

ELEMENT 9 - MONITORING, MEASUREMENT & PROGRAM MODIFICATIONS

The City monitors the implementation of the SSMP elements in order to measure the effectiveness of the City’s SSMP program in reducing SSOs. The manner in which each SSMP element is monitored and evaluated and the schedule with which the City completes this monitoring and evaluation is described in this SSMP Element.

9.1 Regulatory Requirements

WDR Order No. 2006-0003-DWQ Section D.13(ix) states:

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.

9.2 Establishing and Prioritizing SSMP Activities [WDR D.13(ix)(a)]

Table 9-1 outlines the relevant information maintained by the City to establish and prioritize appropriate SSMP activities:

Table 9-1: SSMP Implementation Management

SSMP Element	SSMP Information
1. Goal	This SSMP Element contains the City’s goals for the operation, maintenance, and management of the sanitary sewer collection system, which provide focus to help reduce SSOs and mitigate SSOs that do occur.
2. Organization	A table containing names, job titles, roles, responsibilities, and contact information is contained in this SSMP Element, which allows the public, staff, and regulators to directly contact the person most knowledgeable for each aspect of the SSMP Program. An organization chart shows lines of authority.
3. Legal Authority	Appendices to this SSMP Element contain the complete City Municipal Code and MRWPCA Ordinance cited.

SSMP Element	SSMP Information
4. Operation and Maintenance Program	Appendices to this SSMP Element thoroughly document the sanitary sewer system operation and maintenance activities, which are utilized to develop the City's Rehabilitation and Replacement Plan. Appendices include maps, work orders, iWorQ reports, training records, equipment and replacement part inventories, and the CIP and associated funding mechanisms.
5. Design and Performance Provisions	Appendices to this SSMP Element include the City of Pacific Grove Standard Details for Street Improvements and will include a copy of sewer collection system design and construction standards and specifications upon their completion.
6. Overflow Emergency Response Plan	Appendices to this SSMP Element include notification, response, and emergency operations procedures, training records, and response and mitigation programs.
7. FOG Control Program	Annual reports generated by MRWPCA documenting FOG inspection results and enforcement actions will be included as appendices to Element 7 – FOG Control Program and Element 9 – Monitoring, Measurement, and Program Modifications.
8. System Evaluation and Capacity Assurance Plan	This SSMP Element contains the hydraulic analyses and evaluation of the City's collection system and provides the 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. A schedule for the completion of the Sewer Collection System Management Plan, which will include the CIP, is also included in this SSMP Element.
9. Monitoring, Measurement, and Program Modifications	This SSMP Element will be updated annually with the number of SSOs that occur and their causes in a calendar year. This is the most important trend to document and the reason for the SSMP.
10. SSMP Program Audits	SSMP Audit Reports will be appended to this SSMP Element when they are generated,

	which at a minimum will be biannually beginning in June 2015.
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SSMP Element	SSMP Information
11. Communication Program	Appendices to this SSMP Element contain examples of public outreach articles, flyers and pertinent City of Pacific Grove and MRWPCA website addresses, as well as meeting agendas and minutes from meetings with stakeholders.

9.3 SSMP Implementation Monitoring [WDR D.13(ix)(b)]

The Public Works Director and Environmental Programs Manager are responsible for:

9.3.1 Element 1 – Goals

The City Environmental Programs Manager is responsible for monitoring the implementation of this SSMP Element. The City’s sanitary sewer system goals will be evaluated and progress toward meeting these goals will be measured on an annual basis by the Environmental Programs Manager, who will submit a staff report to the City Council in February of each year, which communicates the City’s progress toward achieving these goals and implementing the SSMP. Copies of these reports will be included in Appendix 9A.

9.3.2 Element 2 – Organization

The Community Development/Public Works Director is responsible for monitoring the implementation of this SSMP Element. The organization charts will be reviewed and revised annually in February of each year. The SSO response and notification process will be reviewed and revised to increase its effectiveness annually in February of each year.

9.3.3 Element 3 – Legal Authority

The Community Development/Public Works Director will receive input from the Environmental Programs Manager, Sewer Field Supervisor, and MRWPCA Source Control Supervisor on the effectiveness of the City and MRWPCA legal authorities in preventing SSOs annually in February of each year. Information gathered from this Staff will annually be sent in a memo to the City Attorney and MRWPCA legal counsel for consideration in updates to the City Municipal Code and MRWPCA Ordinance.

As of this revision to the SSMP, Revision 01, the City maintains the Legal Authorities stated by WDR Section D.13(iii) with the exception of the right to operate and maintain sewer laterals. The City does not currently own any laterals except to City-owned properties and, therefore, does not require the legal authorities to operate and maintain laterals to private properties.

9.3.4 Element 4 – Operation and Maintenance Program

The City’s Sewer Field Supervisor is responsible for monitoring the implementation of this SSMP Element, which is to be reviewed and revised annually.



The City plans to include interactive links incorporated into the City's existing GIS database to provide immediate access to sanitary sewer collection system photos, closed circuit television (CCTV) inspection videos, and the trunk system's as-built plans and construction drawings over the course of the next two years. As-built plans and construction drawings are maintained as the collection system is improved through each CIP, and this data will also be routinely integrated back into the collection system GIS database as this system is upgraded.

Furthermore, printed copies of the City's sewer atlas are used in the field for staff to highlight as part of a weekly cleaning record. This information is then entered into iWorQ as a work history record and to create future cleaning schedules. The City is planning to link and integrate this information into its GIS mapping system for easy reference and use over the course of the next two years.

Over the next 2 years, approximately 12,500 linear feet of the system is planned to be inspected. Staff anticipates identifying additional line segments to be added to this list based on routine and emergency observations in the field. Additional inspections should be included as part of interim SSMP Updates over the next 2 years. The results of these inspections will be integrated into any CIP identified in the Sewer Master Plan being conducted in 2013.

The City works with a contractor to address high maintenance areas (HMAs) caused by root intrusion and is in the process of issuing a request for proposals for a new root cleaning contract. SSMP Element 4 – Operation and Maintenance Program must be revised to include this contract once it is awarded.

SSMP Element 4 – Operation and Maintenance Program includes funding and identification of historical and current fiscal year capital projects. Future funding and identification of long term capital projects beyond this fiscal year will be provided through the Sewer Collection System Master Plan (SCSMP) and Rate Study, which are scheduled to be completed by the end of 2013 and the end of fiscal year 2013/2014, respectively, as part of the SSMP Update contracted to Wallace Group. SSMP Element 4 – Operation and Maintenance Program will need to be updated upon the completion of the SCSMP and again upon the completion of the Rate Study.

The City will develop a formal training program that incorporates future and existing operation, maintenance, and safety procedures. Annual training on all procedures and SSMP Element 4 – Operation and Maintenance Program will be conducted with City Staff and any contractors implementing portions of SSMP Element 4 – Operation and Maintenance Program. Training will be documented and tracked in iWorQ. This program will be in place by September 2013.

To meet the City's annual and future SSMP goals and address the many tasks required of this department, the City should consider hiring a minimum of 1 additional full-time maintenance staff member to conduct O&M activities. This additional staff member should complement existing staff for a minimum two year training period to ensure proper job training, familiarity with all associated job tasks, familiarity with the collection system and transfer of institutional knowledge. This additional staff would help to ensure a smooth transition in the event of staff retirement or transfer.

A formal list of critical parts and equipment for Pacific Grove pump stations should be developed, maintained, and kept on file in iWorQ with the City's existing equipment and parts inventory within 3 months of the adoption of the City's SSMP.

9.3.5 Element 5 – Design and Performance Provisions

The City of Pacific Grove contracts design services to Neill Engineers Corp. Currently, Neill Engineers Corp. creates design and construction standards and specifications specific to the projects the City undertakes, such as the individual standards and specifications created and utilized for the City's CIPs Phases 1 through 6. The City does have nine details related to the sanitary sewer system, such as a detail for a standard manhole and a detail for a sanitary sewer spot repair, included in the City of Pacific Grove Standard Details for Street Improvements.

The City should formalize and standardize or incorporate by reference a complete set of design and construction standards and specifications, which can be utilized and referenced in all of their projects.

The City has a contract for inspection services for its CIPs to the City of Seaside for fiscal years 2012-2013 and 2013-2014. The City of Pacific Grove does not have an established set of inspection standards and procedures, and needs to develop or incorporate by reference a set of inspection procedures and standards

The City plans to develop or incorporate by reference a complete set of design and construction standards and specifications and a set of inspection and testing procedures and standards for the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects by the end of 2014. The City's Community Development/Public Works Director is responsible for monitoring the implementation of this SSMP Element and will review and update these standards, specifications, and procedures annually and as changes occur.

9.3.6 Element 6 – Overflow Emergency Response Plan

The City Environmental Programs Manager is responsible for monitoring the implementation of this SSMP Element. The City's OERP, which includes emergency response procedures, will be reviewed and revised on an annual basis by the Environmental Programs Manager and Sewer Field Supervisor.

If a SSO occurs, the City's Environmental Programs Manager and Sewer Field Supervisor will evaluate the effectiveness of the OERP to determine whether any modifications need to be made to the procedures and protocol contained in the OERP and make the revisions needed to improve the effectiveness of the City's SSO response and notification processes.

9.3.7 Element 7 – FOG Control Program

The Community Development/Public Works Director and Environmental Programs Manager are responsible for monitoring the implementation of this SSMP Element and its effectiveness at reducing SSOs on an annual basis. The MRWPCA Source Control Supervisor and Inspector are responsible for meeting with the Environmental Program Manager in February of each year and presenting a report documenting the results of their annual food service establishment (FSE) inspections and joint enforcement actions with the City. This information will be included in the Staff Report the City's Environmental Programs Manager presents to the City Council in February of each year.

FOG Program changes necessitated by an increase in SSOs caused by FOG or an increase in number of FSE's in violation will be developed by MRWPCA Source Control Staff with the Environmental Programs Manager and decided upon by the Community Development/Public Works Director and City Manager.

9.3.8 Element 8 – System Evaluation and Capacity Assurance Plan

The City of Pacific Grove has hired Wallace Group to evaluate the current collection system and provide recommendations to improve the collection system to meet the existing and future conditions. The evaluation and recommendations will be included in the City's SCSMP, which Wallace Group is scheduled to be completed by the end of 2013. At that time, SSMP Element 8 – System Evaluation and Capacity Assurance Plan needs to be revised and updated to reference the City's SCSMP and include its findings and recommendations. The City will also need to develop a schedule of completion dates for all portions of the capital improvement program developed in the SCSMP.

The four sections of SSMP Element 8 – System Evaluation and Capacity Assurance Plan are: Evaluation, Design Criteria, Capacity Enhancement Measures, and Schedule. The City's Community Development/Public Works Director is responsible for reviewing and revising the Evaluation section every five years, the Design Criteria section annually, the Capacity Enhancement Measures section annually, and the Schedule section annually.

9.3.9 Element 9 – Monitoring, Measurement, and Program Modifications

The Community Development/Public Works Director and Environmental Programs Manager are responsible for the implementation of this SSMP Element, which is to be reviewed and revised annually. The review and revisions are to be documented on the revision record, which is the first page of each element. The metrics contained in this SSMP Element are important tools in the determination of what tasks and projects contained in each element are a priority from fiscal year to fiscal year.

9.3.10 Element 10 – SSMP Program Audits

The City Public Works Director or their designee is responsible for assuring the SSMP Audit is conducted and complete prior to the June 19, 2015 deadline and continuously on a two year interval following this date. SSMP Audits should be conducted with cooperation of all of the management, administrative, maintenance, and contract positions responsible for implementing specific measures in the SSMP program. When conducting the SSMP Audit, City Staff must evaluate the effectiveness of each element of the District's SSMP. A comprehensive, effective review of the District's SSMP must be documented in a SSMP Audit Report.

Upon the completion of the first SSMP Audit, which is due June 19, 2015, the City must evaluate the effectiveness of the SSMP Audit and the manner in which it was performed in this SSMP Element.

9.3.11 Element 11 – Communication Program

The City Environmental Programs Manager is responsible for the implementation of this SSMP Element, which is to be reviewed and revised annually. Revisions must include examples of public outreach articles, flyers and pertinent City of Pacific Grove and MRWPCA website addresses, as well as meeting agendas and minutes from meetings with stakeholders.

The City of Pacific Grove is a member of the MRWPCA Technical Advisory Committee, which is comprised of MRWPCA and its tributary agencies: Pacific Grove, Monterey, Del Rey Oaks, Seaside, Sand City, Fort Ord, Marina, Castroville, Moss Landing, Boronda, Salinas, and some unincorporated areas in northern Monterey County. This committee is designed to be a venue for communication and coordination between these agencies, but meetings have not occurred in several years. However, the City plans to work with MRWPCA to reinstate these meetings or to

create a new quarterly meeting between City Staff and MRWPCA Staff in order to increase coordination and communication between these agencies starting in the first quarter of fiscal year 2013/2014.

9.4 Preventative Maintenance Program Assessment [WDR D.13(ix)(b)]

The City's Preventative Maintenance Program includes CCTV inspection, cleaning, visual manhole inspection, and HMA identification and maintenance and has been successful at decreasing the amount of SSOs, which occur on an annual basis, as identified and described below in Section 9.6: SSO Trends. The improvements the City is making to its Preventative Maintenance Program are described in SSMP Element 4 – Operation and Maintenance Program and above in Section 9.3.4: Element 4 – Operation and Maintenance Program.

9.5 SSMP Updates [WDR D.13(ix)(d)]

The intention of the City is to use the SSMP for training, planning and regular maintenance of the collection system. As the document is utilized, any deficiencies or discrepancies will be corrected. Program elements will be updated based on performance evaluations, organizational, operational, and maintenance changes, new regulatory requirements, and repairs, replacements, and upgrades made to the collection system.

At a minimum, the City will review and revise the SSMP annually. The Public Works Director and/or Environmental Programs Manager are responsible for revising and maintaining the SSMP. A revision record will be maintained to track changes.

9.6 SSO Trends [WDR D.13(ix)(e)]

The trends in the City of Pacific Grove's SSOs for 2008 through 2012 are illustrated in Figure 9-1 and identified in Table 9-2. The cause categories identified in Table 9-2 are the causes available for use in the SSO Report in California Integrated Water Quality System (CIWQS). City Staff is responsible for determining which cause category is appropriate for each SSO when the SSO is reported in CIWQS.

Figure 9-1: SSO Types, Locations, and Volumes: *Exhibit illustrating the types, locations, and volumes of all SSOs will be incorporated by the end of 2013.*

Table 9-2: Number of SSOs per Indicator per Year

Indicator		2008	2009	2010	2011	2012	Total
No. of SSOs		12	5	7	3	3	30
Locations with Multiple SSOs		0	0	0	0	0	0
Volume (gal)	Volume	4735	414	1110	75	1355	7689
	Volume Recovered¹	3000	201	0	65	53	3319
	Volume Reached Surface Water	0	51	0	0	853	904
Causes	Debris	1	0	0	0	0	1
	Debris – General	2	1	2	0	0	5
	Debris – Rags	1	1	1	0	2	5
	Flow Exceeded Capacity	0	0	0	0	0	0
	FOG	2	0	1	0	0	3
	Operator Error	0	1	1	0	0	2
	Other	1	2	1	2	0	6
	Pipe Structural Problem/Failure	0	0	0	0	0	0
	Pump Station Failure	0	0	0	0	0	0
	Rainfall Exceeded Design	0	0	0	0	0	0
	Root Intrusion	5	0	0	1	1	7
Vandalism	0	0	1	0	0	1	

¹Several of SSO Reports in CIWQS include a comment under spill response activities, which state that all or a portion of the SSO was contained when the reported volume recovered was zero gallons.

Table 9-2 illustrates that the City of Pacific Grove has decreased the number of SSOs, which occur each year, and that there were no locations where SSOs were reoccurring during the last five years. The primary cause of SSOs is debris in sewer lines (a combination of the three debris categories), followed by root intrusion. The tertiary cause of SSOs, “Other”, is comprised of four (4) causes: Unknown; Debris – Rags; Debris; and contractor installed plug at a factory service connect. The inclusion of Debris – Rags and Debris being included in the causes for SSOs classified as “Other” illustrates the need for City Staff to train on the OERP annually in

order to streamline SSO reporting and SSO cause classification as discussed in Element 6 – Overflow Emergency Response Plan.

The information provided in Table 9-2 is derived from the historical SSO data provided in Tables 9-3 through 9-7. Tables 9-3 through 9-7 contain the City of Pacific Grove’s historical SSO details for each SSO record, which occurred from 2008 through 2012, respectively, and is in CIWQS.

Table 9-3: 2008 SSO History

Event ID	SSO Date	Cat.	Total Vol.	Vol. Recovered	Vol. Reached Surface Water	Failure Point	Location	Cause
763422	01/17/2008	2	75	0 ¹	0	SRV / Cleanout	1136 Balboa Ave.	Root Intrusion
763411	02/29/2008	2	50	0 ¹	0	Private Bathroom	433 Asilomar Ave.	Debris
763404	03/05/2008	1	3000	3000	0	Main: Manhole #623	623 Piedmont @ Ransford Ave.	Root Intrusion
763393	06/18/2008	2	100	0 ¹	0	Private Cleanout	448 Lighthouse Ave.	Debris - Rags
763385	08/28/2008	2	30	0 ¹	0	Private Cleanout & Grease Trap	643 Lighthouse Ave.	Other
763089	08/30/2008	2	70	0 ¹	0	Main	Hilcrest Ave. between Forest Ave. & Fountain Ave.	Debris - General
763091	08/31/2008	2	150	0 ¹	0	Main	Granite St. & Sloat Ave.	Root Intrusion
763384	09/12/2008	2	500	0	0	Manhole # 418	Laurel Ave. & Willow Ave.	FOG

Event ID	SSO Date	Cat.	Total Vol.	Vol. Recovered	Vol. Reached Surface Water	Failure Point	Location	Cause
763382	11/07/2008	2	20	0 ¹	0	Manhole #867	277 Grove Acres Ave.	Root Intrusion
763379	12/20/2008	2	30	0 ¹	0	Main: Manhole #588	1021 Hillside Ave.	Root Intrusion
763375	12/23/2008	2	350	0 ¹	0	Main	Fountain Ave. & Gibson Ave.	Debris - General
763373	12/24/2008	2	360	0	0	Main	611 Dennet St.	FOG

¹In the SSO Report in CIWQS, there is a comment under spill response activities, which states that all or a portion of the SSO was contained.

Table 9-4: 2009 SSO History

Event ID	SSO Date	Cat.	Total Vol.	Vol. Recovered	Vol. Reached Surface Water	Failure Point	Location	Cause
762957	02/24/2009	2	49	0 ¹	0	Main	12 th St. & Laurel Ave.	Operator Error
762959	10/19/2009	2	64	0 ¹	0	Private Access Cover	Congress Ave. & David Ave.	Other
762963	10/26/2009	1	200	200	50	Main: Between Manholes #502 & #503	Floor Drain in Animal Control Bldg.	Debris - Rags
762967	11/14/2009	2	100	0 ¹	0	Main: Between Manholes #929 & #928	702 Grove Ave.	Debris – General
762986	11/26/2009	2	1	1	1	Main: Between Manholes #134 & #135	Laurel & 8 th St.	Other – Unknown Blockage

¹In the SSO Report in CIWQS, there is a comment under spill response activities, which states that all or a portion of the SSO was contained.

Table 9-5: 2010 SSO History

Event ID	SSO Date	Cat.	Total Vol.	Vol. Recovered	Vol. Reached Surface Water	Failure Point	Location	Cause
762712	02/02/2010	2	150	0 ¹	0	Main	218 Locust Ave.	Debris – General
762716	03/30/2010	2	200	0 ¹	0	Main	Walnut St. & Junipero Ave.	Debris - General
762721	05/05/2010	2	50	0 ¹	0	Main	Willow St. & Laurel Ave.	Debris – Rags
762726	06/04/2010	2	300	0 ¹	0	Main	850 Lighthouse Ave.	FOG
762729	06/21/2010	2	300	0 ¹	0	Main	1006 Sunset Dr.	Other
762762	07/03/2010	2	10	0 ¹	0	Main: Manhole # 764	Lighthouse Ave. & Bayview Ave.	Operator Error
762770	12/16/2010	2	100	0 ¹	0	Main	1215 Presidio Blvd.	Vandalism

¹In the SSO Report in CIWQS, there is a comment under spill response activities, which states that all or a portion of the SSO was contained.

Table 9-6: 2011 SSO History

Event ID	SSO Date	Cat.	Total Vol.	Vol. Recovered	Vol. Reached Surface Water	Failure Point	Location	Cause
762535	02/03/2011	2	10	10	0	Main	339 17 Mile Dr.	Other
767248	06/07/2011	2	10	0 ¹	0	Main: Manhole #837	800 Asilomar Ave.	Root Intrusion
772544	10/24/2011	2	55	55	0	Main: Manhole # 865	1342 Arena Ave.	Other

¹In the SSO Report in CIWQS, there is a comment under spill response activities, which states that all or a portion of the SSO was contained.

Table 9-7: 2012 SSO History

Event ID	SSO Date	Cat.	Total Vol.	Vol. Recovered	Vol. Reached Surface Water	Failure Point	Location	Cause
776454	01/26/2012	1	55	53	53	Main: Manhole #012	Eardley Ave. & Evans Ave.	Debris – Rags
778509	03/07/2012	1	800	0 ¹	800	Main	17 Mile Dr. & Congress Ave.	Debris - Rags
788982	12/12/2012	2	500	0	0	Main	2824 Forest Hill Blvd.	Root Intrusion

¹In the SSO Report in CIWQS, there is a comment under spill response activities, which states that all or a portion of the SSO was contained.

As noted in Tables 9-3 through 9-7, several of the SSO Reports in CIWQS include a comment under spill response activities, which state that all or a portion of the SSO was contained when the reported volume recovered was zero gallons. City Staff must review these SSO records to determine whether any or all of the volume of each of these SSOs was recovered and coordinate any needed corrections with the RWQCB.

APPENDIX 9A

Annual Sanitary Sewer System Goal Evaluation Reports