Enrollee’s sanitary sewer system of a volume equal to or greater than 1,000 gallons that did not reach surface water.

**SSO Category 3** – All discharges of sewage resulting from a failure in an Enrollee’s sanitary sewer system of a volume less than 1,000 gallons that did not reach surface water.

**SSO Database** – Online reporting system developed, hosted, and maintained by the SWRCB for compliance with the Monitoring and Reporting Program contained in SSS WDR.

**Storm Drain** – For the purposes of complying with the SSS WDR, any pipe that is part of a MS4 used for collecting or conveying storm water.

**Total # of PLSDs per 100 miles of Sewer per Year** – Broad metric used to compare the relative performance of privately owned laterals tributary to an Enrollee’s sanitary sewer system. This metric expresses the number of Private Lateral Sewage Discharges, for which the reporting Enrollee is not responsible, for every 100 miles of privately owned laterals tributary to an Enrollee’s sanitary sewer system. Due to the large variation in community specific characteristics, this metric should only be viewed as a rough comparison of the operation and maintenance performance for privately owned laterals. The metric is calculated as described below:

$$\text{Total \# of PLSDs per year} = \frac{(\text{Total \# of PLSDs} \times 100)}{(\text{Years} \times \text{Miles of Private Laterals})}$$

**Total # of SSOs per 100 miles of Sewer per Year** – Broad metric used to compare the relative performance of Enrollees and their sanitary sewer systems. This metric expresses the number of SSOs for which the reporting Enrollee is responsible, for every 100 miles of pipe or sewer lines in an Enrollee’s sanitary sewer system. Due to the large variation in facility specific

characteristics, this metric should only be viewed as a rough comparison of the operation and maintenance performance of Enrollees and their sanitary sewer systems. For systems smaller than 100 miles, this metric tends to skew the result as the miles of pipe get smaller. This metric is calculated as described below:

$$\text{Total \# of SSOs per year} = \frac{(\text{Total \# of SSOs} \times 100)}{((\text{Years}) \times (\text{Miles of Pressure Sewer} + \text{Miles of Gravity Sewer} + \text{Miles of Public Laterals}))}$$

**Total Volume of PLSDs Reached Surface Water per 100 miles of Sewer per Year** – Broad metric used to compare the relative performance of privately owned laterals tributary to an Enrollee’s sanitary sewer system. This metric expresses the volume of Private Lateral Sewage Discharges, for which the reporting Enrollee is not responsible, that reached surface water for every 100 miles of privately owned laterals tributary to an Enrollee’s sanitary sewer system. Because sewage discharges that reach surface water pose a greater threat to public health and the environment, this metric reflects some accounting of the threat posed by PLSDs. Due to the large variation in community specific characteristics, this metric should only be viewed as a rough comparison of the operation and maintenance performance for privately owned laterals. For systems smaller than 100 miles, this metric tends to skew the result as the miles of pipe get smaller. This metric is calculated as described below:

$$\text{Total Volume of PLSDs Reached Surface Waters} = \frac{(\text{Total Volume of PLSDs Reached Surface Water}) \times (100)}{(\text{Years}) \times (\text{Miles of Private Laterals})}$$

**Total Volume of SSOs Reached Surface Water per 100 miles of Sewer** – Broad metric used to compare the relative performance of Enrollees and their sanitary sewer systems. This metric expresses the volume of SSOs, for which the reporting Enrollee is responsible, that reached surface water for every 100 miles of pipe or sewer lines in an Enrollee’s sanitary sewer system. Because sewage discharges that reach surface water pose a greater threat to public health and the environment, this metric reflects some accounting of the threat posed by SSOs. Due to the large variation in facility specific characteristics, this metric should only be viewed as a rough comparison of the operation and maintenance performance of Enrollees and their sanitary sewer systems. For systems smaller than 100 miles, this metric tends to skew the result as the miles of pipe get smaller. This metric is calculated as described below:

$$\text{Total Annual volume of SSOs reaching Surface Waters} = \frac{(\text{Total volume of SSOs reaching Surface Waters} \times 100)}{((\text{Years}) \times (\text{Miles of Pressure Sewer} + \text{Miles of Gravity Sewer} + \text{Miles of Public Laterals}))}$$

**Total Volume Reached Surface Water** – Amount of sewage discharged from a sanitary sewer system, private lateral, or collection system estimated to have reached surface water.

**Total Volume Recovered** – Amount of sewage discharged that was captured and disposed of properly.

**Upper Lateral** – Portion of a lateral usually from the building foundation to the property line or easement line where it connects to the Lower Lateral. Enrollees may not own and maintain this portion of a Lateral since responsibility usually lies with the owner of the property that the lateral serves.

**WDID** – Waste Discharge Identification number assigned as a unique identifier by the SWRCB to each Enrollee for regulatory recordkeeping and data management purposes.



## Acknowledgements

This Guide has been developed by a consortium of sewer collection system agencies and environmental professionals that have combined their experience with various SSS WDR compliance strategies and organized them in this document to help other collection system agencies develop or update their Sanitary Sewer System Management Plans (SSMPs) and conduct internal SSMP Program Audits.

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## **1.0 Introduction**

The California State Water Resources Control Board (“SWRCB”) promulgated a waste discharge requirement (“WDR”) permit on May 2, 2006 to regulate sanitary sewer systems. This permit is known as SWRCB Order No. 2006-0003, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems. On July 30, 2013, Attachment A to the Order was promulgated and became effective on September 9, 2013 and is known as Attachment A, SWRCB Order No. WQO 2013-0058-EXEC, amending the Monitoring and Reporting Program for Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (together these documents constitute the “SSS WDR”).

This permit, among other things, requires local public sewer collection system agencies, referred to as “Enrollees,” to develop a Sewer System Management Plan (“SSMP”). SSMPs must be self-audited at least every two (2) years and updated every five (5) years from the original adoption date by the Enrollee’s governing board. The original SSMP must have been approved by the governing board of the Enrollee at a public meeting and certified.

The five-year SSMP update must also be approved and certified as do all significant updates to the SSMP. The SSMP, all references in the document, and the adoption documents by the governing board must be available on the agency website or submitted to the SWRCB upon adoption or recertification.

## 1.1 Purpose

This guidance document (“Guide”) is intended to aid Enrollees in the preparation and revision of an SSMP. This document replaces the previous SSMP development guidance published by BACWA in July of 2005, which is no longer considered appropriate for the formatting of the SSMP. The information provided herein is intended to be an overview of SSMP information necessary for conformance with the SSS WDR. This Guide also provides suggested information that an Enrollee could consider including in their SSMP. This document is for guidance purposes only and does not provide an Enrollee with legal assurances of compliance with the SSS WDR regulations. This Guide is not intended to supplant legal review.

Due to the various sizes or complexities of sanitary sewer systems, compliance strategies will vary greatly. For instance, a small collection system may have just one employee that performs all compliance and operational activities, whereas very large and complex collection systems may employ several full-time compliance professionals. This Guide provides recommendations and considerations for Enrollees that desire to have all operations information in a single document. It also includes suggestions for including additional or clarifying information in a SSMP to provide SWRCB and RWQCB staff, customers, and NGOs with adequate information to understand the Enrollee’s collection system.

The information in this Guide is divided into several sections that correspond to the SSS WDR mandatory requirements, which are called “Elements.” Each Element discussed in this Guide is broken into the following sections.

- Requirements – This section contains the requirements directly from the SSS WDR. In some areas, where the requirement is vague or confusing, the information is restated in simpler terms.
- Things to Think About – This section contains information that Enrollees may want to consider when developing or revising an SSMP. The information may not address specific requirements of the SSS WDR, but may be applicable to their collection system.
- Helpful Hints – This section includes additional information that may be useful to Enrollees. The suggestions are typically based on the experience of other Enrollees.
- Monitoring and Reporting Plan Requirements – This section contains specific MRP requirements, but does not include all MRP requirements.
- Issues Noted From Previous Inspections and Enforcement Actions – This section contains examples of typical areas of potential non-compliance with the requirements of the SSS WDR noted in previous enforcement actions and inspections.
- References – This section includes references to documents applicable to that Element.
- Attachments – This section includes documents and forms referenced or applicable to that Element.

## 1.2 Overview/Background

In preparing and revising an SSMP, the Enrollee should carefully explain their operations in enough detail to allow the reader to understand the general operations of their sanitary sewer system and their emergency response efforts. An Enrollee may consider including an *Introduction* or *Executive Summary* in the SSMP document that characterizes the specifics of the infrastructure managed by the Enrollee (e.g., size and age of system, asset description, lateral responsibility, etc.). If an Enrollee decides to include information related to the operations that is not required by the SSS WDR, the Enrollee should avoid creating policies that could be construed as a new or additional requirement by its simple inclusion in the SSMP.

Some Enrollees have included references to other agency documents or have attached them as appendices to the SSMP. These references contain planning information, standards, or capital program information directly or partially related to meeting the SSMP requirements. While technically this practice complies with the permit, the use of these references and appendices may create confusion and frustration for a reader trying to find the specific location in a reference that complies with a specific regulatory requirement. It may be better to refer to specific pages or paragraphs in a document and not to require the reader to search for the specific portion of the document referenced. If pinpoint citations are provided, then these can be true references and do not need to be directly appended to the SSMP.

While other documents may provide substantial details of the operations, the reader should be able to gain a basic understanding of the Enrollee's collection system, related operation and maintenance activities, and SSO prevention and reduction efforts by reviewing only the SSMP. The use of references and appendices, while it may reduce the amount specific supporting detail, are not needed or required in the SSMP. Specific documents can be referenced if detailed information is needed such as, master planning, modeling, standards, or procedures. Hyperlinks can be included to the referenced documents, along with a pinpoint citation to the page number, in electronic versions of the SSMP to allow readers to easily access any referenced materials and reduce the amount of materials incorporated by reference in the SSMP. The Enrollee will want to ensure that those links are in working order so that users can access the reference materials.

Keep in mind that the SWRCB and RWQCB have the authority to issue various levels of enforcement for failure to comply with the provisions of the SSS WDR and failure to conduct the required audits. Enforcement actions are clearly explained in the SWRCB's Enforcement Policy and the Enrollee's Guide to the SSO Database: Sanitary Sewer Overflow Reduction Program (also referred to as Discharger's User Guide.)

General SSMP References as of the date of this document:

SSS WDR -

[http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2006/wqo/wqo2006\\_0003.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2006/wqo/wqo2006_0003.pdf)

MRP -

[http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2013/wqo2013\\_0058exec.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2013/wqo2013_0058exec.pdf)

Enrollee's Guide to the SSO Database Sanitary Sewer Overflow Program, SWRCB, August 2013

Best Management Practices for Sanitary Sewer Overflow (SSO) Reduction Strategies, BACWA/CVCWA, December 2009

Effective Utility Management, A Primer for Water and Wastewater Utilities, APWA, ASCE, NACWA, WEF, June 2008

CMOM Program Self-Assessment Checklist 2003, US EPA

Core Attributes of Effectively Managed Wastewater Collection Systems, APWA, ASCE, NACWA, WEF, July 2010

Water Quality Enforcement Policy, SWRCB, November 17, 2009

Water Environment Federation, Collection System Committee Private Virtual Library

Guide for Evaluating Capacity, Management, Operation and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems, EPA 305-B-05-002, USEPA, January 2005

Capacity, Management, Operations, and Maintenance (CMOM) Program Self-Assessment Checklist, USEPA, October 2003

Wastewater Collection Systems Management, Manual of Practice (MOP) 7, 6th Edition, Water Environment Federation, 2009

CSUS Office of Water Programs, Operation and Maintenance of Wastewater Collection Systems Vol. I & II

CSUS Office of Water Programs, Collection Systems Methods for Evaluating and Improving Performance

Sewer Spill Estimation Guide, Orange County Area Waste Discharge Requirements Steering Committee

## 2.0 Elements of an SSMP

Section D.13 of the SSS WDR, requires all Enrollees to development an SSMP and make it available to the public and to the SWRCB and RWQCB. The order further specifies eleven (11) mandatory Elements that must be addressed in the SSMP. The SSS WDR also requires that the SSMP be audited at least every two (2) years from the original governing board approval date and updated or revised and re-certified by the governing board at least every five (5) years from adoption or whenever “significant changes” are made to the SSMP. This guide is written to assist Enrollees in developing and updating SSMPs.

The minimum requirements of each D.13 Element, copied from the SSS WDR, are shown in gray boxes in the beginning of each Section of this Guide followed by information provided to assist Enrollees in developing and updating their SSMP.

The eleven (11) required SSMP Elements that must be included in an SSMP are as follows:

1. Goals
2. Organization
3. Legal Authority
4. Operations and Maintenance program
5. Design and Performance Provisions
6. Overflow Emergency Response Plan (“OERP”)
7. Fats, Oils, and Grease (FOG) Control Program
8. System Evaluation and Capacity Assurance Plan (“SECAP”)
9. Monitoring, Measurement and Program Modifications
10. SSMP Program Audits
11. Communications Program

If any Enrollee determines that certain required Elements of the SSMP are not appropriate or applicable to the Enrollee’s sewer system, the Enrollee does not need to address that Element. However, the Enrollee must provide a written rationale within its SSMP to explain why that Element does not directly apply to that Enrollee. This decision should be re-evaluated and the information and rationale reviewed for continuing applicability with each audit or major update of the SSMP.

If an Enrollee modifies amends or changes any of the Elements as a result of an audit, changes in its operating philosophies, or new technology additions, those changes must be specified and included in an SSMP Change Log now required to be included in an appendix to the SSMP (MRP Section E.3.).

The SSS WDR’s Elements do not conform to the BACWA 2005 SSMP Development Guide that was previously used for the preparation of many SSMPs across the State. The SWRCB recently stated that they will no longer accept that SSMP format or information from that guidance document, but rather expect Enrollees to follow the prescribed SSMP Section D.13. outline, and include all required information from section D.13., at a minimum.

It may be helpful when preparing an audit or revision of the SSMP to obtain copies of enforcement orders, settlement agreements, or consent decrees in the local area to understand

what other Enrollees are being asked to implement or comply with by regulators or NGOs. This review may lead to the inclusion of additional information in the audit or in the SSMP revision that could address concerns that others have had to address through threats of or actual litigation. At a minimum, this review should alert an Enrollee to the need to evaluate its own operations in the areas of concern raised by the regulators or NGOs in advance of dealing with them directly. Taking these actions in a conscientious way before they are required may be beneficial if an enforcement action is ever brought against the Enrollee. It is always best to be prepared and have thought about a response if these issues were to be raised against your agency. Such an analysis also may provide insights to the future requirements and regulations that may be requested during upcoming State reviews of the SSS WDR regulations.

## 2.1 Element 1 - Goals

### 2.1.1 Requirements

D.13.(i) **Goals:** The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent SSOs, as well as mitigate any SSOs that do occur.

### 2.1.2 Things to Think About

In order to comply with Element 1, an Enrollee should develop a single comprehensive goal or several broad Goals that reflect the Enrollee's commitment to all aspects of the sanitary sewer collection system and are unique to the infrastructure and performance of the Enrollee. These Goals should speak directly to the enhanced performance and protection of the environment from the effects of SSOs. These Goals should reflect the Enrollee's operating philosophy, should be implementable, and should be supported by the monitoring and measurement metrics included in Element 9 of the SSMP. Examples of Goals from SSMPs from across the State are provided below for information and consideration:

- Properly manage, operate, and maintain all portions of the Enrollee's wastewater collection system
- Provide adequate capacity to convey peak wastewater flows associated with the design storm event
- Prevent or minimize the frequency of SSOs
- Reduce the number of SSOs and achieve the greatest reasonable reduction in SSOs
- Eliminate or minimize preventable SSOs
- Minimize and mitigate the adverse impacts of SSOs that may occur despite best efforts
- Meet all applicable regulatory notification and reporting requirements
- Measure progress through performance measures so the plan can be adjusted as needed
- Protect public health and safety, and the environment
- Prevent unnecessary property damage
- Provide a safe work environment for employees and contractors
- Effectively identify and remedy design, construction, and operational deficiencies
- Perform all operation and maintenance activities in a safe manner
- Prevent adverse impacts to surface waters, and their beneficial uses
- Ensure corrective action is taken in a timely manner
- Ensure compliance with current regulatory requirements
- Document and define procedures to address SSO prevention and response
- Prepare for emergencies
- Be a part of the community and be a responsive public agency
- Involve employees in the strategic planning process for the collection system
- Effectively plan system expansion to meet the capacity needs of the Enrollee



- Set high, yet achievable standards for the construction of new infrastructure
- Cost effectively minimize infiltration/ inflow (“I/I”)
- Maintain and improve the condition and performance of the Enrollee’s wastewater collection system
- Understand the condition of and maintain infrastructure to maximize the life of the collection system
- Properly operate and maintain the collection system to minimize financial impacts on customers
- Adhere to the components of the SSMP
- Be available and responsive to the needs of the public and work cooperatively with local, state, and federal agencies to reduce, mitigate the impacts of, and properly report SSOs
- Identify, prioritize, and continuously renew and replace sewer system facilities to maintain reliability
- Implement regular, proactive maintenance of the system to remove roots, debris, and FOG in areas prone to blockages that may cause sewer backups or SSOs
- Uphold high standards and specifications on newly constructed and/or rehabilitated public and private sewers

Goals should be realistic, attainable, and effective. Goals should describe the guiding policies of the Enrollee at a very high level. The Enrollee should establish a sufficient number of Goals to focus the Enrollee’s efforts on the collection system and to guide the staff and contractors in understanding the expectations of the governing board and the public for the operation of the Enrollee’s collection system. Generally, Enrollees should select one or more goals appropriate to the Enrollee, which it considers to be adequate to meet the regulatory requirements.

Goals represent an important aspect of an SSMP by providing focus for the Enrollee’s staff to continue efficient and effective work practices, and/or to implement improvements in management of the wastewater collection system. Goals may also reflect performance, safety, and adequate levels of service, resource use, economics, and other considerations.

Goals should always be reevaluated with each audit and major SSMP revision to determine if the goals remain appropriate for the collection system operations. If changes or modifications are made to the Goals, the audit should explain the changes and why the Enrollee has chosen to modify or change the SSMP goals. Any changes to the Goals must also be identified and included in the SSMP Change Log.

### **2.1.3 Helpful Hints**

The development of an Enrollee’s Goals should include not only the collection system management and staff, but also the senior management of the Enrollee to assure that the Goals are set at a high level and reflect the policies of the Enrollee’s collection system. Goals should also be facility specific. For example, Enrollees with few pipes and no laterals, but many pump stations should have different goals than Enrollees with many miles of pipes and few pump stations or with significant lateral responsibilities.

### **2.1.4 Monitoring and Reporting Plan Requirements**

All changes to this Element of the SSMP must be recorded along with the date and person responsible for the changes on the SSMP Change Log (MRP at section E.3.) attached as an appendix to the SSMP. Enrollees should also consider the addition of separate appendices for copies of all adoption and recertification documents and all audit reports completed by the Enrollee.

### **2.1.5 Issues Noted From Inspections and Enforcement Activities**

Enrollee Goals have not been directly included in enforcement actions by the SWRCB and RWQCBs nor raised in legal challenges by NGOs as of the date of this Guide.

### **2.1.6 References**

SSS WDR -

[http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2006/wqo/wqo2006\\_0003.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2006/wqo/wqo2006_0003.pdf)

MRP -

[http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2013/wqo2013\\_0058exec.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2013/wqo2013_0058exec.pdf)

## 2.2 Element 2 - Organization

### 2.2.1 Requirements

D.13.(ii) **Organization:** The SSMP must identify:

- (a) The name of the responsible or authorized representative as described in Section J of this Order (SSS WDR).
- (b) The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and
- (c) The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services (Cal OES)).

### 2.2.2 Things to Think About

Section J of the SSS WDR describes the responsible or authorized representative, also known as the Legally Responsible Official or LRO. The responsible representative is a principal executive officer or ranking elected official. The principal executive officer/ranking elected official may designate an authorized representative to execute the duties of the LRO. The authorization must be made in writing and the authorized representative must be an individual in a position having responsibility for the overall operation of the regulated facility or activity as an authorized representative. An Enrollee may have more than one LRO to ensure continuous coverage.

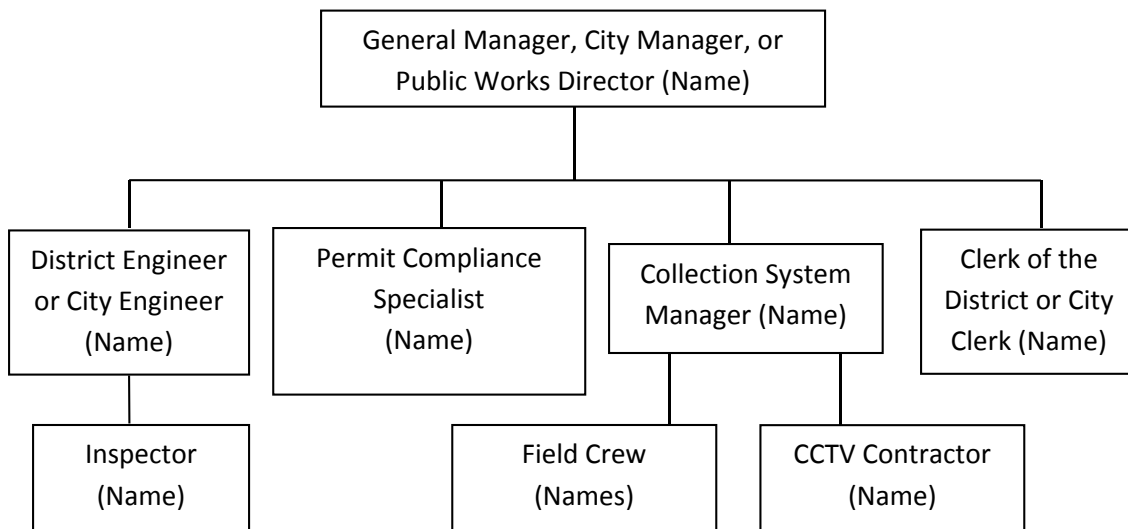
The intent of the Organization element is to identify persons, by name, responsible for implementing the SSMP, responding to SSO events, and meeting the SSO reporting requirements, including drafting and certifying reports and providing other information required by the CIWQS Online Database.

Although names are required by the SSS WDR, job titles may be listed in addition to individual names.

## 2.2.3 Helpful Hints

An organizational chart with position titles and staff names can be used to illustrate the lines of authority for overseeing and implementing the SSMP. A sample organizational chart is shown in Figure 2.2-1. A narrative in the form of brief statements can be used to describe the role of each person named in the organizational chart. A table with staff names, positions, and brief narrative description of the employee's role in the SSMP can also be used to document lines of authority for the SSMP. The people assigned as the LRO(s) and Data Submitters ("DS") may be indicated on the chart, although this is not required. Remember to update this chart as staff changes or modifications in classification responsibilities occur.

**Figure 2.2-1 Example SSMP Organization Chart**



Examples of SSMP Roles for wastewater collection system staff are:

General Manager, City Manager, or Public Works Director (Name) - Establishes policy, plans strategy, leads staff, allocates resources, delegates responsibility, authorizes outside contractors to perform services, and may serve as public information officer.

District Engineer or City Engineer (Name) - Prepares wastewater collection system planning documents; manages capital improvement delivery system; documents new and rehabilitated assets; and coordinates development and implementation of SSMP.

Inspector (Name) - Ensures that new and rehabilitated assets meet Enrollee's standards, works with field crews to handle emergencies when contractors are involved; and provides verbal reports to District Engineer.

Permit Compliance Specialist (Name) - Works as needed on applicable permits, laws, and regulations; provides support to all parts of operation.

Collection System Manager (Name) - Manages field operations and maintenance activities, provides relevant information to Enrollee management, prepares and implements contingency plans, leads emergency response, investigates and reports SSOs, and trains field crews.

Field Crew (Names) - Undertakes preventive maintenance activities, mobilizes and responds to notification of stoppages and SSOs; mobilizes sewer cleaning equipment, by-pass pumping equipment, and portable generators.

CCTV Contractor (Name) – Inspects designated gravity sewers at the Enrollee’s direction.

Contact information required in the Organization Element is also required in the OERP Element. To eliminate the potential for conflicting information in the SSMP, a list of names and telephone numbers can be located in the OERP Element and referenced in the Organization Element; see Table 2.2-1 Enrollee Contacts Responsible for SSMP. A chain of communication for receiving reports of and reporting SSOs is required in both the Organization Element and OERP Element; a flow chart can be used to illustrate the flow of information from receiving a spill report to internal spill reporting and external spill reporting. This flow chart can be part of the OERP Element and referenced in the Organization Element to avoid duplication and inconsistencies.

**Table 2.2-1 Enrollee Contacts Responsible for SSMP**

SSMP Element	Responsible Party (Position)	Responsible Party (Name)	Phone Number	Email Address
Introduction, if included				
1 – Goals				
2 – Organization				
3 – Legal Authority				
4 – O&M Program				
5 – Design & Performance Provisions				
6 – Overflow Emergency Response Program				
7 – FOG Control Program				
8 – SECAP				
9 – Monitoring, Measurement, and Program Modifications				
10 – SSMP Program Audits				

11 – Communication				
Change Log				
Appendices				

## 2.2.4 Monitoring and Reporting Plan Requirements

The MRP states that:

- An Enrollee may/should have more than one LRO.
- Any LRO shall be registered with the SWRCB; link to CIWQS User Registration (LROs and Data Submitters) at <https://ciwqs.waterboards.ca.gov/ciwqs/newUser.jsp>.
- The Enrollee shall maintain continuous coverage by an LRO. Any change of a registered LRO, including deactivation or a change to the LRO’s contact information, shall be submitted by the Enrollee to the SWRCB within 30 days of the change by calling 866-79-CIWQS (24977) or by email at [ciwqshelp@waterboards.ca.gov](mailto:ciwqshelp@waterboards.ca.gov).

## 2.2.5 Issues Noted From Inspections and Enforcement Activities

The Office of Enforcement has noted in previous audits that the organization chart could include outside agencies or contractors that provide services, such as regional FOG control and contractor services for sewer cleaning, root control, and CCTV assistance, particularly where there are long-term contracts.

Past external audits have noted procedures included in the SSMP that are not being followed by the Enrollee, even if these procedures are not required by the SSS WDR. An audit may also note missing or outdated names and contact information for the LRO, Data Submitter, and other positions responsible for implementing specific measures in the SSMP.

## 2.2.6 References

SSS WDR -

[http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2006/wqo/wqo2006\\_0003.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2006/wqo/wqo2006_0003.pdf)

MRP -

[http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2013/wqo2013\\_0058exec.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2013/wqo2013_0058exec.pdf)

## 2.3 Element 3 - Legal Authority

### 2.3.1 Requirements

- D.13.(iii) Legal Authority: Each Enrollee must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:
- (a) Prevent illicit discharges into its sanitary sewer system (examples may include infiltration and inflow (I/I), storm water, chemical dumping, unauthorized debris and cut roots, etc...);
  - (b) Require that sewers and connections be properly designed and constructed;
  - (c) Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the Public Agency;
  - (d) Limit the discharge of fats, oils, and grease and other debris that may cause blockages, and
  - (e) Enforce any violation of its sewer ordinances.

### 2.3.2 Things to Think About

Legal authority refers to powers granted to an Enrollee related to the provision of services to its customers. These powers are typically granted by statute and are implemented through sewer use ordinances, service agreements, or other legally binding procedures and mechanisms.

An Enrollee can use its applicable legal authority to require system users and customers to meet performance standards, maintain user-owned assets such as laterals, and pay penalties for non-compliance with Enrollee regulations. The legal authority can also be used to specify what assets are the responsibility of the Enrollee or private users and customers, and to specify the amount and process for issuing penalties for violations of the Enrollee ordinances and agreements. The specific type of legal authority available to Enrollees varies significantly depending on the legal designation of the Enrollee - for example, sanitary district, wastewater district, utility district, general purpose city, charter city - since State law differs for these various entities.

### 2.3.3 Helpful Hints

Some things to remember in the documenting an Enrollee's legal authority in an SSMP:

- Ordinances, service agreements, discharge permits, and other legal mechanisms can include the proper authority and power to require collection system users to comply with applicable design, construction, use, and maintenance standards and regulations.
- An Enrollee can include the ability to enforce violations of its ordinances and ultimately disconnect users for egregious non-compliance. An Enrollee can impose fines, including civil and criminal penalties, in cases of deliberate and significant violations of

ordinances and codes that may result in substantial impacts to receiving waters, endangerment of human health, or interference or disruption with the downstream WWTP.

- Illicit discharges can be defined and subject to corrective response actions, using any existing laws or ordinances that prohibit a certain type of discharge, regardless of the user class (for example, domestic, commercial or industrial classes).
- Building and plumbing codes normally provide legal authority for the proper construction of privately-owned sewer lines. The details of programs requiring the testing of laterals upon the sale or remodeling of property can also be included in these codes if desired.
- Consider the adoption and use of the California or Uniform Plumbing Codes (CPC & UPC) if an Enrollee has a need to establish new requirements. These Codes may be particularly helpful for lateral and grease removal devices requirements and standards. In cases when an Enrollee has adopted one or both of these Codes, the Enrollee's other codes and ordinances, as well as Enrollee practices, should be reviewed for consistency with the CPC and UPC. If both are incorporated, one should take precedence over the other to avoid conflicts and confusion. The Enrollee should always assure that there is no conflicting language between the sewer use ordinance FOG sections and the CPC or UPC language.
- An Enrollee's ordinances and codes can specify its authority to access portions of Enrollee-owned laterals located on private property.
- Limits may need to be placed on the discharge of FOG, and any other debris or substance that may cause blockages in the sewer system and resultant overflows. An Enrollee may also consider inclusion of requirements related to grease removal devices, including their need, design, construction, maintenance, and recordkeeping.
- An Enrollee can use its sewer use ordinance or municipal code to specify what parts of the system are privately-owned and who is responsible for the maintenance of certain assets, such as laterals. The exact boundary of ownership and maintenance responsibility should be defined. For example, delineations, such as "up to and including the wye connection to the main line," "up to the property line cleanout," etc., can be included when defining asset responsibility.
- Many Enrollees have enforceable regulations prohibiting downspout, roof drain, area drain, and storm water connections to their sanitary sewer systems. These can be included as aforementioned "illicit discharges" and may be prohibited.

A good mechanism to consider that would demonstrate that the required authorities exist is to include a table in this element of the SSMP that details the specific Enrollee code or ordinance sections that relate to the items and abilities cited in the SSS WDR, and the items that are relevant to SSMP implementation. An example of a "Legal Authorities Checklist" is attached for reference in Attachment 2.3.7.1

A section can be included in this Element that describes all agreements with other agencies, if any. Where included, the relationship with the other Enrollee(s) and a brief description of the legal relationship can be provided. For example, the other agencies may be "satellite" agencies to the Enrollee or to another Enrollee, or the Enrollee may contract service out to the other Enrollee. An Enrollee can list its satellite agencies in this Element, even if there is no formal



agreement with the satellite agency. It is important to note that any agency that owns a collection system longer than one mile in length is required to file a Notice of Intent (“NOI”) to discharge under the SSS WDR, obtain a WDID number, and complete an SSMP, even if it contracts its operation and maintenance to another agency, Enrollee, or contractor.

### 2.3.4 Monitoring and Reporting Plan Requirements

The September 2013 MRP did not change any of the requirements of the previously adopted SSS WDR for this element.

### 2.3.5 Issues Noted From Previous Inspections and Enforcement Activities

The failure to provide evidence of the required, necessary legal authority in an Enrollee’s SSMP has been reported in SWRCB inspection reports.

### 2.3.6 References

SSS WDR -

[http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2006/wqo/wqo2006\\_0003.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2006/wqo/wqo2006_0003.pdf)

MRP -

[http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2013/wqo2013\\_0058exec.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2013/wqo2013_0058exec.pdf)

SSO Reduction Program Library (Previous SWRCB Inspection Reports) -

[http://www.waterboards.ca.gov/water\\_issues/programs/sso/index.shtml](http://www.waterboards.ca.gov/water_issues/programs/sso/index.shtml)

### 2.3.7 Attachments

#### 2.3.7.1 Legal Authority Checklist

Requirement	Enrollee Code Reference
<b>Public Sewers</b>	
Ability to prevent illicit discharges into the wastewater collection system	Ordinance/Code Section xxx.xx
Ability to require that sewers and connections be properly designed and constructed	
<b>Laterals</b>	
Ensure access for maintenance, inspection, or repairs for portions of the service lateral owned or maintained by the Enrollee	Ordinance/Code Section xxx.xx
<b>FOG Source Control</b>	
Ability to limit the discharge of FOG and other debris that may cause blockages	

<b>Enforcement</b>	
Ability to enforce any violation of the Enrollee's sewer ordinances	
<b>Other Possible Code Sections (Referenced but not required by the SSS WDR)</b>	
<b>Public Sewers</b>	
Ability to require proper installation, testing, and inspection of new and rehabilitated sewers	Ordinance/Code Section xxx.xx
<b>Laterals</b>	
Provide clear delineation of Enrollee responsibility (e.g., mains and lower laterals) and policies (e.g., courtesy cleaning, repair, cleanout installation)	
Ability to control I/I from private service laterals	
Define lateral ownership and maintenance responsibility	
Prohibit vandalism (tampering)	
Ability to deal effectively with private lateral problems (e.g., force property owner to correct failed/plugged private building sewer)	
<b>Satellite Collection Systems</b>	
Ability to control I/I from satellite collection systems, if any	Agreement between Enrollee and Satellite dated xx/xx/xx
<b>FOG Source Control</b>	
Requirements for the installation of GRDs	Ordinance/Code Section xxx.xx
Ability to set design standards for GRDs	
Ability to set maintenance requirements for GRDs	
Ability to require application of BMPs	
Ability to require record keeping and reporting of GRD maintenance and repair	
Authority to inspect grease producing facilities	
<b>Enforcement</b>	
Prescribe prohibited actions (e.g., illicit connections, discharges)	
Provide notice of alleged violations to sewer user	

## 2.4 Element 4 - Operation and Maintenance Program

### 2.4.1 Requirements

D.13.(iv) **Operation and Maintenance Program.** The SSMP must include those elements listed below that are appropriate and applicable to the Enrollee's system:

- (a) Maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable storm water conveyance facilities;
- (b) Describe routine preventive operation and maintenance activities by staff and contractors; including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The Preventative Maintenance (PM) program should have a system to document scheduled and conducted activities, such as work orders;
- (c) Develop rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short and long term plans plus a schedule for developing the funds needed for the capital improvement plan;
- (d) Provide training on a regular basis for staff in sanitary sewer system operations, maintenance, and require contractors to be appropriately trained; and
- (e) Provide equipment and replacement part inventories, including identification of critical replacement parts.

### 2.4.2 Things to Think About

The following information represents suggestions for consideration, not requirements. The following list of items is provided merely as examples of the types of information, procedures, and processes that an Enrollee might use to assure conformance with the SSS WDR. Not all of the information is required of an Enrollee, but if included should provide a more thorough and complete description of the Enrollee's operations and maintenance program. An Enrollee should carefully evaluate the information to be included in the SSMP to assure that they are following those processes or procedures, and that they are not creating responsibilities that the field crew or office staff is not capable of achieving.

- a) Maps
- Maintain up-to-date maps
    - i) Field crews can be consulted and asked to note errors or discrepancies on maps.
    - ii) Once maps are updated, assure that any changes made are also made on any hard copies, including maps used in the field. Enrollees should also update the change log for the mapping revisions when completed.
    - iii) Maps can be paper only, which might be useful if your system is small and electronic maps are cost prohibitive. The down side is that paper maps are more difficult to update, which could result in conflicting information being used by staff. Electronic maps are easier to update, to create layers, and to manage information, but may be more expensive.
    - iv) Consider adding information needed by crews for conducting work. Field crews and response staff need information such as location, pipe diameter, pipe material, pipe length, manhole depth, direction of flow, scale, legend, etc. Assure that all pertinent asset information is obtained and included on the map or in the database, or schedule a reasonable time period to obtain all missing information.
    - v) Develop a process for adding system changes or modifications that occur as a result of capital improvements and development or redevelopment.
    - vi) Establish a defined process for capturing as-built information, including new assets.
  - Show, where applicable, gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable storm water conveyance facilities
    - i) For pumping facilities, determine if diagrams or schematics would be better for demonstrating assets and critical components at the site.
    - ii) Determine how to get storm water information when the Enrollee does not own the storm water system. This may necessitate coordinating with other public entities that own, operate, or have maintenance responsibility for local storm sewer assets.
    - iii) For containing SSOs, it is helpful to have the local municipal separate storm sewer systems (“MS4”) on the same map as the Sanitary Sewer System (but a different color coding system might be used to differentiate non-Enrollee assets).
- b) Preventive O&M (“PM”)
- Describe operation and maintenance activities of staff and outside service contractors including other public agencies that provide services as part of the collection or treatment operations (i.e., FOG related services and pretreatment responsibilities, etc.).
    - i) Provide a general overview of PM programs.

- ii) Describe crew staffing (e.g., who does what). This could be done by adding a specific collection system organization chart to this subsection as a figure or referencing the chart included in Element 2 – Organization.
- Describe schedules for regular maintenance and more frequent cleaning (“hot spots”)
  - i) Provide a narrative and a schedule of regular maintenance for all assets (e.g., pressure system, pump stations, gravity lines, siphons, easements, maintenance holes). This may include methods used to define or update the enhanced maintenance schedule.
  - ii) Include strategies for more frequent cleaning (e.g., hot spots), where needed.
  - iii) Adjust schedules to prevent reoccurrence of SSOs and assure system performance optimization.
  - iv) Develop a standard method for the evaluation of cleaning activities to assure consistent and complete reporting of the performance of the pipeline segments cleaned – this can also assure consistent cleaning results from the field crews performing the maintenance.
  - v) Provide information on the cleaning of large diameter sewers if different than the smaller lines handled by Enrollee’s crews.
  - vi) Explain pipeline maintenance in easements and difficult to access areas of the collection system.
  - vii) Describe maintenance for pump stations and force mains that are maintained by the crews. This description can include condition assessment and evaluation of these assets, which can be updated on a regular basis. If the asset information for these assets was not included in the Introduction to the SSMP, then basic information on dates of installation, pump sizes and capacity, standby generation and force main dates of installation, lengths and pipe materials can be included in this Element.
  - viii) Describe public and private lateral programs and responsibilities of the Enrollee and the private property owner, especially if lower lateral maintenance is the responsibility of the Enrollee.
  - ix) Provide descriptions of other related maintenance activities like chemical root foaming, use of grease emulsifiers, roach and rodent dusting, dry well responsibilities, siphon and air release valve maintenance, pipeline cathodic protection programs, etc.
- Document scheduled and conducted activities
  - i) Schedules should be realistic and attainable.
  - ii) Resources (both fiscal and manpower) should be taken into consideration.

- iii) Consider developing defined meaningful performance measures and goals to support the effectiveness evaluations required in the SSMP audits.
- Include regular inspections
  - i) CCTV, sonar, and visual are options with varying costs and degree of effectiveness.
  - ii) Inspections might result in condition assessments that can be rated and ranked for both structural and maintenance conditions.
  - iii) Consider including procedures for the return inspection frequency based upon previous ratings and field maintenance results.
- c) Rehabilitation and Replacement (“R&R”)
  - Identify and prioritize system deficiencies
    - i) CCTV inspections can be valuable in identifying deficiencies and determining priority for corrective actions.
    - ii) Develop and describe a scoring/rating program for deficiencies or adopt an existing rating system, if preferred. A popular rating system includes the Pipeline Assessment & Certification Program (“PACP”), although others can be created or utilized.
  - Implement “Short Term” and “Long Term” actions
    - i) Short term actions usually focus on higher risk imminent failure locations.
    - ii) Long term actions generally focus on lower risk sites and actions requiring more resources.
    - iii) Plans must be realistic and be able to be conducted utilizing the available resources of the Enrollee.
    - iv) Include a CIP list or describe the backlog of unfunded projects and actions and a planned schedule for addressing issues.
  - Utilize data from regular inspections
    - i) Use CCTV, sonar, and visual inspections from regular inspections and rating/ranking systems to prioritize repairs, and rehabilitation or replacement projects. Develop procedures for the return frequency of condition assessment based upon previous findings from CCTV and field maintenance. The use of a flow chart based upon PACP ratings are frequently used to make these types of return frequency decisions.
  - Include system for scheduling projects based on rating/ranking
    - i) Results can focus on type of deficiency, consequence of failure, and available resources.
  - Focus on risk management
    - i) Common risks include proximity to waterways, flows, and potential impacts to public health and the environment.
    - ii) Higher risks generally receive higher ranking and higher priority for repair/replacement.

- Include Capital Improvement Plan and funding for the future
  - i) When setting rates and fee schedules, future anticipated costs to cover planned and future projects should be considered.
  - ii) Funding options may include rate increases, SRF loans and grants, or other supplemental funding sources.
  - iii) Consider adding tables of at least the coming five years of capital projects, along with the estimated project costs and total by fiscal year.
- d) Provide training for staff and contractors on a regular basis, including initial and periodic training to ensure continuing competency
  - Training should include review of the agency SSMP and OERP, including both classroom and field training efforts to assure understanding of existing standard operating procedures. Staff should be told where the SSMP and OERP are kept, so that they can be accessed at any time.
  - Provide Training on Sewer System Operations and Maintenance, which can include in house training as well as using outside formal training. All training activities should be documented.
  - Consider discussing emergency response at regular contractor meetings.
  - Include requirements for emergency response and training in Enrollee's standard specifications for all public works projects and service contracts working on or near sewer facilities.
- e) Keep equipment and replacement part inventories
  - Any Equipment and Replacement Part Inventories kept by the Enrollee should list the equipment and parts owned and stored by the Enrollee
    - i) Identify potential equipment not on the list that might be needed to assure asset reliability and provide redundancy for uninterrupted service.
    - ii) Include information on emergency response equipment and materials.
    - iii) Identify age, make or model, and type of equipment and parts, and any expiration dates (as applicable).
  - Identify critical parts necessary for the Enrollee to maintain
    - i) Consider important parts for timely and efficient response to potential system failures, including vehicles.
    - ii) Review list and update as necessary to assure that the list is current and reflects any asset changes.

### **2.4.3 Helpful Hints**

Maps and Asset Records:

- a) Knowledge of the location and type of all wastewater collection system facilities is important to effective management, including emergency response. This includes

- keeping up-to-date collection system maps in the office and in the field that are readily available to all staff. Maps can be available in hard copy or electronic format.
- b) Electronic formats are typically easier to update, which may make them more accurate if updated regularly. Another benefit of an electronic format is that it provides consistency in locating system assets by reducing errors from conflicting maps as the information is typically generated from one common geo-database.
  - c) Electronic maps can also be linked to other software, such as a CMMS, CCTV, or other Asset Management programs, which provide a more sophisticated tool for producing work orders for cleaning and maintenance activities, and can also facilitate the prioritizing of repair, replacement, or rehabilitation of projects.
  - d)
  - e) Sewer maps should include at least the basic information shown in T table 2.4.1 below. Additional attributes, which may be useful to the Enrollee, are shown in the column to the right of the basic attributes. Some of this basic information may be included as part of the GIS database linked to the map instead of on the map itself. Pump stations and force main locations can also be indicated on maps although their technical information may be too complex to display on a map sheet, and it may be more appropriate to place this information in a GIS database or other asset management tool.
  - f) Service lateral data may be optionally included for agencies that do not own or have maintenance responsibilities for laterals, just to keep track of these locations. Enrollees that do own or maintain laterals should record and note lateral information on maps, where known.
  - g) For Enrollees with lateral inspection and repair programs, information about the last certification of the laterals can also be included in databases.

**Figure 2.4-1 Basic Asset Information Desirable**

<b>Asset Type</b>	<b>Basic Map Information</b>	<b>Potential Additional Map Information</b>
<b>Manholes/Junction Structures/Access Points</b>	<ul style="list-style-type: none"> <li>- ID number or other unique identifier</li> <li>- Location, with reference to streets and property lines</li> <li>- Size</li> <li>- Material type</li> <li>- Depth</li> </ul>	<ul style="list-style-type: none"> <li>- GPS coordinates</li> <li>- Date built</li> <li>- Rim elevation</li> <li>- Invert elevation</li> <li>- Easements</li> <li>- Meter locations</li> <li>- Smart meters</li> <li>- Dry wells</li> </ul>



<b>Pipes</b>	<ul style="list-style-type: none"> <li>- ID number or other unique identifier</li> <li>- Location, with reference to streets and property lines</li> <li>- Size</li> <li>- Direction of flow</li> <li>- Force mains</li> <li>- Siphons</li> <li>- Length</li> <li>- Material type</li> </ul>	<ul style="list-style-type: none"> <li>- Date built or rehabilitated</li> <li>- Replacement Date</li> <li>- Slope</li> <li>- Pipe invert elevations</li> <li>- Plan or as-built ID number</li> <li>- Easements</li> <li>- Legend</li> </ul>
<b>Pump Stations</b>	<ul style="list-style-type: none"> <li>- ID number</li> <li>- Location</li> </ul>	<ul style="list-style-type: none"> <li>- Additional information would normally be available on drawings, or a GIS if available</li> </ul>

- h) While using a spreadsheet or a card file recordkeeping system can work for a smaller system, many Enrollees have transitioned to and successfully utilize a CMMS to track activities of staff and contractors, set schedules for routine and more frequent cleaning, and document all activities conducted on individual sewer mains, manholes, or pump stations. CMMS systems allow for easy retrieval and sorting of data.
- i) Detailed records of activities performed on unique components of the collection system, in addition to Condition Assessments, can be helpful in determining the timing future activities, such as determining whether or not to increase PM frequency or add to the R/R list, or both.

Rating Systems and Prioritization:

- a) It is not uncommon for Enrollees to have more deficiencies than they have current financial or manpower resources to address. Therefore, having a ranking and rating system may help to prioritize problems identified and demonstrate effective system operations.
- b) While it is acceptable to develop your own system for rating, many Enrollees have chosen to use the PACP system developed by NASSCO to score the condition of pipes and manholes.
- c) Because conditions change over time, regular inspections are used to update condition assessments and note rating changes over time. Another consideration would be potential risk of a component failure and the potential impact if not reviewed occasionally.
- d) Long term planning should include projections for costs and identifying funding sources. When short term and long term plans are developed and modified, Enrollees may wish to set goals that are both realistic and attainable.

### Training and Education:

- a) An ongoing training program addresses the skills necessary to perform proper operations and maintenance, to provide timely and effective emergency response, to incorporate recognized safety practices, and to ensure periodic SSMP review and training.
- b) Training is specific to the range of job duties for each employee classification or type of employee. Training can take many forms, including special classes or seminars, certification programs, such as through the CWEA, on-the-job training such as field exercises, staff meetings, tail gate discussions, and informal training, through mentoring of experienced personnel with those new to collection systems.
- c) CWEA's program provides a mechanism for employee education as well as establishing the technical competence at each level of certification. In addition, CWEA offers a program for registering the continuing education activities of employees, which is part of the process for maintaining certification.
- d) When using contractors, training and proof of training should be a requirement in the contract.

### Equipment and Inventories:

- a) Equipment and replacement parts inventory lists typically include a process for identifying critical parts needed for system operation and maintenance and emergency response. The process for identifying critical parts can be based on a review of equipment and manufacturer's recommendations, supplemented by the experience of the maintenance staff and local availability.
- b) The purpose of a spare parts inventory is to minimize equipment or facility downtime in the event of an unplanned failure. Replacement parts for pumps, motors, and vehicles and appropriately maintained emergency response equipment and accessories allow field crews to effectively respond to incidents and efficiently perform routine maintenance.
- c) Without an adequate inventory of replacement parts, the collection system may experience high volume and/or extended overflow events in the event of a breakdown or malfunction. Contingency equipment (e.g., portable pumps, generators, etc.) supports a quicker and potentially more effective response to emergency conditions. This equipment should be inspected regularly to make sure everything is in working order.

## 2.4.4 Monitoring and Reporting Plan Requirements

- a) The 2013 MRP update did not change the map requirements; however, the new Technical Report requirement for SSOs  $\geq 50,000$  gallons does require a “*Detailed location map illustrating all water quality sampling points.*” It may be useful to draw or sketch on a copy of your map when documenting an SSO event to indicate the location(s) where the spill occurred and where water quality samples or any photos were taken.
- b) The 2013 MRP update requires a Technical Report for SSOs  $\geq 50,000$  gallons. Part of that report must spell out an Enrollee’s response to the SSO, including “*Final corrective action(s) completed and/or planned to be completed, including a schedule for actions not yet completed.*” Any changes to the Preventive Maintenance Schedule could be included as a part of a corrective action plan. In addition, any Rehabilitation or Replacement needed could be listed as part of the corrective action(s) taken or planned.
- c) LROs, Data Submitters, and staff should be trained on details of the MRP as appropriate.
- d) The 2013 MRP update did not change the Equipment and Replacement Part Inventory requirements.

## 2.4.4 Issues Noted From Inspections and Enforcement Activities

The SWRCB Office of Enforcement has stated that some SSMPs have not adequately addressed both the short and long term needs for renewal and replacement of existing infrastructure in Element 4 nor addressed capacity enhancement improvements necessary to assure there are no capacity related SSOs. They suggest that stronger narratives regarding methods of prioritization, specifics of projects, and reasonable descriptions and funding requirements over time have been missing in many SSMPs. Other comments are as follows:

- a) Maps are not kept up to date.
- b) Lack of documentation of PM activities.
- c) Lack of a short and long term repair and rehabilitation program.
- d) Lack of documentation of training.
- e) Written SOPs do not exist, are not sufficient, or do not conform to SSMP requirements.
- f) Contractor’s training not required or evaluated by the Enrollee.
- g) Equipment and replacement parts not inventoried.
- h) Employees not aware of SSMP requirements or even acronym’s meaning.

## 2.4.6 References

SSO BMP Manual 1.0, jointly produced by BACWA and CVCWA Collections Committees - <http://bacwa.org/Portals/0/Committees/CollectionSystems/Library/SSO%20BMP%20Manual%201%201.pdf>

CSUS Office of Water Programs, Operation and Maintenance of Wastewater Collection Systems Vol. I & II - <http://www.owp.csus.edu/courses/wastewater.php>

CSUS Office of Water Programs, Collection Systems Methods for Evaluating and Improving Performance - <http://www.owp.csus.edu/courses/wastewater.php>

Core Attributes of Effectively Managed Wastewater Collection Systems, July 2010, National Association of Clean Water Agencies and the Water Environment Federation - <http://www.nacwa.org/>

WEF Collection System Committee “Access Water Knowledge Center”

WEF Collection Systems Discussion Forum

WEF Private Property Virtual Library

WEF Wastewater Collection System Management, Manual of Practice 7

WEF Existing Sewer Evaluation and Rehabilitation, Manual of Practice FD-6

These documents can be found at <http://www.wef.org/>

EPA Collection Systems O&M Fact Sheet: Sewer Cleaning and inspection, EPA 832-F-99-031, September 1999 -

<http://yosemite.epa.gov/water/owrccatalog.nsf/7322259e90d060c885256f0a0055db68/30024e47e16e948e85256d83004fda4e!opendocument>

EPA Collection Systems O&M Fact Sheet: Trenchless Sewer Rehabilitation, EPA 832-F-99-032, September 1999 -

<http://yosemite.epa.gov/water/owrccatalog.nsf/7322259e90d060c885256f0a0055db68/59f447a7b806744385256b06007232a4!opendocument>

EPA Wastewater Collection System Toolbox Website -

<http://www.epa.gov/region1/sso/toolbox.html>

## 2.5 Element 5 - Design and Performance Provisions

### 2.5.1 Requirements

**D.13.(v) Design and Performance Provisions:**

- (a) 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; and
- (b) Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

### 2.5.2 Things to Think About

Section D.13.(v) of the SSS WDR requires that every Enrollee in the State of California adopt design and construction standards for sewer systems and then, through plan checking, inspections, and testing, insure that all new and rehabilitated sewer projects are designed and built to those standard specifications. These specifications should include all collection system infrastructure elements, including pipelines, manholes, pump stations, siphons, air relief valves, etc.

Design, construction, inspection, and testing standards represent a critical part of an Enrollee's operation and maintenance of a sewer system. Properly designed and constructed sewers are less likely to fail and cause an SSO that could endanger the public and the environment. Once standards are adopted, the Enrollee continues to evaluate and regularly update those standards as the industry improves and changes. The Enrollee may establish a regular schedule for the review and updating of these standards. This suggestion does not mean that this review needs to be done each year but, at a minimum, the Enrollee can conduct a thorough review during SSMP audits and conduct comprehensive reviews on a regular basis. Finally, any approved changes to these standards should be identified and described in the SSMP Change Log.

Design standards usually include written documents and standard drawings that tell a design engineer how to design a gravity sewer, pressure sewer, sewage lift stations, and other sewer appurtenances. These standards show how to size a sewer through design criteria using dry weather flows and wet weather peaking factors, what pipe materials to specify, and other standards, such as maximum and minimum depths, curves, manhole spacing, and others. Sewer design engineers then use those standards to prepare a set of plans and specifications for either new or rehabilitated sewer or lift station projects. Design engineers can be Enrollee employees, consultants hired by developers to design sewers for new development, or consultants hired by

the Enrollee to design new trunk or interceptor sewers or to design sewer rehabilitation projects to assure consistent system development.

For each new sewer project, a properly designed set of sewer plans, consistent with the standard specifications, are then submitted to an Enrollee for review and approval. This step represents a critical part of the sewer design and construction process in that the plans must be checked for conformance with the design, construction, and maintenance standards. Standards for sewer construction and maintenance standards are often developed from years of experience from the Enrollee's engineering and maintenance staff and can be transmitted to the design engineer through the plan check process. Once plans are ready for approval, they are then stamped or signed by the appropriate authorized person from the Enrollee.

Sewer construction standards or specifications may be included in a set of standards separate from design standards. Construction standards provide the detail necessary for a sewer contractor to properly construct a new sewer, a lift station, or to rehabilitate existing assets. These standards also may provide information not shown on the sewer plans, such as pipe specifications, backfill requirements, and testing standards. Although these standards can be incorporated into a set of sewer plans, they also can be contained in a separate document, often called Standard Specifications, which can also include other constructions standards, such as water and road work. These specifications include the testing methods and standards that a contractor must follow to demonstrate that the sewer was constructed properly. These testing methods may include leak testing of sewers and manholes as well as other testing that may be required for certain pipe types or construction projects.

Once the sewer project is designed properly and the contractor has approved construction plans and specifications, the Enrollee ensures the new or rehabilitated sewers are properly constructed before the Enrollee accepts operation and maintenance responsibility. Construction approval is performed by an inspector visiting the construction site to ensure the work is done properly. Although an inspector is not required to be at the construction site every hour of every working day, inspectors generally visit the site during critical construction times and during all testing. The inspector usually provides a written record of each inspection, and a final acceptance authorization.

### **2.5.3 Helpful Hints**

The following are suggestions that may help to meet this requirement:

- Many large sewer agencies have developed their own design, construction, inspection and testing standards and have published them in written and/or electronic form. Small sewer agencies often do not have written design, construction and testing standards and infrequently have new sewer construction and rehabilitation projects. Small agencies might consider adopting the sewer standards of a nearby sewer agency, so that if and

when new projects arise, standards are available and similar to other local agencies' standards. This adoption can be done by a simple resolution of the Enrollee's governing board.

- Small system Enrollees often do not have the staff to perform plan checking and inspection activities. These Enrollees might consider hiring a consultant engineer for the plan checking and inspection or even asking an overlapping or nearby agency (like a county) to provide those services. Larger Enrollees are often plan checking a development's road plans and may have inspectors on the project anyway. Either way, Enrollees want to ensure that the people involved in these duties have the proper experience to adequately provide the service.
- An Enrollee may want to consult with its maintenance staff to determine if they have helpful comments to provide during the plan checking process. Maintenance staff often has the experience, through their work, to provide input that will help make sure the new design can be properly and economically constructed and maintained.
- Design and performance standards should be reviewed and updated on a regular basis and can include looking at new and emerging technologies. These standards should be reviewed, not only by the Enrollee's engineering staff, but also by the Enrollee's maintenance staff as discussed above. Changes and corrections are then be adopted by whatever means is required for that Enrollee. Suggestions can also be solicited from consulting engineers, and contractors and suppliers, but those changes should also be approved by staff and the Enrollee's board. These standards should initially be adopted by the Enrollee's governing board, and readopted whenever changes are proposed (SSS WDR Section D.14.).

The SSS WDR requires that an SSMP contain a section detailing the design and performance standards of the Enrollee. Since such standards are often large documents that would unnecessarily burden a SSMP. Instead, a brief description of these documents can be provided and then referenced to a location (e.g., website or physical location) where the documents can be reviewed, purchased, or downloaded electronically. If an Enrollee adopts another agency's standards, references should be made to where such standards can be found. All standards referred to in the SSMP should be available on the Enrollee's website and, for ease of the reader, can be on the same page that the SSMP is displayed or by a hyperlink. If this does not happen or is not feasible, then copies of all documents must be submitted to the SWRCB along with the SSMP (see SSS WDR Section E, MRP Sections C.8.b.(iv) and MRP Section E.3.).

### **2.5.5 Monitoring and Reporting Plan Requirements**

The MRP, issued with the SSS WDR, has no requirements to report anything specifically related to the Design and Reporting Standards required in the SSS WDR.

### **2.5.6 Issues Noted From Inspections and Enforcement Activities**

The SWRCB's Office of Enforcement has noted that many Enrollees have very old design standards and specifications that have not been reviewed in many years or even decades, and that may not refer to the most current standards utilized by other Enrollees. While there is no prescribed standard that must be attained, the Office of Enforcement recommends regular reviews and evaluations of design standards to ensure that the Enrollee is considering the standards used by others in the collection system industry. These standard reviews should include the evaluation of new technologies that are then being used by the industry or are available to service area customers and engineers.

## **2.5.7 References**

For reference, links to the design, constructions and testing specifications for several large Enrollees are provided below:

### **San Diego -**

<http://www.sandiego.gov/mwwd/business/sewer.shtml>

### **Sacramento Area Sewer District -**

<http://www.sacsewer.com/standards-specifications>

### **Placer County -**

Land Development Manual

<http://www.placer.ca.gov/Departments/CommunityDevelopment/Eng/LandDevManual.aspx>

General Specifications

<http://www.placer.ca.gov/~media/cdr/Eng/GeneralSpecs/General%20Specifications.pdf>

### **Water Environment Federation -**

WEF Gravity Sewer Design and Construction, Manual of Practice FD-5 - <http://www.wef.org/>

**Green Book** - Standard Specification for Public Works Construction -

[http://www.bnibooks.com/shopdisplayproducts.asp?id=361&coupon=932Y&utm\\_source=bing&utm\\_medium=cpc&utm\\_term=2012%20greenbook&utm\\_campaign=greenbook](http://www.bnibooks.com/shopdisplayproducts.asp?id=361&coupon=932Y&utm_source=bing&utm_medium=cpc&utm_term=2012%20greenbook&utm_campaign=greenbook)

### **ASCE -**

[http://www.asce.org/searchResults.aspx?q=Sewer+Specifications&btnG=Google+Search&client=asce\\_corporate&output=xml\\_no\\_dtd&filter=0&site=asce&ie=UTF-8&ulang=&ip=205.174.24.170&access=p&sort=date:D:L:d1&entqr=3&entqrm=0&start=0](http://www.asce.org/searchResults.aspx?q=Sewer+Specifications&btnG=Google+Search&client=asce_corporate&output=xml_no_dtd&filter=0&site=asce&ie=UTF-8&ulang=&ip=205.174.24.170&access=p&sort=date:D:L:d1&entqr=3&entqrm=0&start=0)

### **Central Contra Costa Sanitary District Standard Specifications for Design and Construction -**



<http://www.centalsan.org/index.cfm?navId=928>

## 2.6 Element 6 - Overflow Emergency Response Plan

### 2.6.1 Requirements

- D.13.(vi) **Overflow Emergency Response Plan** - Each Enrollee shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:
- (a) Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;
  - (b) A program to ensure appropriate response to all overflows;
  - (c) Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g. health agencies, regional water boards, water suppliers, etc...) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the MRP. All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDR or NPDES permit requirements. The SSMP should identify the officials who will receive immediate notification;
  - (d) Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the Emergency Response Plan and are appropriately trained;
  - (e) Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and
  - (f) A program to ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from the SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

### 2.6.2 Things to Think About

The SSS WDR requires Enrollees to develop an Overflow Emergency Response Plan (“OERP”) for use when responding to SSOs. The response plan must, at a minimum, address the requirements set forth in the SSS WDR. A summary of some of the requirements are discussed below:

- Notification – This section requires Enrollees to have internal notification procedures so response and mitigation efforts to minimize the effects of the SSO are completed in a timely manner. Enrollees are also required to notify OES for Category 1 SSOs equal or greater than

1000 gallons. Enrollees may also want to, or are required under other orders, to notify the Health Department, local RWQCB, or other state or local agencies

- Response Activities– This section requires Enrollees to adequately address various types of overflows and to perform reasonable SSO response activities to contain the overflow and to minimize the impact to the environment.
- Reporting – This section requires Enrollees to meet the MRP requirements listed in Section G of the SSS WDR. The MRP requires certain overflow information be reported to the CIWQS database online.
- Training – This section requires Enrollee to adequately train their employees to understand and follow the OERP. The training should include emergency operations, such as traffic and crowd control as well as procedures for volume estimation and SSO start time determinations.

In addition to the requirements set forth in the SSS WDR, RWQCBs may impose additional reporting and monitoring requirements. If the Enrollee is required to report or monitor additional information, it may be beneficial to combine all applicable requirements into one response plan. Having only one comprehensive response plan will help to avoid confusion and ensure all requirements are met. The OERP should address all requirements specifically stated in the SSS WDR and any additional requirements prescribed by the RWQCB.

A line item included in the OERP for each specific requirement may be beneficial. Using line items or a checklist can be helpful, especially for tracking which requirements have already been met or for use when audits are performed.

Employees should be trained according to the tasks they are expected to perform. Most employees will not be expected to know how to complete every task. However, supervisors and managers may need to know how to perform multiple roles.

### **2.6.3 Helpful Hints**

The OERP does not have to be a monumental effort. The OERP can be as simple as descriptions of the tasks and a checklist to ensure the responder has gathered the required information to be reported. A Field Report sample is included in Section 2.6.7.

The OERP is not expected to cover every detail or possible response activity when responding to SSOs. Best management practices for SSO containment and recovery may be included in the response plan to ensure proper response to SSOs. A strong emphasis may be placed on activities, such as blocking drain inlets and placing berms around the spill, which will help to prevent sewage from entering a waterway or drainage channel leading to downstream surface waters. The OERP may also include recovery efforts and cleanup activities that will reduce the effects of the overflow. This may require an OERP that covers

different types of SSOs. The infrastructure that caused the overflow may dictate what response activities are warranted. Different response activities may be necessary depending on the volume or area affected by the overflow.

The OERP is also not expected to address how to prevent SSOs from occurring. Since other parts of the SSS WDR and SSMP cover SSO prevention, the OERP is intended to only cover SSO response activities. The OERP may address the prevention of overflows from reaching waterways and may also address overflows that are common to the Enrollee's collection system. This would help to demonstrate that the Enrollee is prepared to handle overflows that typically occur, such as overflows due to FOG, rags, roots, or other debris.

The OERP is part of the SSMP, but can be produced as a separate binder or manual, or electronically on a tablet, for field staff to use. This will allow crews and supervisors to easily reference the OERP without having to carry a complete copy of the SSMP. An OERP can include information about damage to private property, but Enrollees should consider including this information in a separate SOP so as to not become a requirement of the SSMP.

Training is usually more helpful when planned and implemented regularly. The training can target the changes made to the OERP since the last training session as well as reviewing information from previous training sessions. This will ensure all responders are up-to-date on the latest procedures. A document recording all the changes from the previous OERP may be helpful when determining if a responder followed the correct protocol at the time of response. Trainings should be documented to show compliance with the SSS WDR requirement.

There are many different ways to document the events that occur during an SSO. The Enrollee may need to consolidate the data so all entries are consistent and accurate when compared to the CIWQS database. Also, Enrollees should make an effort to estimate the actual start time and volume of the SSO as accurately as possible. This can include using flow meter data, if available, and contacting any reporting party to ask follow-up questions. To ensure SSOs are documented and reported correctly, Enrollees should train employees on appropriate reporting and consistent protocols.

Reporting private overflows is not required by the SSS WDR, but is required by San Diego Regional Water Board, Region 9. Once the Enrollee determines that an overflow is occurring because of a blockage in a private sewer or lateral, the Enrollee should notify the owner or other responsible party to take appropriate response action. In some instances, an agreement may be needed between the different parties so there is a procedure for dealing with a PLSD.

## **2.6.4 Monitoring and Reporting Plan Requirements**

The MRP requires Enrollees to report and monitor a large amount of information related to SSOs. One of the biggest requirements from the MRP is reporting data into the CIWQS database online. If possible, the Enrollee may want to organize their reporting forms to match the same data fields and sequence presented in the CIWQS database. This will prevent confusion and ensure all required information is

entered into the CIWQS database. Training modules for CIWQS may be available and can be utilized by responders.

The MRP has time sensitive requirements depending on the overflow category. For example, if the overflow is a Category 1 SSO greater than or equal to 1,000 gallons, the Enrollee must inform Cal OES as soon as possible, but not later than two (2) hours after the Enrollee has knowledge of the spill, and if notification is possible without substantially impeding cleanup or other emergency measures. These time sensitive requirements may be reflected in the response plans and training documents to ensure all requirements are met.

## **2.6.5 Issues Noted Inspections and Enforcement Activities**

Enforcement actions may be brought for a variety of reasons. Some reasons for enforcement actions are shown below.

- Spills to surface waters: An NOV may be issued if the overflow reaches a waterway.
- Inadequate Reporting: If the Enrollee does not report SSOs on time or does not submit a “No Spill Certification” when no overflows occurred in the previous month.
- Failing to Report Accurately: The Enrollee may receive an NOV if their data is incorrect or inconsistent with other documentation.
- Proper Documentation: Documenting the start time of the overflow is often important to aid in estimating the volume of the overflow.
- Accurate Reporting: areas of non-compliance typically noted in SWRCB and RWQCB enforcement actions include inadequate SSO reporting, or failure to report accurate SSO information.

## **2.6.6 References**

SWRCB Library – Sample OERP documents -

[http://www.swrcb.ca.gov/water\\_issues/programs/sso/sso\\_reduct\\_lib.shtml](http://www.swrcb.ca.gov/water_issues/programs/sso/sso_reduct_lib.shtml)

San Diego Volume Chart

California Sanitation Risk Management Association SMART Response App for cloud based SSO reporting application.

California Health and Safety Code Sections 5410 to 5416 – homeowner reporting of PLSDs -

[http://www.weblaws.org/california/codes/ca\\_health\\_and\\_safety\\_section\\_5410](http://www.weblaws.org/california/codes/ca_health_and_safety_section_5410)

## 2.6.7 Attachments

### 2.6.7.1 Sample Field Report

#### REPORTED BY

Call Address:  
On Service Request \_\_\_\_\_ (SR # \_\_\_\_\_)

Caller Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Receipt of Call: Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time: \_\_\_\_:\_\_\_\_  AM  PM Call Received By: \_\_\_\_\_

Call Dispatch: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time: \_\_\_\_:\_\_\_\_  AM  PM Assigned To: \_\_\_\_\_

USD Arrival Time: Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time: \_\_\_\_:\_\_\_\_  AM  PM

#### SPILL START TIME NOTES

**Caller Interview:** Where did you see sewage spill from? From: Manhole  Inside Building  C/O   
 Wet well/Lift station  Other \_\_\_\_\_

Time Caller noticed spill: \_\_\_\_:\_\_\_\_  AM  PM Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Comments:

\_\_\_\_\_  
\_\_\_\_\_

Last time Caller observed NO Spill occurring: \_\_\_\_:\_\_\_\_  AM  PM Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SSO End Time \_\_\_\_:\_\_\_\_  AM  PM Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Other Comments regarding spill start time:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**SPILL LOCATION**

Observed: Spill from:  Manhole ID \_\_\_\_\_  Lift Station ID \_\_\_\_\_

Clean Out Address \_\_\_\_\_

Comments: \_\_\_\_\_

Building Address \_\_\_\_\_

Comments: \_\_\_\_\_

Spill Destination:  Building  Paved Surface  Storm Sys  Curb/Gutter  Unpaved  Surface Water

Answer these questions:

#1 – Was there a discharge to surface water or a drainage channel that is tributary to surface water? \_\_\_\_ Yes \_\_\_\_ No

#2 - Was there a discharge to a storm drain pipe that was “NOT” fully captured & returned to the sanitary

sewer system? \_\_\_\_ Yes \_\_\_\_ No

If you answered no to both questions above, was it  $\geq 1,000$  gallons? \_\_\_\_ Yes \_\_\_\_ No

If yes, the SSO is a Category 2. If NO, the SSO is a Category 3.

**SPILL VOLUME WORKSHEET**



The purpose of this worksheet is to capture the data and method(s) used in estimating the volume of an SSO. Since there are many variables and often unknown values involved, this calculation is just an estimate. Additionally, it is useful to use more than one method, if possible, to validate your estimate.

The following methods and tools are the approved methods in the SOP CS-103 *SSO Response*. Check all methods and tools that you used:

- Eyeball Estimate Method
- Measured Volume Method
- Duration and Flow Rate Method (Account for diurnal flow pattern for long duration)
- USD SSO Flow Rate Estimating Tool
- Other (explain) i.e.; estimated daily use per capita upstream or meter @ Pump Station.

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**Eyeball Estimate Method-** Imagine a bucket(s) or barrel(s) of water tipped over.

Size of bucket(s) or barrel(s)	How many of this Size?	Multiplier	Total Volume Estimated
1 gal. water jug		X 1	
5 gal. bucket		X 5	
32 gal. trash can		X 32	
55 gal drum		X 55	
Total Volume Estimated Using Eyeball Method			

**Measured Volume Method** (this may take several calculation as may have to break down the odd shaped spill to rectangles, circles, and polygons) It is important when guessing depth to measure, if possible in several locations and use an average depth. Use the [SSO Volume Estimate by Area Work Sheet](#) , if necessary, to sketch the shapes and show your work.

1. Draw a sketch of the spill [SSO Volume Estimate by Area Work Sheet](#), or use a photo copy of USD block book to draw on and attach it.
2. Draw shapes and dimensions used on your sketch
3. Use correct formula for various shapes

Rectangle	$L \times W \times D$
Circle	$3.14 \times R^2 \times D$
Polygons see reference chart	Show formula used

**Duration and Flow Rate Method** worksheet:

Start Date and Time	1.
End Date and time	2.
Total time elapsed of SSO event (subtract line 1 from line 2. Show time in minutes)	3.
Average flow rate GPM (account for diurnal pattern)	4.
Total volume estimate using duration and flow rate method (Line 3 x Line 4)	5.



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**CAUSE OF SPILL**

Spill Cause:  Roots  Grease  Debris  Vandalism  Lift Station Fail  Other \_\_\_\_\_

Spill cause to be determined by CCTV inspection (Attach TV Report to this form)

Final Cause Determination:

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Follow-up or Corrective Action Taken:

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**SPILL CONTAINMENT**

Containment Implemented: \_\_\_\_\_: \_\_\_\_\_  AM  PM Date: \_\_\_\_/\_\_\_\_/\_\_\_\_



Containment Measures:  Plugged Storm Drain  Washed Down  Vacuum Up Water/Sewage

Other Measures: \_\_\_\_\_

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**CLEAN UP**



Clean Up Begin: \_\_\_\_\_:\_\_\_\_\_  AM  PM Date: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Clean Up Complete: \_\_\_\_\_:\_\_\_\_\_  AM  PM Date: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Describe Clean Up Operations: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ Gallons – Estimate Volume of Spill Recovered (do not count wash down water)

**OTHER IMPORTANT MILESTONES**

Contacted Supervisor: \_\_\_\_\_:\_\_\_\_\_  AM  PM Date: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Requested Additional EE's/Equip: \_\_\_\_\_:\_\_\_\_\_  AM  PM Date: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Requested Additional EE's/Equip: \_\_\_\_\_:\_\_\_\_\_  AM  PM Date: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Requested Additional EE's/Equip: \_\_\_\_\_:\_\_\_\_\_  AM  PM Date: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Departure Time: \_\_\_\_\_:\_\_\_\_\_  AM  PM Date: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

\_\_\_\_\_:\_\_\_\_\_  AM  PM Date: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

\_\_\_\_\_:\_\_\_\_\_  AM  PM Date: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

\_\_\_\_\_:\_\_\_\_\_  AM  PM Date: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

**REPORTING**

Report to Cal-EMA: Date: \_\_\_\_\_:\_\_\_\_\_  AM  PM (Cat.1 Only) **(800) 852-7550** By: \_\_\_\_\_

└─> Control Number provided by Cal-OES: \_\_\_\_\_

└─> Name of Person Contacted: \_\_\_\_\_ or Left Message:

Report to \_\_\_\_\_ Date: \_\_\_\_\_:\_\_\_\_\_  AM  PM Phone: **668-4200** By: \_\_\_\_\_

└─> Name of Person Contacted: \_\_\_\_\_ or Left Message:

Notes: \_\_\_\_\_  
\_\_\_\_\_  
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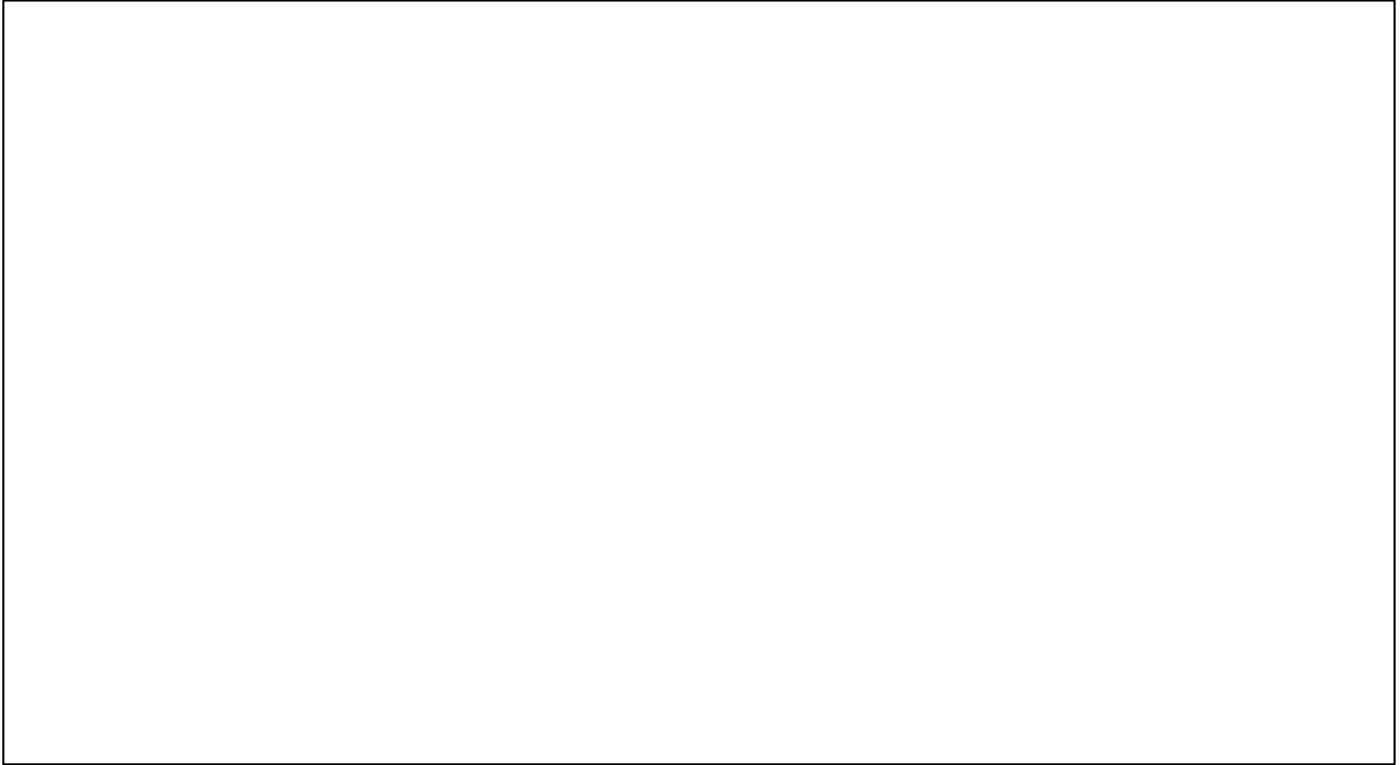
Response Crew: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
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# SSO Volume by Area Estimation Work Sheet

## 2.6.7.2 SSO Volume by Area Estimation Work Sheet

Surface:  Asphalt  Concrete  Dirt  Landscape  Inside Building Other \_\_\_\_\_

(Draw / Sketch outline of Spill 'Footprint' and attach photos)



~~ Breakdown the 'Footprint' into Recognizable Shapes and Determine Dimensions of Each Shape ~~

Area #1 \_\_\_\_\_ % Wet \_\_\_\_\_

Stain. Depth1 \_\_\_\_\_ Depth2 \_\_\_\_\_ Depth3 \_\_\_\_\_ Depth4 \_\_\_\_\_ Depth5 \_\_\_\_\_ Depth6 \_\_\_\_\_

Area #2 \_\_\_\_\_ % Wet \_\_\_\_\_

Stain. Depth1 \_\_\_\_\_ Depth2 \_\_\_\_\_ Depth3 \_\_\_\_\_ Depth4 \_\_\_\_\_ Depth5 \_\_\_\_\_ Depth6 \_\_\_\_\_

Area #3 \_\_\_\_\_ % Wet \_\_\_\_\_

Stain. Depth1 \_\_\_\_\_ Depth2 \_\_\_\_\_ Depth3 \_\_\_\_\_ Depth4 \_\_\_\_\_ Depth5 \_\_\_\_\_ Depth6 \_\_\_\_\_

Area #4 \_\_\_\_\_ % Wet \_\_\_\_\_

Stain. Depth1 \_\_\_\_\_ Depth2 \_\_\_\_\_ Depth3 \_\_\_\_\_ Depth4 \_\_\_\_\_ Depth5 \_\_\_\_\_ Depth6 \_\_\_\_\_

Area #5 \_\_\_\_\_ % Wet \_\_\_\_\_

Stain. Depth1 \_\_\_\_\_ Depth2 \_\_\_\_\_ Depth3 \_\_\_\_\_ Depth4 \_\_\_\_\_ Depth5 \_\_\_\_\_ Depth6 \_\_\_\_\_

Area #6 \_\_\_\_\_ % Wet \_\_\_\_\_

Stain. Depth1 \_\_\_\_\_ Depth2 \_\_\_\_\_ Depth3 \_\_\_\_\_ Depth4 \_\_\_\_\_ Depth5 \_\_\_\_\_ Depth6 \_\_\_\_\_

# SSO Volume by Area Estimation Work Sheet

Area #1 Square Feet: \_\_\_\_\_ x % Wet \_\_\_\_\_ = \_\_\_\_\_ Sq/Ft  
Ave Depth: \_\_\_\_\_  Concrete 0.0026'  Asphalt 0.0013'  
Volume: \_\_\_\_\_ Cu/Ft

Area #2 Square Feet: \_\_\_\_\_ x % Wet \_\_\_\_\_ = \_\_\_\_\_ Sq/Ft  
Ave Depth: \_\_\_\_\_  Concrete 0.0026'  Asphalt 0.0013'  
Volume: \_\_\_\_\_ Cu/Ft

Area #3 Square Feet: \_\_\_\_\_ x % Wet \_\_\_\_\_ = \_\_\_\_\_ Sq/Ft  
Ave Depth: \_\_\_\_\_  Concrete 0.0026'  Asphalt 0.0013'  
Volume: \_\_\_\_\_ Cu/Ft

Area #4 Square Feet: \_\_\_\_\_ x % Wet \_\_\_\_\_ = \_\_\_\_\_ Sq/Ft  
Ave Depth: \_\_\_\_\_  Concrete 0.0026'  Asphalt 0.0013'  
Volume: \_\_\_\_\_ Cu/Ft

Area #5 Square Feet: \_\_\_\_\_ x % Wet \_\_\_\_\_ = \_\_\_\_\_ Sq/Ft  
Ave Depth: \_\_\_\_\_  Concrete 0.0026'  Asphalt 0.0013'  
Volume: \_\_\_\_\_ Cu/Ft

Area #6 Square Feet: \_\_\_\_\_ x % Wet \_\_\_\_\_ = \_\_\_\_\_ Sq/Ft  
Ave Depth: \_\_\_\_\_  Concrete 0.0026'  Asphalt 0.0013'  
Volume: \_\_\_\_\_ Cu/Ft

<p>Total Volume:</p> <p>#1 _____, #2 _____, #3 _____, #4 _____, #5 _____, #6 _____ = _____ *cu ft</p> <p>_____ *cu ft x 7.48 gallons = _____ <b>gallons Spilled.</b></p>
--

# SSO Volume by Area Estimation Work Sheet

## CONVERSIONS

\*\* To convert inches into feet: Divide the inches by 12.

Example:  $27'' / 12 = 2.25'$

Or Use Chart A

Example:  $1 \frac{3}{4}'' = ?$

$1'' (0.08') + \frac{3}{4}'' (0.06') = \underline{0.14'}$

\*\* One Cubic Foot = 7.48 gallons of liquid.

Chart A		
Conversion:		
<u>Inches</u>	to	<u>Feet</u>
1/8''	=	0.01'
1/4''	=	0.02'
3/8''	=	0.03'
1/2''	=	0.04'
5/8''	=	0.05'
3/4''	=	0.06'
7/8''	=	0.07'
1''	=	0.08'
2''	=	0.17'
3''	=	0.25'
4''	=	0.33'
5''	=	0.42'
6''	=	0.50'
7''	=	0.58'
8''	=	0.67'
9''	=	0.75'
10''	=	0.83'
11''	=	0.92'
12''	=	1.00'

## SSO Volume by Area Estimation Work Sheet

### GEOMETRY

For the purposes of this work sheet, the unit of measurement will be in feet for formula examples.

Area is two-dimensional - represented in square feet. (Length x Width)

Volume is three-dimensional - represented in cubic feet. (Length x Width x depth) or (Diameter Squared)  $D^2 \times 0.785 \times \text{depth}$ .

#### A Note about Depth

Wet Stain on a Concrete Surface - For a stain on concrete, use 0.0026'. This number is 1/32" converted to feet. For a stain on asphalt use 0.0013' (1/64"). These were determined to be a reasonable depth to use on the respective surfaces through a process of trial and error by SPUD staff. A known amount of water (one gallon) was poured onto both asphalt and concrete surfaces. Once the Area was determined as accurately as possible, different depths were used to determine the volume of the wetted footprint until the formula produced a result that (closely) matched the one gallon spilled. 1/32" was the most consistently accurate depth on concrete and 1/64" for asphalt. This process was repeated several times.

Sewage "Ponding" or Contained – Measure actual depth of standing sewage whenever possible. When depth varies, measure several (representative) points, determine the average and use that number in your formula to determine volume.

#### Area/Volume Formulas

Area is two dimensional and is represented as Square Feet (Sq. Ft.)

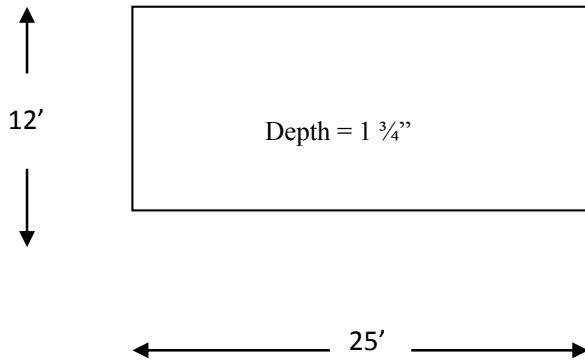
Volume is three dimensional and is represented as Cubic Feet (Cu. Ft.)

One Cubic Foot = 7.48 gallons

## SSO Volume by Area Estimation Work Sheet

### AREA/VOLUME OF A RECTANGLE OR SQUARE

Formula: **Length x Width x Depth = Volume in Cubic Feet**



Length (25') x Width (12') x Depth (0.14')

$25' \times 12' \times 0.14' = 42$  Cubic Feet.

Now the Volume in Cubic Feet is known.

There are 7.48 Gallons in one Cubic Foot

So, 42 Cubic Feet x 7.48 gallons/cubic feet = **314 Gallons**

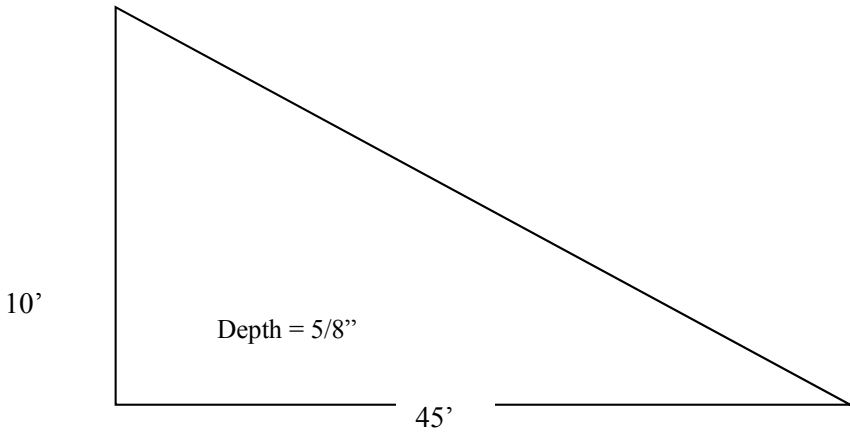
<b>Chart A</b>		
<u>7"</u>		
Conversion:		
<u>Inches</u>	to	<u>Feet</u>
1/8"	=	0.01'
1/4"	=	0.02'
3/8"	=	0.03'
1/2"	=	0.04'
5/8"	=	0.05'
3/4"	=	0.06'
7/8"	=	0.07'
1"	=	0.08'
2"	=	0.17'
3"	=	0.25'
4"	=	0.33'
5"	=	0.42'
6"	=	0.50'
7"	=	0.58'
8"	=	0.67'
9"	=	0.75'



# SSO Volume by Area Estimation Work Sheet

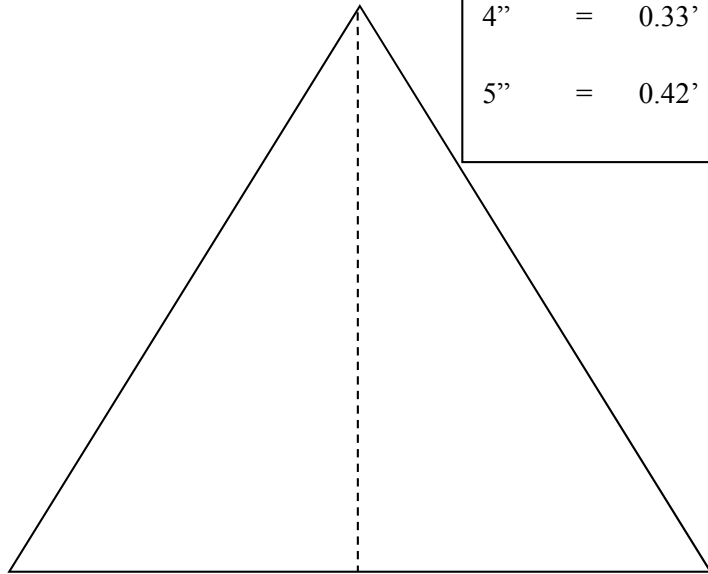
## AREA/VOLUME OF A RIGHT TRIANGLE

Base x Height x 0.5 x Depth = Volume in Cubic Feet



Base (45') x Height (10') x 0.5 x Depth (.05') x 7.48 gallons/cubic foot = **84 gallons**

For Isosceles Triangles (two sides are equal lengths),  
Break it down into two Right Triangles and compute area  
as you would for the Right Triangle above.



**Chart A**

Conversion:

Inches to Feet

1/8" = 0.01'

=

1/4" = 0.02'

3/8" = 0.03'

1/2" = 0.04'

5/8" = 0.05'

3/4" = 0.06'

7/8" = 0.07'

1" = 0.08'

2" = 0.17'

3" = 0.25'

4" = 0.33'

5" = 0.42'

## SSO Volume by Area Estimation Work Sheet

### AREA/VOLUME OF A CIRCLE/CYLINDER

$$D^2 \times 0.785 \times d$$

Diameter Squared x 0.785 x Depth = Volume in cubic feet.

Diameter = Any straight line segment that passes through the center of a circle.

For our purposes, it is the measurement across the widest part of a circle.

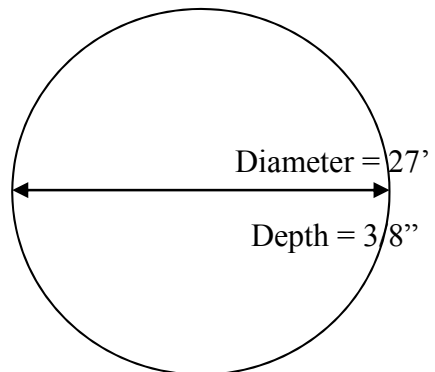
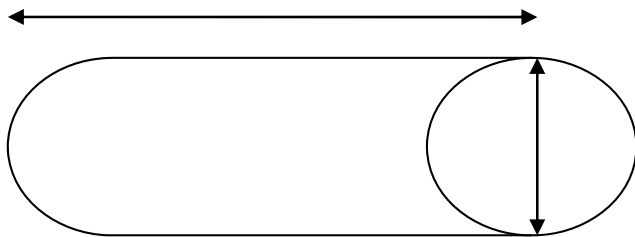
$$D^2 \times 0.785 \times \text{depth} = \text{Volume in cubic feet}$$

Example:

$$27' \times 27' \times 0.785 \times 0.03 = 17.17 \text{ cubic feet}$$

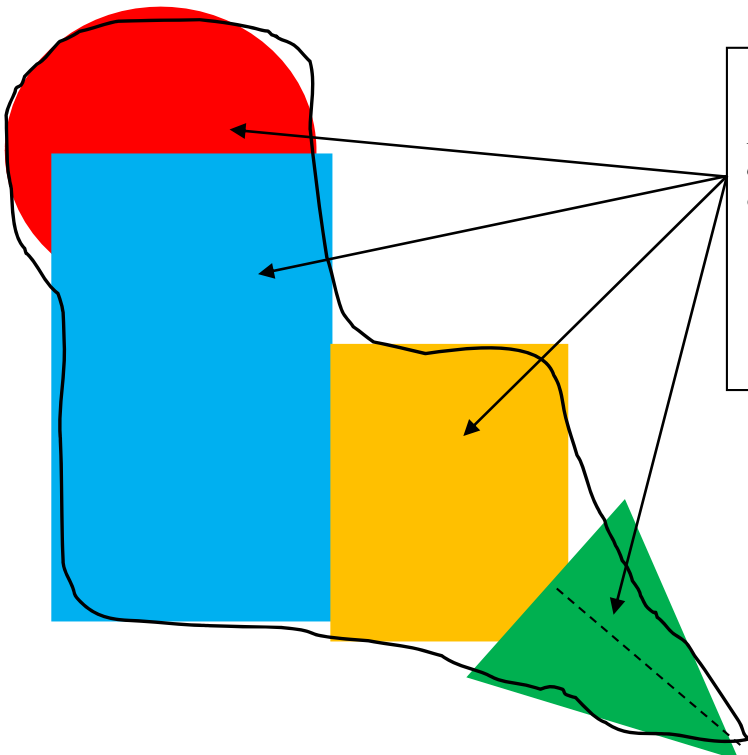
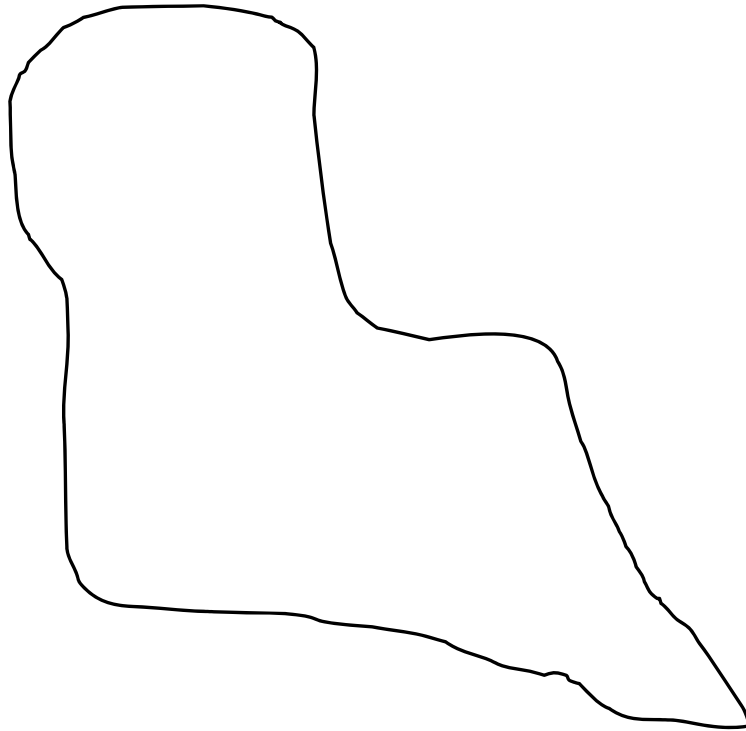
$$17.17 \text{ cubic feet} \times 7.48 \text{ gallons/cubic foot} = \underline{\underline{128 \text{ gallons}}}$$

Chart - A	
Conversion:	
Inches to Feet	
1/8"	= 0.01'
1/4"	= 0.02'
3/8"	= 0.03'
1/2"	= 0.04'
5/8"	= 0.05'
3/4"	= 0.06'
7/8"	= 0.07'
1"	= 0.08'
2"	= 0.17'
3"	= 0.25'
4"	= 0.33'
5"	= 0.42'
...	= ...



# SSO Volume by Area Estimation Work Sheet

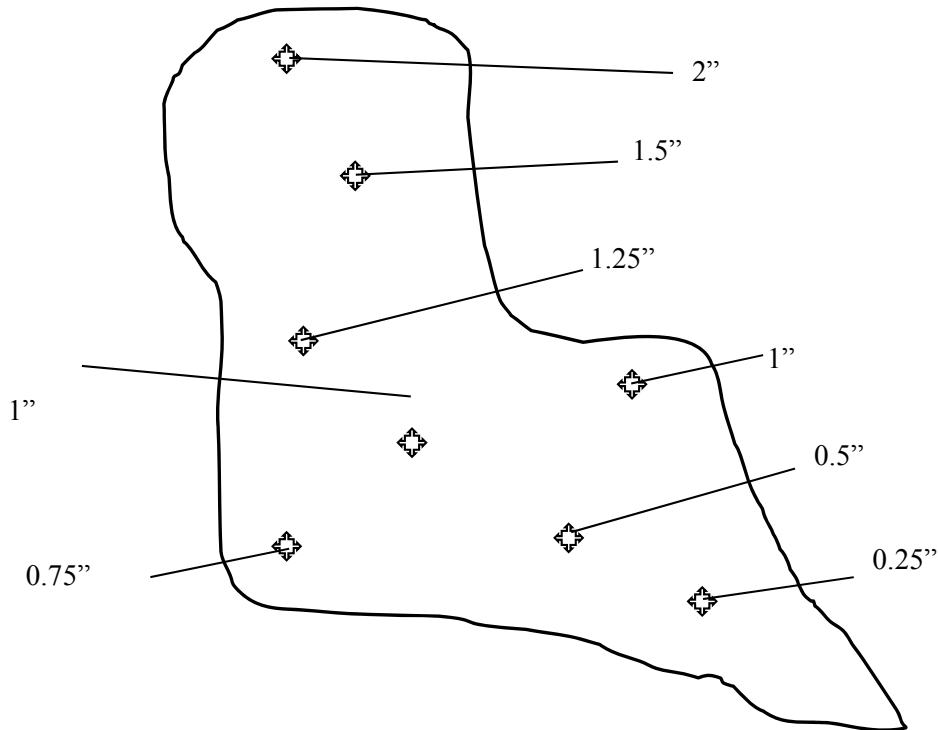
Find the geometric shapes within the shape. If this was the shape of your spill, break it down, as best you can, with the shapes we know.



1. Determine the volumes of each shape.  
*In this example, after the volume of the circle is determined, multiply it by 55% (+/-) so that the overlap area won't be counted twice.*
2. Add all the volumes to determine total spill volume.

## SSO Volume by Area Estimation Work Sheet

If the spill depth is of varying depths, take several measurements at different depths and find the average.



$$2'' + 1.5'' + 1.25'' + 1'' + 1'' + 0.75'' + 0.5'' + 0.25'' = 8.25''$$

$$8.25'' / 8 \text{ measurements} = 1.03''$$

Average Depth = 1.03''

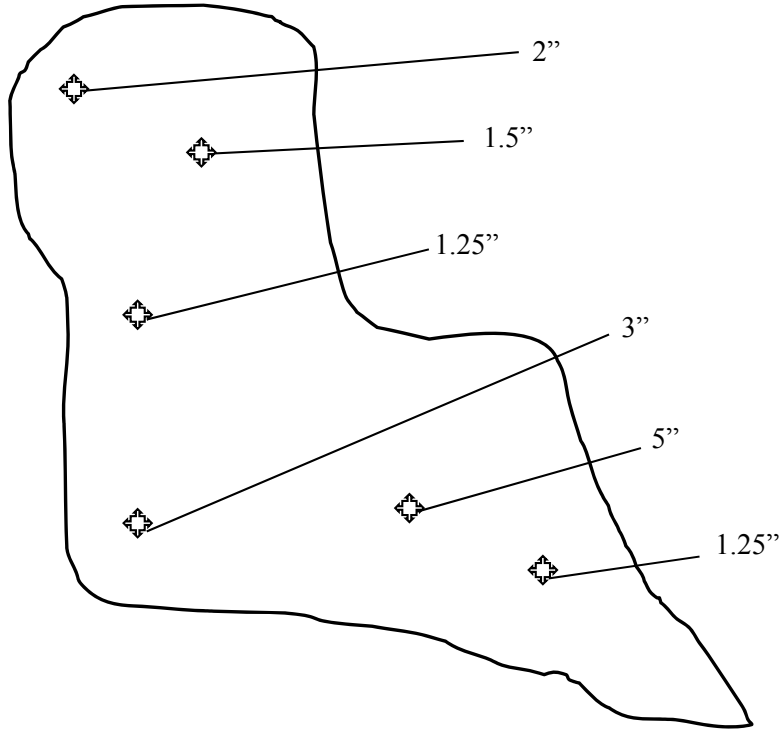
# SSO Volume by Area Estimation Work Sheet

## Step 1

If the spill affects a dry, unimproved area such as a field or dirt parking lot, determine the Area of the wetted ground in the same manner as you would on a hard surface. Using a round-point shovel, dig down into the soil until you find dry soil. Do this in several locations within the wetted area and measure the depth of the wet soil. Average the measurement/thickness of the wet soil and determine the average depth of the wet soil.

**NOTE:** This can be used in a (Dry) dirt or grassy area that is not regularly irrigated like a field or a dirt parking lot.

Wet weather would make this method ineffective.



## Step 2

### Take a Test Sample

$$2'' + 1.5'' + 1.25'' + 3'' + 5'' + 1.25'' = \underline{14.0''}$$

$$14.0'' / 6 \text{ measurements} = 2.33''$$

$$\text{Average Depth} = 2.33'' (0.194')$$

**EXAMPLE:**

If the Area of the spill was determined to be 128 Sq/Ft and the average depth of the wet soil is 2.33 inches:

$$128 \text{ Sq/Ft} \times 0.194' = 24.83 \text{ Cu/Ft}$$

$$24.83 \text{ Cu/Ft} \times 7.48 \text{ Gals/Cu/Ft} = 185.74 \text{ gallons}$$

$$185.74 \times 18\% = \underline{33 \text{ Gallons}} \text{ (water in soil)}$$

## 2.7 Element 7 - FOG Control Program

### 2.7.1 Requirements

- D.13.(vii) **Fats, Oils, and Grease (FOG) Control Program:** Each Enrollee shall evaluate its service area to determine whether a FOG control program is needed. If an Enrollee determines that a FOG program is not needed, the Enrollee must provide justification for why it is not needed. If FOG is found to be a problem, the Enrollee must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. This plan shall include the following as appropriate:
- (a) An implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG;
  - (b) A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area;
  - (c) The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG;
  - (d) Requirements to install grease removal devices (such as traps or interceptors) design standards for the removal devices, maintenance requirements, BMP requirements, record keeping and reporting requirements;
  - (e) Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the FOG ordinance;
  - (f) An identification of sanitary sewer system sections subject to FOG blockages and establish a cleaning maintenance schedule for each section; and
  - (g) Development and implementation of source control measures, for all sources of FOG discharged to the sanitary sewer system, for each section identified in (f) above.

### 2.7.2 Things to Think About

The SSS WDR allows an Enrollee to not develop a FOG Control Program, but only if they have evaluated their service area and determined a FOG Control Program is not needed. In this case, the Enrollee must provide justification why a FOG Control Program is not needed.

When a FOG Control Program is needed, these programs may require references to lengthy documents and documents that change periodically. In this case, these documents can be

referenced in the SSMP with a link provided. The benefit providing references is reducing the size of the SSMP and eliminating the possibility of including information that is no longer valid. References are easier to modify when a change is made in the referenced document. An example of this would be a FOG Ordinance, which may be long and may be periodically modified. Modifications to references should be recorded in the SSMP Change Log.

When developing a FOG Control Program, an Enrollee should consider incorporation of each listed item in its SSMP as described below. Please note that not all of these items need to be included in the Enrollee's FOG Control Program. Only those elements that are appropriate need to be addressed. Enrollees will need to document in its SSMP why any listed item is not appropriate.

- a) **Outreach** - Develop an outreach program for residential and commercial customers to keep FOG out of the sanitary sewer. Describe the types of outreach methods used, such as:
  - Direct mail or utility bill inserts
  - Radio or newspaper ads
  - Use of internet and social media
  - Door hangers
  - Participation in community events
  - Consider translating messages into different languages to reflect the diversity of your community
  
- b) **Disposal method** - Describe the FOG disposal method and prepare a FOG disposal list to include:
  - Location of local FOG disposal facilities, including address and phone numbers for wastewater treatment facilities and waste drop off locations that may accept FOG
  - Name and phone number of licensed grease haulers
  - Location of the facilities that use FOG for energy recovery
  
- c) **Legal authority** - This section should provide the legal authority to regulate FOG discharges to the sewer system. The legal authority could be a standalone Sewer Use Ordinance, a provision in a municipal code, or a permit. When writing or adopting an ordinance, keep in mind that the document should include clearly defined legal requirements and should be easily enforced. Some model ordinances are published on CalFOG.org website - <http://www.calfog.org/Programs.html>. A typical ordinance may include the following provisions:
  - General prohibition
  - Prohibition against discharge of FOG to the sewer
  - Prohibition against discharge of FOG to a storm drain or any surface water

- Definition of food service establishments (“FSEs”), including commercial, industrial and institutions
  - Discharge standards, including the allowable discharge concentration limit for fat laden waste streams, temperature, pH, and other pollutant,
  - Requirements for installation of grease removal devices (“GRD”) with design standards or a reference to building/plumbing codes
  - Requirements for operation of GRD
  - Maintenance and record keeping requirements for GRD operators
  - Facility inspection program
  - Reporting requirements
  - Enforcement provisions, including administrative order, civil and criminal penalties
  - Implementation of BMPs for FSEs
- d) **Requirements to Install GRDs** - Acceptable FOG handling and disposal practices may be developed and written as part of a FOG Control Program. FOG handling practices may include the installation of a GRD or implementation of BMPs, which are described as follows:
- i) If installation of a GRD is required, the following items may be considered as part of the installation plan:
    - Determine type of device (tarps, interceptor, or mechanical grease removal unit)
    - Create design standards including size, water temperature, location, and access points for sampling and inspection. Many municipal ordinances require use of Appendix H of the Uniform Plumbing Code to size grease interceptors.
    - Specify cleaning and maintenance frequency
    - Set record keeping requirement to verify the facility’s maintenance, disposal, and billing records
    - Identify the required storage and disposal method (location of used grease containers and storm water pollution protection method if stored outside)
  - ii) BMPs are activities that if properly implemented will reduce the discharge of FOG to the sewer. Many sewer agencies have developed BMPs that are easily available on the internet so there is no need to create new programs from scratch.
- e) **Inspection and Enforcement Authority** - A FOG plan may develop a comprehensive inspection and enforcement program to include the following:
- Resources (staff, training, collection system map, etc.)
  - List of FSEs
  - List of FSEs with problems, ranked based on the severity of the problem(s)
  - Inspection checklist to aid inspectors when reviewing FSEs
  - Inspection frequency and schedule
  - Location of FOG hot spots in local sewers
  - Training for staff and FSEs
  - Enforcement authority as described in the Legal Authority document (permit, ordinance)



- f) **Collection System Maintenance** - Maintenance of the collection system for removing FOG to prevent sewer blockages or SSOs is part of the “more frequent cleaning and maintenance targeted at known problem areas” described in **Section 2.4 (iv) Operation and Maintenance Program (b)**, which may make some of this information redundant.

The FOG maintenance program may include the following:

- Characterization of the sources of FOG
  - Identification of the problem areas (Hot Spots), which may include reviewing the historical cleaning data, blockage reports, or field observations
  - Determining the cause of FOG-related blockages. Review other compounding factors, such as roots, rags, or insufficient pipe slope that may exacerbate a FOG problem.
  - Developing a schedule using a severity index for the areas with heavy FOG to prioritize areas for cleaning. This prioritization may also consider FOG concentration, age of pipes, roots, or other field conditions.
  - Defining the effective most methods of cleaning on the work orders should optimize results of cleaning efforts.
  - Consider incorporating a QA/QC Plan in the cleaning schedule to ensure desired results are achieved. The plan may include random follow up inspections of some of the lines that have been cleaned, using CCTV.
  - Conducting post SSO/Stoppage review – The use of CCTV and data review after blockages can be useful in determining future preventive efforts.
  - Consider utilizing predictive maintenance and other collection system monitoring methods, such as use of remote monitoring devices, flow meters, or scheduled manhole/pump station inspections.
- g) **Source Control Program** - Source control can be a cost effective method of minimizing or preventing FOG from entering a sanitary sewer collection system. Source control may be achieved by installation of a GRD at a FSE, or by implementation of a public outreach program for both commercial and residential customers. The source control program could include the following:
- A survey program to identify all FSEs. The survey methodology should be designed to identify all types of food service and grease generating facilities (schools, hospitals, food kitchens, creameries, butcher shops, grocers, restaurants, food trucks, etc.).
  - Identification of problem areas, which may include reviewing historical cleaning data, blockage reports, or field observations.
  - Public outreach programs for education of the customers on wastewater related issues, including FOG disposal and potential impacts of improper disposal. A public outreach program can include educational materials, including BMPs for both residential and commercial customers, focusing on problem areas first. Public outreach can also describe storm water pollution prevention methods as it relates to FOG handling, storage, transportation and disposal.

- Ordinance or engineering specifications for installation of GRDs in conformance with plumbing and building codes
- Inspection programs to ensure FSEs comply with the regulatory requirements and keep their treatment devices in good working condition.
- Documentation and tracking system to ensure the program's elements and procedures are followed and progress data can be evaluated to determine the success of the FOG program. Some agencies have had good results using a manifest system that is maintained by the FSE showing proper disposal of the FOG hauled away.

### 2.7.3 Helpful Hints

The following are helpful ideas that can be considered in planning and implementing a FOG program:

#### a) Outreach

- Define the problems associated with FOG in sewer lines, which may include the potential costs to the environment and the community
- Develop targeted outreach as appropriate for each element or audience
- Customize your outreach program to fit your community
- Include the stakeholders in your FOG program development process
- Produce simple and eye catching messages (posters, handouts or video)
- Incorporate graphics in outreach materials
- Include examples (e.g., does and don'ts)
- If necessary and economically feasible, obtain help from a graphic designer
- Consider seasonal outreach (Thanksgiving and holidays) when FOG discharge more likely

#### b) Disposal method

- Define the types of FOG (liquid, solid, yellow vs. brown grease)
- Introduce dry method of removing grease from plates and utensils
- Include spill clean-up and disposal methods (use of dry absorbent materials to clean spill)
- Create a list of grease haulers in the area (to avoid the appearance of bias or a conflict of interest, it would be best to include more than one name on the list)
- Create a list of local disposal sites
- List the facilities that recycle oil or FOG for energy related use (biodiesel)

#### c) Legal authority

- Determine if your agency's legal documents (municipal code, permit or ordinance) contain provisions that address FOG issues
- Create a draft ordinance in consultation with your legal team
- Consult with other agencies in your jurisdiction, including the health department

- Review the existing building/plumbing code and consult with the building officials in your jurisdiction
- Ask for input from the local restaurant association
- Conduct public meetings to receive input from stakeholders
- Issue a draft ordinance for public comments
- Prepare a summary report for approval by the board of directors or council members
- Adopt the final legal documents

#### **h) Requirements to Install GRDs**

- Review the existing requirements in building and plumbing codes
- Consult with local health department officials and become familiar with the requirements
- Determine the available types of GRDs (gravity interceptor, under counter traps, floor traps, or mechanical device) as appropriate for grease laden waste streams.
- Create handouts to assist architects, installers, and the operators with selection and maintenance of the GRD. If possible, consider including a list of GRD manufacturers in any educational handouts provided.
- Coordinate with building/plumbing inspectors to conduct an inspection of the GRD during the installation
- Develop procedures for inspection of the units during the installation. Make sure the plumbing fixtures are appropriately connected to the GRD (avoid connecting garbage disposals to a GRD)
- Develop cleaning and maintenance schedule for the users
- Develop sampling and inspection schedule for inspectors
- Develop inspection checklist and filing system for each facility
- Develop training program for the FSE staff and inspectors
- Develop BMPs that cover all aspects of FOG reduction practices at FSEs. The BMPs may include items such as: dry wiping pots, pans or plates; use of strainers in the sinks to catch scraps; temperature control; GRD maintenance; signage for spill prevention and cleanup methods; grease handling; FOG storage; and storm water protection practices.

#### **i) Inspection and Enforcement Authority**

- Identify resources and develop organization chart or checklist with assigned tasks
- Assign responsibilities to staff members
- Develop a training program for field inspectors and office staff. Training should include communication skills, right of entry, GRD specifications, sampling methods, plumbing codes, enforcement procedures, data entry, and record keeping
- Develop an inspection check list to cover BMPs, GRD maintenance records, and storage and disposal practices

- Include education and training of facilities' owners and operators in the inspection protocol
- Prepare discussion points as a part of inspection visits. Discussion points may include recommendation for water conservation, costs associated with sewer blockage and overflows, health and safety issues, and customers' perception for maintaining a clean and environmentally friendly facility
- Create a template for notices of violation or other enforcement documents (incorporate references to municipal codes or permit conditions)

**d) Collection System Maintenance**

- Is the FOG program administered by the collection system operator? If not, consider:
  - Establishing a communication procedure between the two entities
  - Setting up a regular, recurring meeting to discuss field and operation issues with inspectors and engineering group
  - Develop a cross training program for the operators and inspectors
  - Map the location of FSEs and share that with collection maintenance team
- Communicate with the field crews to develop a Hot Spot list
- Review Hot Spot list periodically and revise as necessary
- Review the records of FOG-related blockages and SSOs
- Conduct QA/QC on the cleaned lines to ensure the effectiveness of the line cleaning method used

**e) Source Control Program**

- Conduct a survey to identify all FOG generating facilities. Potential resources include searching the web, yellow pages, and reviewing building, fire and industrial waste permits. If necessary, use direct mail or conduct a drive-by or walking survey.
- Evaluate the sources of grease at each facility and develop source control measures tailored to each source where feasible. Often, the major sources of grease in a commercial kitchen include 3 compartment sinks, pre-rinse sinks, dishwashers, and floor drains.
- Identify problem areas of the collection system by talking to the collection system maintenance team.

## **2.7.4 Monitoring and Reporting Plan Requirements**

The September 2013 MRP did not change any of the requirements of the previously adopted SSS WDR for this element.

## **2.7.5 Issues Noted From Inspections and Enforcement Activities**

- a) Infrequent number of FSE inspections
- b) Inadequate maps of FSEs or Hot Spots
- c) Inadequate amount of communication between the FOG inspectors and the field crew

- d) Lack of follow up procedures to investigate FOG related incidents of blockages or SSOs
- e) Infrequent number of surveys to locate FSEs (cafeterias, food courts, and commercial kitchens were not identified)
- f) Insufficient resources to conduct adequate inspections
- g) Lack of staff training
- h) Inadequate documentation and filing system
- i) Inconsistencies in data entry, including discrepancies between hard copies and electronic data
- j) Recommendation to develop multi-lingual outreach and BMP instructions
- k) Recommendation to identify Hot Spots on a map (or in GIS)

## 2.7.6 References

National Pretreatment **Program** - Controlling Fats, Oils, and Grease - <http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P10099TU.TXT>

**CWEA Pretreatment Document** - [http://www.cwea.org/nc/Pretreatment\\_fog.pdf](http://www.cwea.org/nc/Pretreatment_fog.pdf)

**EBMUD FOG FAQ** - <https://www.ebmud.com/water-and-wastewater/pollution-prevention/fats-oils-and-grease-disposal-recycling-faq>

FOG control Ordinance, San Francisco Water and Power, [Category 1, 2 and 3 Fats, Oils and Grease \(FOG\) Dischargers - http://sfwater.org/modules/showdocument.aspx?documentid=274](http://sfwater.org/modules/showdocument.aspx?documentid=274)

## 2.8 Element 8 - System Evaluation and Capacity Assurance Plan

### 2.8.1 Requirements

- D.13.(viii) **System Evaluation and Capacity Assurance Plan:** The Enrollee shall prepare and implement a capital improvement plan (CIP) that will provide hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event. At a minimum, the plan must include:
- (a) Evaluation: Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs that escape from the system) associated with conditions similar to those causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events;
  - (b) Design Criteria: Where design criteria do not exist or are deficient, undertake the evaluation identified in “a” above to establish appropriate design criteria; and
  - (c) Capacity Enhancement Measures: The steps needed to establish a short- and long-term capital improvement plan (CIP) to address identified hydraulic deficiencies including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.
  - (d) Schedule: The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a-c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D. 14.

### 2.8.2 Things to Think About

In the SSMP, Enrollees must identify and discuss the means and methods used to assure that the collection system has adequate hydraulic capacity to convey dry and peak wet weather flows through the system to the ultimate disposal point without upset or discharge to the environment or private property. If no evaluation has been made to date, the audit can establish a timeline for the completion of a capacity evaluation, including the steps necessary to complete the program. In the alternative, if the Enrollee has previously determined that no capacity deficiencies exist within the collection system, the SSMP can include a discussion and review of how this determination was made and what evaluations have led the Enrollee to determine that a capacity

assurance element is not required at the current time. If the size and configuration of the system changes over time, the conclusions on capacity may need to be reviewed.

The following are considerations for review:

- (a) Evaluation Process – Describe the techniques used or that will be used to evaluate capacity in all infrastructure within the collection system that has the potential to experience or has experienced SSOs due to size deficiencies in pipes, pump stations or other appurtenances in the collection system.
- (b) Design Criteria – Describe the current infrastructure design criteria, including the selection and use of system design storm, peaking factors for pipe and pump station design, impacts of I/I on the system, and any other criteria used to project current and future flows through the collection system infrastructure.
- (c) Capacity Enhancement Measures – If deficiencies in the collection system infrastructure are discovered from the above evaluations, describe the prioritization of the capacity enhancement projects, the drivers for the capacity enhancements, and the risk that capacity enhancements present to system operations. These enhancements can be described and displayed in a table providing project titles, estimated costs, and timing for both short and long term projects.
- (d) Schedule – Once the capacity enhancement projects are defined and prioritized, an appropriate schedule for those projects is prepared and included in the Enrollee's CIP. This section can also outline a description of the CIP, including timelines for updating processes and defining a schedule for regular review and evaluation of the capacity enhancement implementation program.

Typically, capacity evaluations will be conducted during collection system master planning, especially in systems where growth is occurring. Master plans will typically establish the means and methods to assure that capacity is evaluated utilizing Enrollee or local jurisdiction's land use planning documents, such as a general plan or other growth-related evaluations. In special districts, these master planning techniques will necessarily utilize the general plans or land use decisions of the local agencies in the service area or may require development plans for all new extensions of service prepared by the engineers for the developers. These evaluations may be accomplished through flow modeling, flow monitoring in the system, historical evaluations of SSO records, and direct field observations at critical points in the system during peak wet weather flows, or other actions or activities to assess capacity.

An Enrollee should consider having established design and development criteria, especially for new developments that deal with acceptable levels of I/I, sewage generation and peaking factors for the various classes of dischargers to the system based upon acreage, square footage, or some other criteria. The planning criteria work in conjunction with Element 5, design and construction standards of the Enrollee to assure proper installation of all design elements for new and expanding systems.

If an Enrollee has prepared a collection system master plan, these plans should be reviewed and updated on a regular schedule to assure the short and long term capacity requirements identified do not need modification. Review and update schedules could be included in the SSMP and may be longer for Enrollees with little or no growth or more frequent for Enrollees with major areas of growth or infill. Enrollees experiencing slow or moderate growth may require developers to

conduct specific plans or evaluations of the areas that their projects will impact the collection system to assure that adequate capacity exists to convey the new flow loads. If these types of studies are conducted, they should be referenced in this Element.

### **2.8.3 Helpful Hints**

In many cases, field staff of the Enrollee will have experience with the system and may know of potential capacity restrictions from their many years of operating the collection system. These experiences and observations can provide an important starting point for an evaluation of capacity or for future discussions during audits and SSMP evaluations of areas that may be known to exhibit capacity concerns. It may be helpful if these observations are documented or downloaded to others when staff leave or retire. If the Enrollee observes capacity issues, these issues should be investigated and evaluated. These issues may be openly discussed and available to staff undertaking or participating in master planning for the system.

Indicators that capacity may be an issue, include:

1. Surcharging in consecutive manholes with no evidence of a stoppage downstream
2. Pumps constantly running
3. Areas with high I/I flows
4. Areas with overflows during rain events
5. High grease line in manholes

### **2.8.4 Monitoring and Reporting Plan Requirements**

All changes to this Element of the SSMP and all sections must be recorded along with the date and person responsible for the changes on the SSMP Change Log (MRP section E.3.) attached as an appendix to the SSMP.

### **2.8.5 Issues Noted From Inspections and Enforcement Activities**

The SWRCB Office of Enforcement has stated that some SSMPs have not adequately addressed both the short and long term needs for renewal and replacement of existing infrastructure in Element 4 and have not adequately addressed capacity enhancement improvements necessary to assure there are no capacity-related SSOs. The Office of Enforcement suggests that stronger narratives regarding methods of prioritization, specifics of projects, and reasonable descriptions of funding sources over time have been missing in many SSMPs.

### **2.8.6 References**

Guide for Master Planning in Delaware, Office of State Planning Coordination with assistance of Delaware's Institute for Public Administration, September 2012 -  
<http://www.stateplanning.delaware.gov/docs/MasterPlanGuide.pdf>



Wastewater Collection Systems Management MOP 6, Water Environment Federation ISBN:978-0-07-166663-3 - <http://www.wef.org/>

California Government Code Section 65403 governing special district capital improvement program development - <http://law.onecle.com/california/government/65403.html>

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## 2.9 Element 9 - Monitoring, Measurement, and Program Modifications

### 2.9.1 Requirements

D.13.(ix) **Monitoring, Measurement, and Program Modifications:** The Enrollee shall:

- (a) Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;
- (b) Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP;
- (c) Assess the success of the preventative maintenance program;
- (d) Update program elements, as appropriate, based on monitoring or performance evaluations; and
- (e) Identify and illustrate SSO trends, including: frequency, location, and volume.

### 2.9.2 Things to Think About

This Element of the SSMP should discuss how an Enrollee maintains relevant information and data related to SSMP activities, monitors the implementation of SSMP Elements, and measures the effectiveness of its SSMP Elements. A system for assessing preventive maintenance (“PM”) program effectiveness and potential modifications to program elements should be developed and identified. Meaningful data needs to be identified, obtained, and displayed to support the opinion of program effectiveness and the need to revise, or maintain, PM practices and SSMP program elements. Relevant performance indicators that indicate the success or failure to meet established goals are selected and tracked on a regular basis.

If an Enrollee has jurisdiction over any portion of sewer laterals, charts can separate the lateral spills from other SSOs. The reason for this is to normalize the data for comparison to Enrollees that do not have lateral responsibility.

### 2.9.3 Helpful Hints

Annual performance indicators may include:

- Total number of SSOs per year, including the previous 3-5 years
- SSO rate, often measured as number of SSOs/100 miles of system/year
- Number of SSOs by cause (e.g., roots, grease or FOG-related blockage, debris, line failure, capacity deficiency, storm flow exceeding design, lift station failure, or other)
- Total volume of SSOs and volume contained and returned to the system
- Number and percentage of SSOs that reached surface water

- Total volume and percentage of SSO volume that reached surface water
- Footage of main lines and percentage of system cleaned annually
- Footage of “hot spot” or high frequency cleaning compared to the total length of pipe cleaned, and percentage of system hot spot areas cleaned annually
- Footage of main lines rehabilitated or replaced annually
- Footage of main lines and percentage of system inspected by CCTV or video annually
- Annual number of FSE inspections and number of enforcement actions on FSEs
- Average SSO response and clean up time (response is time from call out to arrival, and clean-up is time from arrival to completion of immediate spill response action)

SSO trends can be tracked, and illustrated by graphs updated annually and included as part of the audits to track trends and progress. The number and rate of SSOs, total volume of SSOs, volume of SSOs reaching surface water, and breakdown of SSOs by cause may also be shown graphically and included as part of SSMP audits. Some sample monitoring and reporting tables and graphs of SSO trends along with some performance results are in the attached Appendix 2.9.7.1. This is not intended to be a requirement or to represent a complete set of tables and graphics, but is merely intended to provide examples of the types of graphs and tables that could be useful.

The Enrollee develops a system to monitor performance and results in relation to its established goals at a determined frequency. Program elements should be revised, as needed, based upon performance and the success or failure in meeting established goals. Some possible ways to perform this monitoring and program assessment include:

- Assignment of staff member(s) to review the SSMP and performance data periodically to check effectiveness
- Periodic check-ins by and with collection system staff to review program and methods effectiveness - identify potential areas for improvements
- Peer review by other collection system agencies and/or consultants

Progress reports documenting effectiveness and potential program revisions, and a summary of program activities may be prepared to document this monitoring and assessment. Program elements would be revised in accordance with assessment and documented by the “change log” mentioned in the MRP requirements below. Significant changes to the SSMP that have policy or funding implications may need approval from the Enrollee’s governing board or council.

The Enrollee may consider the use of a table in this element that shows performance indicators for tracking effectiveness of the SSMP elements. An example “SSMP Monitoring Performance Indicators” table is attached in Appendix 4.9.2.

## **2.9.4 Monitoring and Reporting Plan Requirements**

The September 2013 MRP added an additional requirement related to the program modifications issue. The 2013 MRP states: “Records documenting all changes made to the SSMP since its last

certification indicating when a subsection(s) of the SSMP was changed and/or updated and who authorized the change or update. These records shall be attached to the SSMP.”

These changes may relate to the results of the system’s performance evaluation. Other changes may be enacted by an Enrollee after an SSMP audit is performed. The changes are to be documented, whenever they are made, as described in the MRP. An Enrollee may easily keep these actions and changes documented through the use of a simple “Change Log” that may provide a brief description and date of any SSMP changes, as an appendix to the SSMP. A sample log is attached as Appendix 3.5.1 for convenience.

## **2.9.5 Issues Noted From Inspections and Enforcement Activities**

The failure to complete and provide an adequate “Monitoring, Measurement and Program Modification” SSMP Element in an Enrollee’s SSMP has been cited as a violation of the SSS WDR.

## **2.9.6 References**

SSS WDR -

[http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2006/wqo/wqo2006\\_0003.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2006/wqo/wqo2006_0003.pdf)

MRP -

[http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2013/wqo2013\\_0058exec.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2013/wqo2013_0058exec.pdf)

SSO Reduction Program Library (Previous SWRCB Inspection Reports) -

[http://www.waterboards.ca.gov/water\\_issues/programs/sso/index.shtml](http://www.waterboards.ca.gov/water_issues/programs/sso/index.shtml)

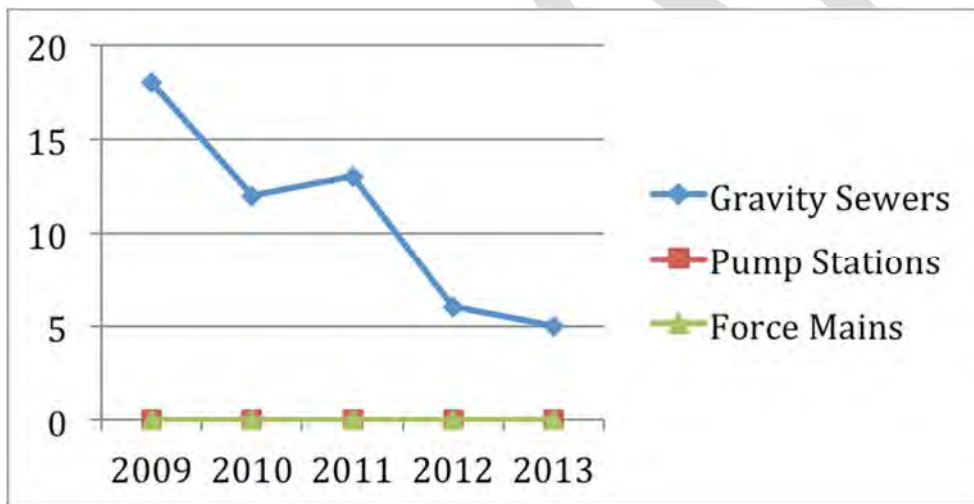
## 2.9.7 Attachments

### 2.9.7.1 Sample Monitoring and Reporting Tables and Graphics

#### Gravity Sewer, Pump Station, and Force Main SSOs by Calendar Year

CY	Gravity Sewer SSOs	Pump Station SSOs	Force Main SSOs
2009	18	0	0
2010	12	0	0
2011	13	0	0
2012	6	0	0
2013	5	0	0

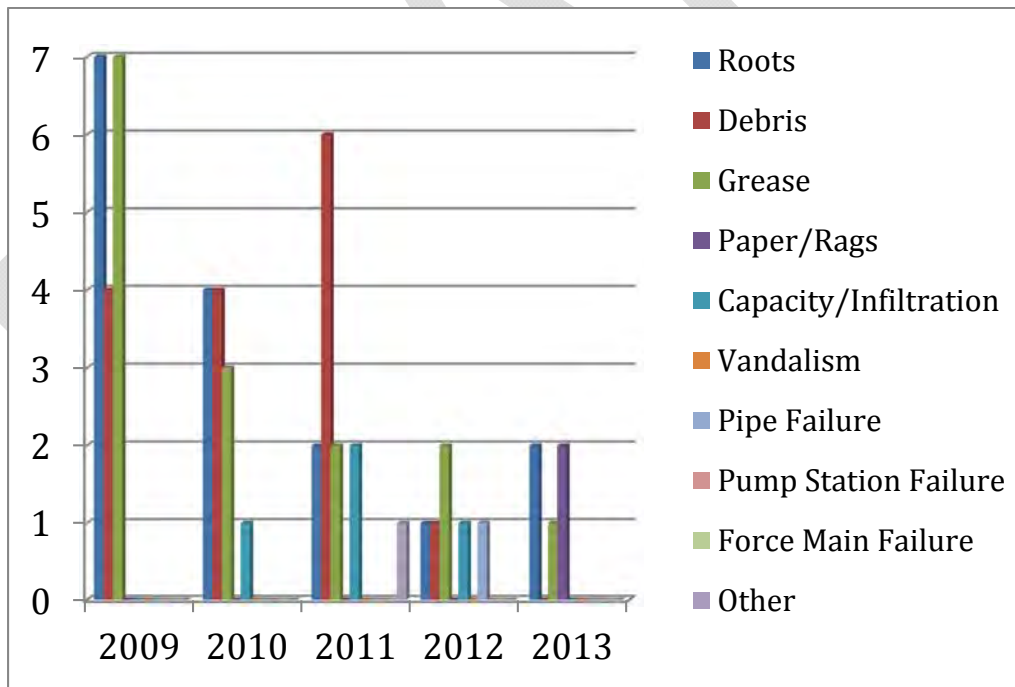
#### SSO Trends, 2009 - 2013



### SSOs by Cause, 2009 through 2013

CY	Roots	Debris	FOG	Paper /Rags	Capacity Related	Vandalism	Pipe Failure	Other
2009	7	4	7	0	0	0	0	0
2010	4	4	3	0	1	0	0	0
2011	2	6	2	0	2	0	0	1
2012	1	1	2	0	1	0	1	0
2013	2	0	1	2	0	0	0	0

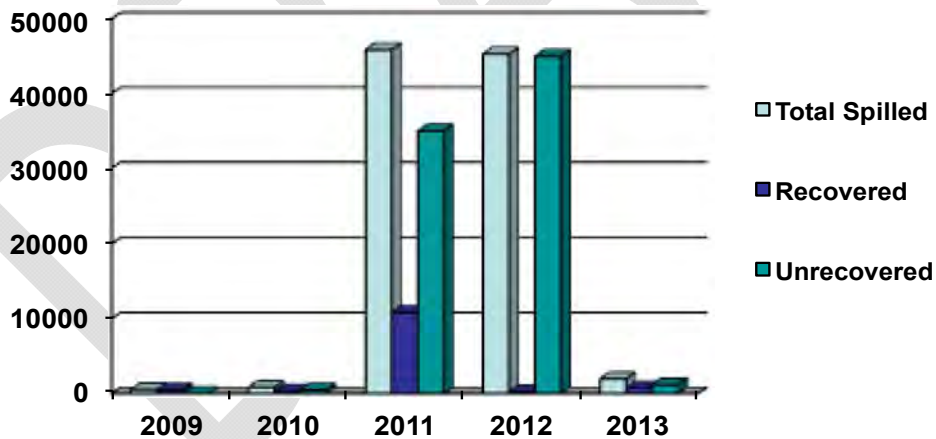
### SSOs by Cause, 2009 through 2013

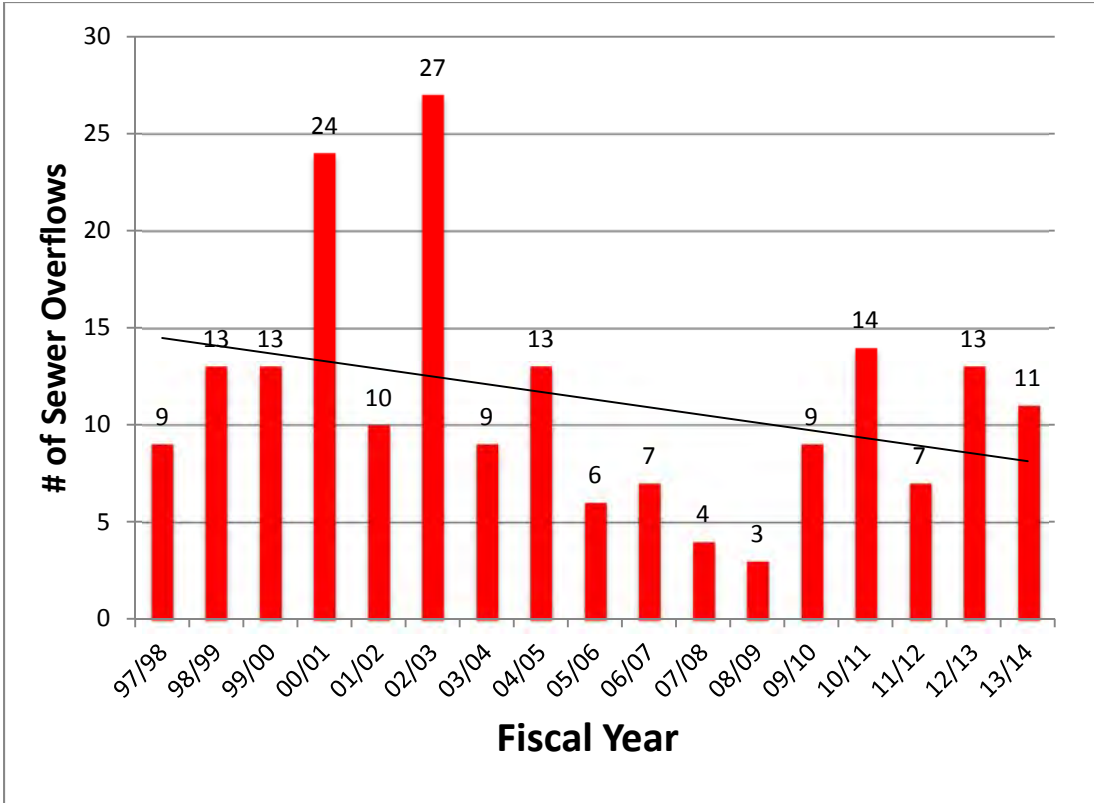


**Current Year Totals for Sewer Mains (SSO Volume, Portion Contained, and Volume to Surface Water)**

CY	Total Volume SSOs, gallons	Portion Contained and Returned to Sewers, %	Total Volume Entering Surface Water, gallons
2009	569	77%	65
2010	872	54%	375
2011	45,862	23.5%	35,000
2012	45,285	<1.0%	44,990
2013	1,980	39%	1,200

**Trend in Volume of Sewer Main Overflows, Volume Reaching Surface Water and Volume Recovered**





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### 2.9.7.2 SSMP Monitoring Performance Indicators, by SSMP Element

SSMP Element	Summary of Element Purpose	Performance Indicators for Tracking Effectiveness
Goals	Establish priorities of Enrollee and provide focus for Enrollee staff	Annual review of goals based upon results of performance evaluations.
Organization	Document organization of Enrollee staff and chain of command/communication for SSO response	Review of Organization Chart and all contact information, making any changes identified
Legal Authority	Ensure the Enrollee has sufficient legal authority to properly maintain and protect the integrity of the system	Annual review of codes and/or ordinances for revisions, including schedule for identified updates.
Operations and Maintenance Program	Minimize blockages and SSOs by properly operating and maintaining the system	<ul style="list-style-type: none"> <li>▪ Total number and volume of SSOs</li> <li>▪ Number of repeat SSOs (from same location as any previous SSO)</li> <li>▪ Number of lateral SSOs (if known for private laterals)</li> <li>▪ Number of main line SSOs</li> <li>▪ Total volume spilled</li> <li>▪ Total amount recovered</li> <li>▪ Total amount estimated to reach surface waters</li> <li>▪ Percent reaching surface water</li> <li>▪ Number of pipe failures</li> <li>▪ Total length of pipe CCTV'ed</li> <li>▪ Total length of pipe hydrocleaned</li> <li>▪ Total length of pipe repaired or replaced</li> </ul>
Design & Construction Standards	Ensure new facilities are properly designed and constructed	Annual review of new technologies and materials for collection systems assets.

<b>SSMP Element</b>	<b>Summary of Element Purpose</b>	<b>Performance Indicators for Tracking Effectiveness</b>
Overflow Emergency Response Plan (OERP)	Provide timely and effective response to SSO emergencies and comply with regulatory reporting requirements	<ul style="list-style-type: none"> <li>▪ Average response time from call to arrival</li> <li>▪ Average response time from arrival to SSO stoppage and cleanup</li> <li>▪ Percent of total SSO volume contained or returned to sewer</li> </ul>
Fats, Oils & Grease (FOG) Control	Minimize blockages and overflows due to FOG	<ul style="list-style-type: none"> <li>▪ Number of blockages due to FOG</li> <li>▪ Number of SSOs due to FOG</li> <li>▪ Number of FOG-producing facilities inspected</li> </ul>
Monitoring, Measurement, & Program Modifications	Evaluate effectiveness of SSMP, keep SSMP up-to-date, and identify necessary changes to SSMP Elements	<ul style="list-style-type: none"> <li>▪ Prepare and update performance results in Elements 4, 6 &amp; 7.</li> <li>▪ Review and update callout forms as needed.</li> <li>▪ Conduct annual review of CIWQS data.</li> </ul>
Program Audits	Formally identify SSMP effectiveness, limitations, and necessary changes on an annual basis	<ul style="list-style-type: none"> <li>▪ Date of completion of last annual audit</li> </ul>
Communication Plan	Communicate with the public and satellite agencies.	Place audit on Enrollee webpage.

## 2.10 Element 10 - SSMP Program Audits

### 2.10.1 Requirements

D.13.(x) **SSMP Program Audits** - As part of the 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.

### 2.10.2 Things to Think About

The Enrollee is required under the SSS WDR to conduct periodic internal SSMP audits at least every two (2) years starting from the original date of adoption of the SSMP by the Enrollee's governing board.

Once the audit is complete, the Enrollee must prepare an audit report. MRP Section E requires that audit reports be kept on file for a minimum of five (5) years and be made available to SWRCB or RWQCB staff upon request. These Audit Reports could be appended to the SSMP in a separate appendix.

The purpose of the audit is to evaluate the effectiveness of the SSMP and its Elements and to determine the compliance of the Enrollee with the SSMP requirements. The audit must identify any deficiencies in the SSMP and any corrective actions taken or to be taken to be in compliance with the following SSMP Elements:

1. Goal
2. Organization
3. Legal Authority
4. Operation and Maintenance Program
5. Design and Performance Provisions
6. Overflow Emergency Response Plan
7. FOG Control Program
8. SECAP
9. Monitoring, Measurement, and Program Modifications
10. SSMP Program Audits
11. Communication Program

Enrollees should refer to the appropriate sections in this Guide for the specific details on each of the above Element requirements.

The Enrollee should consider the purpose of the internal audit before conducting the evaluation. As previously stated, the core purpose of the audit is to evaluate the effectiveness of the SSMP and demonstrate compliance with the SSMP requirements. However, it may be beneficial for the Enrollee to demonstrate its successes in achieving goals or other benchmarks that the Enrollee may establish.

Some Enrollees may consider conducting additional informal evaluations of their collection systems and operations that would not be included as part of the audit. Consult with legal counsel on what information discovered during an audit needs to be a part of the Audit Report.

The SSMP audit may be used as a tool to aid the Enrollee in evaluating the performance of its system and operations. The audit may also be used to ensure the Enrollee's practices are consistent with the SSMP (including its references and SOPs). An Enrollee can utilize the audit process to conduct several other program evaluations. Examples of these evaluations include review of CIWQS system data to assure conformance with Enrollee's other records; SSO files and records contained therein for conformance with recordkeeping requirements, and completion of the latest version of the SWRCB's Collection System Questionnaire annually. Conducting program evaluations during the audit process can aid the Enrollee in preparing for a field inspection or locating needed information and responding to a SWRCB or RWQCB request for information in a timely manner.

The SSS WDR requires an SSMP audit report to be developed. Enrollees may want to consult with legal counsel to determine what information resulting from the internal audit evaluation is confidential and how the results of that evaluation should be presented in the SSMP audit report. Because Section J of the SSS WDR states that all reports shall be certified by the LRO, the Enrollee should consider this requirement in relation to the audit report. These audit reports can also be attached as an Appendix to the SSMP or be easily locatable on the Enrollee's website.

SWRCB and RWQCB staff utilize SSMP audit reports during inspections to determine compliance with the SSS WDR, the adequacy of the system operations and management, and the level of effort taken by the Enrollee in reducing SSOs. They also use this information to prioritize which Enrollees they may inspect, to identify key areas to focus on for enforcement actions, and to determine the need for future regulatory changes. How the information is conveyed in the audit report may affect the level of scrutiny the Enrollee receives.

### **2.10.3 Helpful Hints**

The Enrollee should review the SSMP requirements prior to conducting the audit. Developing a checklist specific to the Enrollee's system and SSMP program may be beneficial in conducting the audit. Some Enrollees also find it helpful to review or use the SWRCB Sewer Collection System Pre-Inspection Questionnaire as a resource during the internal audit; however, this is not

a requirement and parts of the Pre-Inspection Questionnaire may not be required in the SSS WDR.

The initial steps in conducting the audit consist of reviewing the current SSMP for compliance with the SSS WDR and evaluating whether the measures outlined in the SSMP have been implemented. This evaluation may also include a review of operations and management practices to determine how closely the Enrollee is following the intent of its SSMP.

In order to demonstrate the effectiveness of the SSMP program, Enrollees may want to consider establishing a variety of performance indicators that could be narrative and/or metric-based. For instance, the indicators could include:

- Describing the Enrollee’s goals, strategies, and successes in improving system performance, reducing SSOs, and achieving the goal(s) outlined in the SSMP;
- Identifying areas of the SSMP that need to be updated and the associated actions necessary to complete the updates; or
- Establishing metrics or benchmarks that help demonstrate SSMP effectiveness. For example, using the information reported in CIWQS to establish performance as compared to metrics and benchmarks may assist in showing improvement and effectiveness of the program over time.

Enrollees should evaluate the information collected for Element 9 of the SSMP, since much of that information may be used in preparing the audit and establishing the performance indicators.

The Enrollee should only select performance indicators that are appropriate for their operations and management of the system and the SSMP program. However, before a performance goal is established, Enrollees should consider the cost of implementing changes that may be necessary to their system operations to meet that goal and whether sufficient resources (staff, equipment, and funding) will be available.

It is important that, if an action is identified in the SSMP or the SSMP audit report, the Enrollee follows through and implements the identified actions. In other words, Enrollees should not state that they plan to do something and then not do it.

Enrollees may want to identify unusual circumstances or data anomalies in the SSMP audit report that are outside normal operating conditions, may have been “unavoidable,” or may “skew” the data or performance indicators.

Enrollees may want to document any changes in methodologies, baselines or reporting requirements and how these changes may affect data and performance indicators measured or compared to previous years.

Other items that are often overlooked and should be verified and documented during the SSMP audit include Enrollee certification of SSMP, governing board approval of SSMP, and updating the SSMP at least every five (5) years.

## **2.10.4 Monitoring and Reporting Plan Requirements**

The September 2013 MRP did not change any of the requirements of the previously adopted SSS WDR for this element.

## **2.10.5 Issues Noted From Inspections or Enforcement Activities**

The following were found to be areas of non-compliance relating to the conducting of internal SSMP audits noted during SWRCB and RWQCB inspections:

- Failure to complete an SSMP audit within the required timeframes
- Failure to certify SSMP elements within the required timeframes
- Failure to evaluate the effectiveness of the SSMP or the effectiveness of the SSMP was not completely or adequately measured
- Complete failure to evaluate SSMP compliance or SSMP compliance was not completely or adequately evaluated
- Failure to implement the SSMP as required in the SSS WDR
- Failure to comply with mandatory record keeping requirements

Note: SWRCB and RWQCB staffs are requesting to review SSMP audit reports and the Enrollee's SECAP during inspections. SSMP adoption and certification documents should also be readily available during inspections and can be included in the SSMP documents.

## **2.10.6 References**

SSS WDR -

[http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2006/wqo/wqo2006\\_0003.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2006/wqo/wqo2006_0003.pdf)

Enrollee's Guide to the SSO Database (Dischargers User Guide), Section 3.0 Frequently Asked Questions and Section 7.1 Pre-Inspection Questionnaire -

[http://www.waterboards.ca.gov/water\\_issues/programs/sso/docs/discharger\\_workbook.pdf](http://www.waterboards.ca.gov/water_issues/programs/sso/docs/discharger_workbook.pdf)

SSMP Self Audits Presentation, SWRCB and BACWA -

[http://bacwa.org/Portals/0/BACWA\\_SSMP%20Audits\\_OE\\_ppt-12-08-11.pdf](http://bacwa.org/Portals/0/BACWA_SSMP%20Audits_OE_ppt-12-08-11.pdf)

Biennial SSMP Audit Report Template, BACWA Website -

<http://bacwa.org/Portals/0/Committees/CollectionSystems/Library/SSMP%20Audit%20Report%20Template%205-26-2014.pdf>

## 2.11 Element 11 - Communication Program

### 2.11.1 Requirements

D.13.(xi) **Communication Program.** The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the Enrollee as the program is developed and implemented.

The Enrollee shall also create a plan of communication with systems that are tributary and/or satellite to the Enrollee's sanitary sewer system.

As with all SSS WDR requirements, this Element applies to wastewater collection systems that are larger than 1 mile in length.

### 2.11.2 Things to Think About

Numerous ways exist to communicate with the public, including the following that could be considered by Enrollees:

- Quarterly newsletters
- Enrollee website
- Board/City Council Meetings
- Flyers in billings to satellite agencies
- Flyers in billings to the ratepayers/customers
- During Public Outreach events
- During crew interactions with the public
- Creating an Advisory Council for citizens to share information with the public.

While some large Enrollees have communications officers, this is not required. However, a person should be designated as the Enrollee's spokesperson when media inquiries are made, particularly in times of emergency (e.g., during a large SSO event).

### 2.11.3 Helpful Hints

Enrollees should consider budgeting for newsletters, websites, flyers, and additional public outreach training. The SSS WDR does not define "regular basis" in relation to how often communications should be made, but this would likely be dictated, at least in part, by budget restrictions. What is a regular basis for one Enrollee would not necessarily be the same as another Enrollee.

Public notification and an opportunity for public input into the process should be considered when the Enrollee adopts or modifies its SSMP. This would provide the public with a means to provide input in the development and implementation of the Enrollee's program.

Enrollees should also consider providing training to specific employees to ensure that they have extensive knowledge of all elements of the SSMP and are able to convey that information to the public and satellite agencies.

The Enrollee spokesperson should be trained or know how to properly and effectively interact with the public and the media, particularly when emergencies arise, such as a large SSO event. This training should take place prior to such an event occurring so that mistakes are not made and the message is clear.

Enrollees with satellite agencies should consider establishing communications programs with those satellite agencies and should consider communicating regularly with those agencies. If desired, Enrollees may document any meetings through agendas and minutes of these meetings.

### **2.11.4 Monitoring and Reporting Plan Requirements**

The September 2013 MRP did not change any of the requirements of the previously adopted SSS WDR for this Element.

### **2.11.5 Issues Noted From Inspections or Enforcement**

At this point, Notice of Violations have not been issued for violations of the Communications Program.

### **2.11.6 References**

SSS WDR -

[http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2006/wqo/wqo2006\\_0003.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2006/wqo/wqo2006_0003.pdf)

### **2.11.7 Attachments**

#### **Attachment 2.11.7-1 Sample Communication Documents**

Substantial information is available on the Internet illustrating good communication between wastewater agencies and the public. Several agency websites have examples of newsletters, flyers, reports, and other helpful information that can aid an agency while revising their communication plan.

Samples of successful communication documents with the public can be found on the SWRCB website within the SSO Reduction Program Library:

[http://www.swrcb.ca.gov/water\\_issues/programs/sso/sso\\_reduct\\_lib.shtml](http://www.swrcb.ca.gov/water_issues/programs/sso/sso_reduct_lib.shtml)



## 3.0 SSMP Appendices

### 3.1 Requirements

MRP Section E. 3. - Records documenting all changes made to the SSMP since its last certification indicating when a subsection(s) of the SSMP was changed and/or updated and who authorized the change or update. These records shall be attached to the SSMP.

### 3.2 Helpful Hints

The MRP now requires the use of an SSMP Change Log, which must list the specific changes or updates made, the location of the changes within the SSMP, the person who authorized the change or update, and the date of the change or update. In addition, the Enrollee should consider whether to include other appendices attaching documents that are important to the adoption and reporting requirements by the SSS WDR. Some Enrollees are including two additional appendices for SSMP adoption and recertification documents and SSMP audit reports. Adding these two additional appendices to the SSMP will assure the availability of these important documents in a known location for easy accessibility. In addition, it places these important documents on the Enrollee's website or in the CIWQS system for review by elected officials, service area customers, and regulators.

Enrollees should give serious consideration to the content of any other appendices that might be appended to an SSMP. The goal is not to have every document that is used in the sewer system operation included in the SSMP. Rather these types of large documents such as standards, master plans and the like are simply referred to in the document with identification of the specific location of the referenced information, or utilizing a hyperlink that allows the large document to be added to the same page that the SSMP is placed on the Enrollee's website. These documents, while important, encumber and enlarge the SSMP unnecessarily and may be better left outside of the SSMP.

### 3.3 Monitoring and Reporting Plan Requirements

The September 9, 2013 MRP revisions require an Enrollee to provide a log of all changes made to the SSMP as stated above in Section 3.5.1.

### 3.4 Issues Noted From Previous Inspections or Enforcement Activities

The SWRCB Office of Enforcement has found that, in many cases, Enrollees are not able to identify dates of SSMP adoption, or are unable to locate the formal documents approving and adopting an SSMP. The Office of Enforcement has strongly suggested in presentations that these documents should be attached directly to the SSMP. Similar comments have been made with regard to SSMP Audit Reports prepared pursuant to Element 10. Attaching these reports directly in an appendix to the SSMP assures ease of availability if request by an interested party.

### 3.5 References

#### 3.5.1 SSMP Sample Change Log

{Insert Enrollee Name}  
Sewer System Management Plan  
Change Log

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

## 4.0 Frequently Asked Questions and Answers

### General Questions and Answers

#### **1. What does SSMP effectiveness mean?**

ANSWER: *The effectiveness of an SSMP is judged upon how well the document achieves the goals of the SSS WDR and the goals of the Enrollee. If an SSMP results in fewer SSOs, SSOs of lower volumes, faster response times, better operation and maintenance of the facilities, etc., then the SSMP will be more likely to be deemed to be effective. The Oxford Dictionary defines effectiveness as “The degree to which something is successful in producing a desired result; success.”*

#### **2. When must an Enrollee revise or update the SSMP?**

ANSWER: *An Enrollee is required to update and/or revise the SSMP at least once every five (5) years, or whenever significant changes are made to the SSMP. SSMPs are considered “living documents” and can be changed at any time. All changes should be recorded in a Change Log, but minor changes may not require recertification. The Enrollee can define what constitutes a “significant change.” Significant changes may refer to substantive modifications necessary to comply with the changes made to SSS WDR, or to meet litigation obligations related to Enrollee collection system operations. All significant changes to the SSMP and five-year updates are required to be re-certified by the governing body according to SSS WDR Section D.14.*

#### **3. When must the Enrollee’s governing body approve or recertify the SSMP?**

ANSWER: *The governing body must approve and adopt the SSMP upon original completion of the document. Thereafter, the SSMP must be re-certified at least every 5 years following original adoption date or whenever significant changes are made to the SSMP.*

#### **4. How should reference materials be used in the SSMP?**

ANSWER: *All materials referred to in an SSMP should specifically point to the specific location in the reference materials where the cited information will be found. The SSS WDR does not require that references become additions to the SSMP, especially if they include very large documents, such as standard plans and specifications, ordinances, master plans, specific plans or modeling reports. These types of document should be referred to only, but then placed on the Enrollee’s website with hyperlinks or copies of the actual reference materials.*

#### **5. What must be done with the SSMP once approved or recertified by the governing body?**

ANSWER: *Once formal adoption or re-certification by the governing board occurs, the SSMP must be placed (along with all references in the SSMP) on the Enrollee’s website. That website*

*must be reported to the CIWQS system along with the formal adoption document approved by the governing board. If the Enrollee chooses not to place the document on the website or if no website is available, the SSMP and all reference documents must be submitted electronically to the SWRCB, Division of Water Quality, Attn: SSO Program Manager 1001 I Street, 15<sup>th</sup> Floor, Sacramento, CA 95814 within 30 days of adoption or re-certification.*

**6. Does the SSS WDR contain the only requirements that an Enrollee must meet?**

*ANSWER: No, although not encouraged by the SWRCB, some RWQCBs have imposed additional requirements on collection system agencies on top of those included in the SSS WDR. These requirements are generally more restrictive or require actions of an Enrollee beyond those in the SSS WDR. Currently, several regions expect water quality monitoring for SSOs reaching waters for spills less than 50,000 gallons. The San Diego RWQCB (Region 9) requires all known private sewer lateral discharges to be reported in the CIWQS system. Other RWQCBs may have other requirements and the Enrollee should make sure that the local RWQCB does not impose additional requirements beyond those contained in the SSS WDR.*

**7. How is an SSMP recertified? When must it be recertified?**

*ANSWER: The SSMP must be re-certified by the governing board of the Enrollee every five (5) years following original adoption or when significant changes to any Element of the document are made.*

**8. What documents should be appended to the SSMP?**

*ANSWER: SSMP Change Logs are required. The other suggested appendices, which are not required by the SSS WDR and the MRP, are:*

- a. SSMP Adoption Documents*
- b. SSMP Audit Reports*

Element 10 – SSMP Audits

**9. What is an SSMP audit?**

*ANSWER: A thorough review of each of the Elements of the SSMP to determine if the Enrollee is complying with the requirements of the SSS WDR and to identify any deficiencies found along with actions needed to correct or enhance the Enrollee's operations. This audit must result in a formal written report of the findings that are then appended to the SSMP. Consultation with legal counsel is advised to determine scope of the audit and the information included therein.*

**10. Why must an Enrollee conduct audits of the SSMP?**

ANSWER: *The SSS WDR at Section D.13.(x) requires that Enrollees regularly conduct a review of the SSMP to assure that program performance results in effective implementation of and compliance with the requirements in each of the Elements of the SSMP. The audit must identify and address any deficiencies identified. Audits must be appropriate to the size of the Enrollee and must be conducted no less frequently than every two (2) years.*

**11. When must the audit be prepared?**

ANSWER: *All audits must be prepared at least every two (2) years following the date of formal adoption by the governing board.*

**12. Who should conduct the audit of the SSMP?**

ANSWER: *There are no specific requirements for who should conduct an SSMP audit. Audits may be conducted internally by members of the management team overseeing the collection system, Enrollee senior management, or a team of both. Alternatively, outside consultants, contractors, or even other sewer agency personnel in the local area may be tasked with or asked to conduct audits. Whoever conducts the audit should have familiarity with the SSS WDR requirements and basic collection system operations and maintenance processes and procedures. Better audits may result if a small team of the above professionals are used to conduct the audit. The Enrollee may wish to have different levels of audit, which could be based upon the time since last audit or factors such as whether the audit will result in major revisions to the SSMP.*

**13. What happens if an Enrollee does not conduct an SSMP audit?**

ANSWER: *The SWRCB and the local RWQCB have jurisdiction over the SSS WDR compliance and can take appropriate enforcement actions against Enrollees that ignore or fail to comply with the SSS WDR. These enforcement actions range from informal to formal actions that could require an Enrollee to simply provide the missed information all the way to formal hearings to impose administrative civil liability penalties for failure to comply with the SSS WDR, including the audit requirements. These formal actions are outlined in Water Code Sections 13268, 13323 and 13350. If the failure to conduct an audit (or otherwise implement the SSMP) results in SSOs that reach waters of the United States, the Enrollee may be subjected to USEPA enforcement or a citizen suit under the Clean Water Act for unpermitted discharges to waters of the United States.*

**14. Must audits be presented to the governing board of the Enrollee upon completion?**

*ANSWER: All audit reports that are prepared and appended to the SSMP are not specifically required to be presented to the governing board for review and approval unless they result in modifications to the SSMP that require approval. However, these audits should be certified by the LRO upon completion. Enrollees may also provide the public and the governing body with either the audit or a regular (annual or biannual) report of the performance results of the collection system operations. These reports keep the public and governing board aware of the collection system operations and the successes or corrections necessary for a compliant collection system operation. Enhanced public awareness of collection system operations will aid the Enrollee when enforcement actions or significant events occur that require the Enrollee to discuss a response and can assist in assuring the public that the Enrollee is providing the services that the public desires and pays for through their sewer rates.*

**15. How is a revision to or recertification of an SSMP different than an audit?**

*ANSWER: An SSMP revision is a major change to the SSMP or an Element of the SSMP. In addition, every five (5) years from the original governing board adoption, the Enrollee must completely evaluate the entire SSMP for changes that would further the implementation of the goals of the Enrollee and enhance compliance and effectiveness of the Enrollee's operation, maintenance and emergency response with the elements of the SSS WDR. This 5-year recertification process is required to be approved by the governing board even if no changes to the SSMP are proposed. It is recommended that any actions of the governing board be done by resolution.*