



Sewer System Management Plan

2018-2019

City of
SACRAMENTO

Department of Utilities

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I. LIST OF ABBREVIATIONS/ACRONYMS

ADWF	Average Dry Weather Flow
BWF	Base Wastewater Flow
City	City of Sacramento
CCTV	Closed-Circuit Television
CIP	Capital Improvement Program
CIWQS	California Integrated Water Quality System
CMMS	Computerized Maintenance Management System
CSS	Combined Sewer System
CWEA	California Water Environment Association
CY	Calendar Year
DOU	Department of Utilities
DS	Data Submitter
ESD	Equivalent Single-Family Dwelling Unit
FOG	Fats, Oils, and Grease
FOIS	Facilities Operations Information System
FSE	Food Service Establishments
FY	Fiscal Year
GIS	Geographic Information System
GWI	Ground Water Infiltration
I/I	Inflow and Infiltration
LRO	Legally Responsible Official
MRP	Monitoring and Reporting Program
O&M	Operations and Maintenance
OES	Office of Emergency Services
PDWF	Peak Dry Weather Flow
PF	Peaking Factor
PWWF	Peak Wet Weather Flow
QA/QC	Quality Assurance/Quality Control
RDI/I	Rainfall-Dependent Inflow and Infiltration
SASD	Sacramento Area Sewer District
SCADA	Supervisory Control and Data Acquisition
SOP	Standard Operating Procedure
SRCS	Sacramento Regional County Sanitation District (Regional San)
SRWTP	Sacramento Regional Wastewater Treatment Plant
SSO	Sanitary Sewer Overflow is defined as any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from the separated sewer system including the following: <ul style="list-style-type: none">• Overflows that reach waters of the United States• Overflows that do not reach waters of the United States• Wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publicly owned portion of the sewer system
SSMP	Sewer System Management Plan
State WDRs	Statewide General Waste Discharge Requirements for Order No. 2006-0003-DWQ adopted May 2, 2006, also known as WDR
SWRCB	California State Water Resources Control Board
WDID	Waste Discharge Identification Number

II. EXECUTIVE SUMMARY

On May 2, 2006, the California State Water Resources Control Board (SWRCB) adopted Statewide General Waste Discharge Requirements (State WDRs) Order No. 2006-0003 for all publicly owned sanitary sewer collection systems. The intent of the State WDRs is to uniformly collect information on the causes and sources of sanitary sewer overflows (SSOs) to determine the full impact on public health and the environment and to provide a primary regulatory mechanism for sanitary sewer systems statewide to prevent SSOs. An SSO occurs when sewage backs up onto a public right of way and/or private property because sewer lines are blocked, clogged, or otherwise obstructed (refer to Section I List of Abbreviations/Acronyms for a more specific definition). The State WDRs require publicly owned collection systems to prevent SSOs, comply with reporting requirements, and implement a Sewer System Management Plan (SSMP). The Monitoring and Reporting Program (MRP) requirements of the State WDRs were amended in February 2008 and in September 2013. The MRP amendments include specified SSO notification, reporting, and record keeping requirements, and address compliance and enforceability of the MRP.

The City applied for coverage under the State WDRs on November 2, 2006, for the separated sewer collection system and received the Waste Discharger Identification Number (WDID) 5SSO10905. The City separated sewer collection system is shown on Figure 1 in Section III Sewer Collection System Overview and described further in Chapter 4 of this document.

As required by the State WDRs, the City began electronic reporting of sewer overflows to the State online database in September of 2007. Section IV Contact List contains a list of Legally Responsible Officers (LRO) and data submitters (DS) who are authorized to submit the required regulatory reports and subsequently certify the accuracy of the reports.

This SSMP was prepared in compliance with the State WDRs and provides a plan and schedule to properly manage, operate, and maintain the separated sanitary sewer system with the intent of reducing and preventing SSOs. Development of the initial SSMP was approved by City Council in July 2007. City Council certified compliance of the final SSMP in April 2009 and re-certified in April 2014. Copies of the City Council resolution for SSMP development and the resolution certifying compliance of the final SSMP are included in Chapter 12 of this document. The State WDRs requires that the SSMP be updated every five years and requires re-certification by City Council when significant updates are made. The SSMP five-year update was re-certified by City Council on October 15, 2019. A copy of the City Council resolution certifying compliance of the updated SSMP is also included in Chapter 12 of this document.

About This Document

This SSMP provides a general description of how the City complies with the various provisions of the State WDRs and provides references to supporting documents. Some support materials—such as large format drawings, relational databases, and

voluminous documents—may not be included in the SSMP. In these cases, a reference will be provided within the SSMP that indicates the type, owner, and location of these support materials.

III. SEWER COLLECTION SYSTEM OVERVIEW

Wastewater collection in the City of Sacramento is provided by both the City and the Sacramento Area Sewer District (SASD). SASD maintains approximately 35 percent of the public collection system within the City limits, primarily in the northwest and southeast sections of the City. The City Department of Utilities (DOU) maintains the remaining portion of the public collection system, which includes a combined sewer system (CSS) in the older central City area with a total service area of approximately 7,545 acres and approximately 276 miles of 4 to 120-inch diameter pipes. The separated sewer system, which is described in more detail below, is located primarily in the northeast, east and southwest sections of the City with a total service area of about 25,435 acres as depicted in Figure 1.

Wastewater conveyed by the City's separated sewer system (and the combined sewer system during typical operating conditions) is routed by the collection system pipes to the Sacramento Regional Wastewater Treatment Plant (SRWTP) for treatment and disposal via an interceptor system consisting of large diameter pipes and pump stations. The interceptor system and the SRWTP, located just south of the City limits, are owned and operated by independent Sacramento Regional County Sanitation District (SRCSD). A map showing the City of Sacramento and SASD service areas, and the location of SRCSD interceptor pipe within the City is presented in Figure 1.

Maintenance of DOU sewer assets in the separated sewer system is provided by two Divisions within DOU. The Wastewater and Drainage Division operates and maintains the pumping stations and the entire collection system infrastructure, which includes approximately 546 miles of gravity collection pipes, eight miles of force mains, and 14,400 manholes. The Engineering and Water Resources Division coordinates with the Wastewater and Drainage Division to design and manage all capital improvement projects related to sewer replacement and rehabilitation. Figure 1 and Tables 1 and 2 show the size category and distribution of separated gravity and force main pipes in the City service area.

Per City Code 13.08.020, when a sewer main is located in a public right-of-way or easement, City crews are required to inspect, maintain and repair only the sewer mains and associated facilities (i.e., manholes). Services or laterals are considered private from the point of connection with the main to the private property and beyond.

The separated sewer system is composed predominately of vitrified clay pipes and reinforced concrete pipes. A majority of the pipes were installed between the 1940s and the 1970s. Pipes in the older sections of the City (Basins CS351, CS352, and CS353) were constructed in the late 1800s and early 1900s and once conveyed combined wastewater. Storm drain systems were installed in the late 1950s and 1960s, effectively separating the storm drain water from the sanitary sewer in these basins. Since the 1970s, polyvinyl chloride (PVC) pipe gradually gained acceptance, and PVC pipe is now used almost exclusively as replacement pipes and in new construction.

Figure 1 – Separated Sewer System

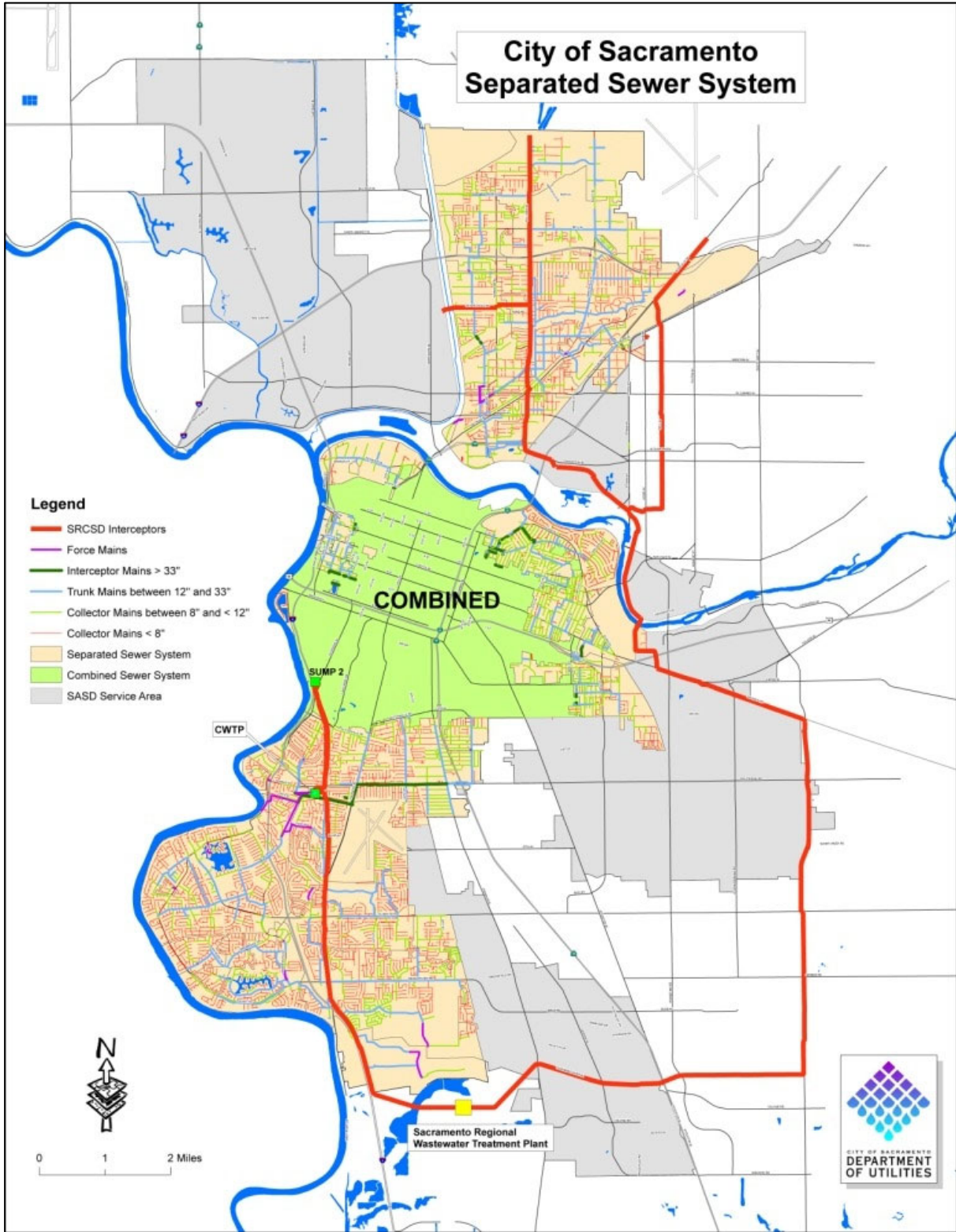


Table 1 – Separated Gravity Collection Pipe

Pipe Diameter Size Category (inch)	Length (feet)	Length (miles)	Percentage of System
6 inches or less	1,685,693	319.26	59
8 inches	641,625	121.52	22
9 – 18 inches	443,097	83.92	15
19 – 36 inches	96,571	18.29	3
> 36 inches	13,411	2.54	<1
Unknown	0	0	0
Total	2,880,397	545.53	100

Table 2 – Separated Force Mains

Pipe Diameter Size Category (inch)	Length (feet)	Length (miles)	Percentage of Force Main (by length)
6 inches or less	16,632	3.15	38
8 inches	5,174	0.98	12
9 – 18 inches	8,131	1.54	18
19 – 36 inches	13,253	2.51	30
> 36 inches	739	0.14	2
Unknown	0	0.00	0
Total	43,932	8	100

The City service area is divided into 54 separated sewer basins. Forty (40) of the sewer basins are pumped through individual pump stations. Ten (10) sewer basins gravity flow directly or indirectly into the SRCSD interceptor pipes. The remaining four (4) basins gravity flow to the adjacent combined sewer system where flows are then pumped into the SRCSD interceptor pipes. Thirty (30) of the pump stations were constructed between the 1940s and the 1970s; and ten (10) pump stations were constructed between 1985 and 2004. One (1) pump station was constructed in 2017 (Sump 86). Many of the pump stations discharge into downstream gravity sewers which, in turn, convey the wastewater to pump stations further downstream. Because of this interconnection, changes in one basin can affect the performance of the separated sewer system in downstream basins. Table 3 presents general information for pump stations within the separated sewer system.

Table 3 – Pump Stations

Pump Station	# of Pumps	Est. Total Capacity (mgd)	Est. Firm Capacity w/ 1 Pump Out (mgd)	Ave. Annual Total Volume Pumped (mg)	Year Constructed/ Acquired by City	Year Rehabilitated
3	2	0.6	0.3	0.33	1990	
6	2	0.5	0.25	1.6	1990	
21	4	7.4	5.6	258.8	2004	
29	2	6.4	3.2	5.3	2000	
32	2	2.9	1.4	51.7	1970	
36	2	0.32	0.16	9.3	1959	1990
40	2	1.9	0.95	94	1958	
42	2	1	0.5	18.6	1959 (acquired)	
45	2	1.7	0.85	80.7	1959 (acquired)	
48	2	2.6	1.3	115.7	1966	
49	2	0.4	0.2	12.6	1960	
53	2	0.9	0.45	27.2	1961	
55	4	14.4	10.8	1,308.9	1963	2002
57	2	0.8	0.4	10.4	1963	2002
79	2	0.6	0.3	20	1964 (acquired)	
80	2	0.6	0.3	31.3	1963	2000
81	2	0.5	0.25	1.2	1989	
84	2	0.7	0.35	1.6	1965	
85	4	13.2	9.9	1,202.2	1965	1984
86	2	0.72	0.48	7.3	2017	
87	3	4.3	2.9	501.3	1961	1999
88	2	2	1	0	1966	
107	3	7.8	5.2	96.6	1992	
119	6	47.9	38	1,881.9	1972	2002
120	3	1.5	1	88.8	1972	1999
121	3	1.5	1	62.4	1972	1996
122	2	0.7	0.35	6.7	1990	1999
123	1	0.2	0.2	0	1971	2000
124	1	0.2	0.2	0.24	1971	2000
125	1	0.2	0.2	0.39	1971	2000
126	2	0.6	0.3	4.5	1974	2001
127	2	0.6	0.3	9.2	1974	2001
131	2	0.6	0.3	4.3	1975	
133	2	0.3	0.15	4.1	1977	2000
134	2	0.2	0.1	14.4	1979	2000
135	2	0.32	0.16	35	1979	2000
136	2	0.32	0.16	55.6	1979	2000
137	4	14.4	10.8	1,258.4	1979	2000
143	2	0.86	0.43	11.3	1985	
145	2	4.6	2.3	110.6	1985	
146	2	2.2	1.1	59.3	1985	
Total				7,463.8		

IV. SSMP CONTACT LIST

Title	Name	Phone	e-mail *	Responsibility	SSMP Roles and Responsibilities
Wastewater and Drainage Division Manager	VACANT	(916)		Management/oversight of all wastewater and drainage operations	O&M Program
Wastewater Collection Superintendent	Kevin Guerra	(916) 808- 4022	kguerra	LRO , Maintenance, repair, and operations for wastewater collection infrastructure, and SSO response	O&M Program FOG Program SSO Reporting
Wastewater Collections Supervisor Operations & Maintenance	VACANT	(916)		Oversees Citywide Wastewater First Responders and FOG Inspectors	O&M Program SSO Reporting
Wastewater Collection Administrative Technician Planner/Scheduler	Alfred Sarra	(916) 808- 4017	asarra	Oversees the scheduling of wastewater maintenance, managing the cleaning QA/QC Program, and updating the cleaning schedule. Supports SSMP regulatory compliance and underlying SSMP programs (DS)	O&M Program FOG Control Program Monitoring, Measurement, Program Modifications, and SSO Reporting
Wastewater Drainage Administrative Analyst	Natasha Carvelli	(916) 808- 4040	ncarvelli	Supports SSMP regulatory compliance and underlying SSMP programs. (DS)	O&M Program FOG Control Program
Wastewater Drainage Administrative Analyst	Rondina Hom	(916) 808-	rhom	Supports SSMP regulatory compliance and underlying SSMP programs. (DS)	O&M Program FOG Control Program
Wastewater Collection, CCTV Supervisor	Kevin Waller	(916) 808- 6905	kwaller	LRO , Oversees CCTV inspections. Manages the On-Call Process, and SmartCovers	O&M Program

Title	Name	Phone	e-mail *	Responsibility	SSMP Roles and Responsibilities
Wastewater Collection Supervisor	Tim Johnson	(916) 808- 6233	tjohnson	Oversees maintenance operations in the North area and North Combo	O&M Program
Wastewater Collection Supervisor	Paolo Ferro	(916) 808- 6698	pferro	Oversees maintenance operations in the South area and South Combo	O&M Program
Wastewater Repairs Supervisor	Seth Ogden	(916) 808- 6224	sogden	Oversees Citywide repairs to the wastewater collection system	O&M Program
Wastewater and Drainage System Maintenance Supervising Plant Operator	Grant Moore	(916) 808- 1406	gemoore	Oversees wastewater and storm drainage pump station maintenance and operations	O&M Program
Drainage Collection Superintendent	Doug Henry	(916) 808- 6955	dhenry	Maintenance and repair operations for drainage collection infrastructure, and SSO response	O&M Program
Drainage Collection Maintenance CE/D SMP Supervisor	Mick Smith	(916) 808- 6903	msmith2	Oversees drainage Hazardous Materials and SSO response	
Wastewater and Drainage Operation and Systems Maintenance Superintendent	Mike Wasina	(916) 808- 7830	mwasina	LRO , Plant Operations, Pumping station mechanical maintenance and generator support	O&M Program
Business Services Division Manager	Ryan Pham	(916) 808- 4928	rpham	Management of Fiscal Operations and Billing including annual budget preparation, rate adjustment planning, and accounts payable and receivable	SSMP

Title	Name	Phone	e-mail *	Responsibility	SSMP Roles and Responsibilities
Safety Officer	Simone Sumeshwar	(916) 808- 3760	ssumeshwar	Oversees city compliance with worker-safety regulations and assists with environmental protection during wastewater plant incident response and hazardous spills	
Media and Communications Specialist	Carlos Eliason	(916) 808- 6839	celiason	Oversees media and communications for DOU	Communication Program
Asset Management Program Specialist	Deanne Neighbours	(916) 808- 3565	dneighbours	Provides condition assessment and funding projections for replacement and rehabilitation of assets	O&M Program (Rehabilitation and Replacement Plan)
Information Technology Manager	Rong Liu	(916) 808- 1979	rliu	Manages all I.T. functions for DOU, including, GIS, Information management, desktop support, FOIS, and CMMS applications	O&M Program
GIS Supervisor	Nathan Jennings	(916) 808- 7857	njennings	Supervises GIS applications and mapping of assets and maintains the Sump Book	O&M Program (Collection System Maps and Information)
Wastewater CIP Supervising Engineer	Brett Grant	(916) 808- 1413	bgrant	Oversees master planning and infrastructure CIPs, supports Wastewater Operation and Maintenance Division and updates City Standard Specifications	O&M Program, Design and Performance System Evaluation and Capacity Assurance
Development Review and Floodplain Management Supervising Engineer	Neal Joyce	(916) 808- 1912	njoyce	Oversees updates to the Design and Procedures Manual	Design and Performance, System Evaluation and Capacity Assurance

Title	Name	Phone	e-mail *	Responsibility	SSMP Roles and Responsibilities
Water & Sewer Superintendent	Charley Cunningham	(916) 808-5518	ccunningham	Oversees electrical and instrumentation operation, and maintenance for the sewer and storm-drainage pumping stations	O&M Program
Engineering Division Manager	Sherill Huun	(916) 808-1455	shuun	Management/oversight of Engineering Division	Environmental & Regulatory Compliance, CIP
Environmental & Regulatory Compliance Supervising Engineer	Sherill Huun	(916) 808-1455	shuun	SSMP regulatory compliance support	WDR/SSMP, SSMP Program, Legal Authority, O&M Program, Overflow Response Plan, Monitoring, Measurement, and Program Modifications, SSMP Program Audits Communications Program
Environmental & Regulatory Compliance Administrative Analyst	Amy Farmer	(916) 808-6944	aefarmer	Coordinates updates to the SSMP, bi-annual audits and Emergency Response Plans, SSMP regulatory compliance support and Data Submitter (DS)	WDR/SSMP, SSMP Program, Legal Authority, O&M Program, Overflow Response Plan, Monitoring, Measurement, and Program Modifications, SSMP Program Audits, Communication Program
Public Affairs Program Analyst	Jessica McCabe	(916) 808-5921	jmccabe	Public outreach coordination	FOG Program Communications Program

* All e-mails are on the domain: @cityofsacramento.org

LRO- Legally Responsible Official

DS- Data Submitter

Chart last updated 8/8/2022

V. SEWER SYSTEM MANAGEMENT PLAN

CHAPTER 1 – GOAL

This chapter provides the goals for the Sewer System Management Plan (SSMP) and complies with section D13 (i) of the State WDRs, included in Appendix A.

1.1 State WDRs

Section D13 (i) of the State WDRs identifies the following goal for the SSMP:

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 sanitary sewer overflows (SSOs), as well as mitigate any SSOs that do occur within the City service area.

1.2 Linkage to Department-Wide Strategy

As the overall management document for the sewer collection system, the SSMP also supports the following strategic goals included in the 2018 City of Sacramento Department of Utilities (DOU) Strategic Plan:

- Build and maintain public confidence and understanding through communication, delivery of quality services, responsive customer service and compliance with environmental regulations;
- Deliver reliable service through proactively monitoring and maintaining our assets and reducing system vulnerability;
- Plan for current and future generations by protecting, preserving and enhancing water resources, the environment, and the community;
- Develop and retain a competent, collaborative and adaptable workforce in an organization that demands accountability and innovation, and ensures cost-effective operations; and
- Maintain a sustainable financial structure that responsibly invests in infrastructure, ensures full cost recovery and appropriate reserves, and optimizes financial resources.

Actions that the Wastewater and Drainage Division implement that align with the State WDR and the Department's Strategic Plan goals include:

- Conduct a training program that ensures regulatory awareness and best maintenance and repair practices;
- Implement a proactive and adaptive preventative maintenance program that ensures that the entire system is touched (cleaned, inspected, graded, scheduled, etc.) within a specified time interval;
- Implement best maintenance and repair practices that minimize the frequency of SSOs; and

- Maintain an integrated overflow emergency response plan designed to protect public health and the environment.

CHAPTER 2 – ORGANIZATIONAL STRUCTURE

This chapter describes the City organizational structure for developing and implementing the SSMP and the chain of communication for reporting and responding to overflows. The information presented complies with section D13 (ii) of the State WDRs, included in Appendix A.

2.1 State WDRs

Section D13 (ii) of the State WDRs requires the SSMP to identify the following:

- (a) The name of the responsible or authorized representative as described in Section J of the State WDRs.
- (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 using an organization chart or similar document with a narrative explanation; and
- (c) The chain of communication for reporting sanitary sewer overflows (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 (OES)).

2.2 Organizational Chart

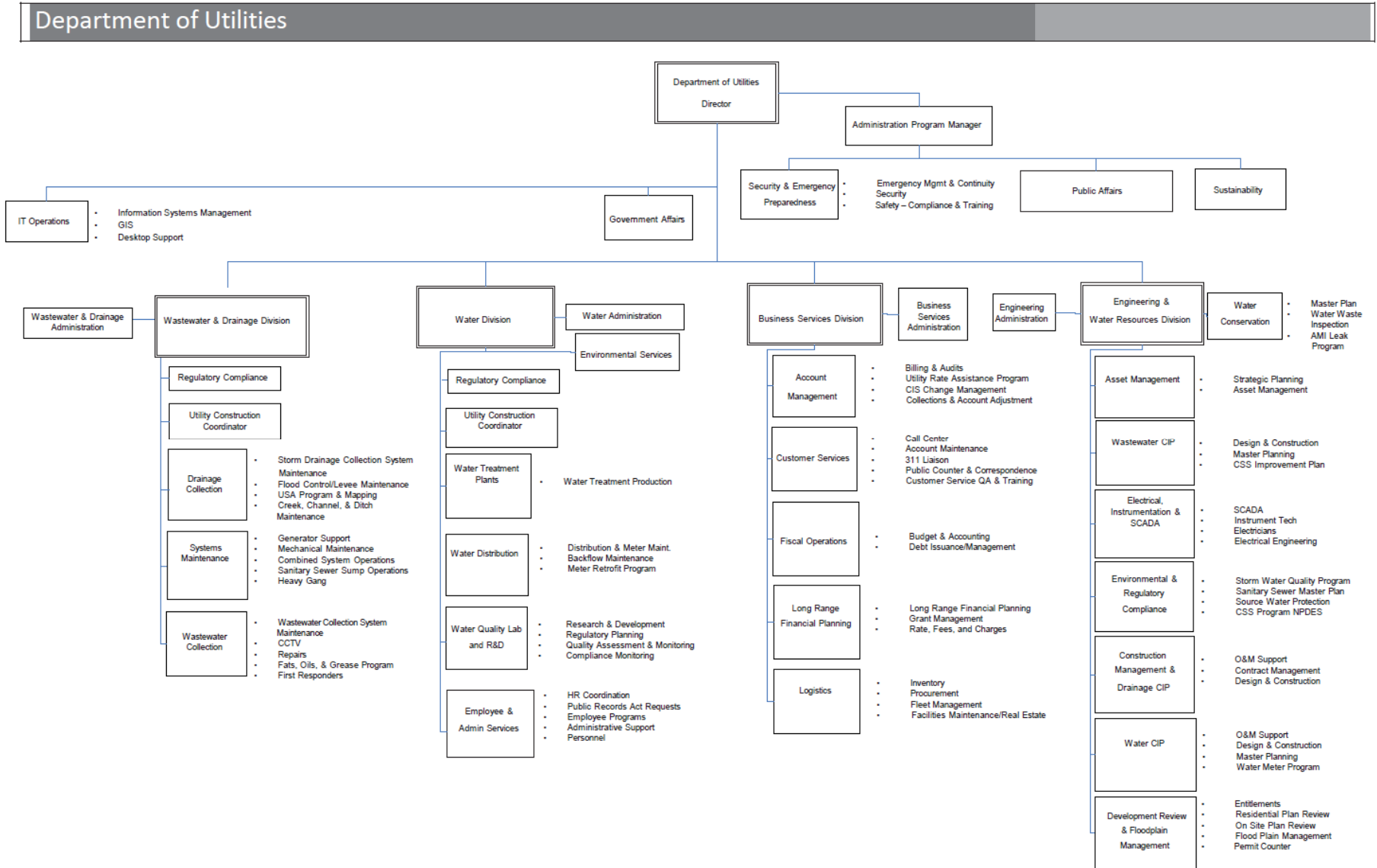
DOU is responsible for construction, design, operation and maintenance of the separated sewer system shown in Figure 1 (Section III Sewer Collection System Overview).

DOU operates in four divisions: Business Services, Engineering and Water Resources, Water and Wastewater and Drainage (as shown in Figure 2.1 below). The management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program are outlined in Figure 2.1 and reflect these organizational changes. An updated list of names and phone numbers for specific staff involved with implementing the SSMP is included in Section IV SSMP Contact List.

Authorized Representatives

Both the Wastewater and Drainage Division Manager and the Wastewater Collection Superintendent are designated as the Legally Responsible Officials (LROs) for the City separated sewer system and are authorized to certify all electronic reports submitted to the California State Water Resources Control Board (SWRCB). The Engineering and Water Resources Division provides support in preparing and implementing SSMP sections and is a backup data submitter (DS) for the Wastewater and Drainage staff.

Figure 2.1 - Organization Chart for the Sewer System Management Plan



Chain of Communication for Reporting Sewer System Overflows

The chain of communication for SSO response for each SSO category is shown in Figures 2.2, 2.3 and 2.4. The internal decision matrix used to determine State WDRs reporting requirements is shown in Figure 2.5. The general response procedure begins when the City receives notification of the SSO. When Drainage Collection assistance is required, the Wastewater Collection Supervisor coordinates with the Wastewater Superintendent and/or other Supervisors to assign the crews necessary to investigate, assess, contain and correct the reported SSO. When the SSO reports are completed, they are submitted to the SWRCB by the DSs listed in the contact list (Section IV) and then the reports are certified by an LRO. For more information on reporting sewer system overflows, refer to Section V Chapter 6 Overflow Emergency Response Plan.

To ensure consistency of the SSO data between California Integrated Water Quality System (CIWQS) and City records, the Wastewater Collection staff tracks all SSOs through an Excel spreadsheet and the Supervisor reviews the spreadsheet and ensures the same SSO data is in Cityworks (CMMS) and CIWQS.

Description of Other Responsibilities

Utilities Director – Under the direction of the City Manager, establishes policy, plans strategy, leads staff, allocates resources, delegates responsibilities, and authorizes outside contractors to perform services.

Division Managers – The managers for the Business Services, Engineering and Water Resources, Wastewater and Drainage, and Water Divisions direct the preparation of wastewater collection system planning documents; refine the capital improvement programs using condition assessment, master planning and maintenance history; manage the capital improvement delivery system; manage the wastewater, drainage and water maintenance programs; document new and rehabilitated assets; and coordinate development and implementation of the SSMP.

- *Engineering and Water Resources Division, Environmental and Regulatory Compliance Section* – Environmental and Regulatory Compliance section staff assist department staff in State WDR compliance, lead the SSMP updates and conduct bi-annual audits.
- *Wastewater and Drainage Division:*
 - o *Wastewater and Drainage Division Manager* – The Wastewater and Drainage Manager and Superintendent (Wastewater Collection) functions as an LRO for the City. In addition, the manager and staff oversee and conduct field operations and maintenance activities, provide relevant information to agency management, prepare and implement contingency plans, lead emergency response, investigate and report SSOs, and trains field crews.

- *Superintendents* – Two Wastewater and Drainage superintendents, Wastewater Collection and Drainage Collection, work collectively in the execution of the City’s SSMP.
- *Field Crews (Lead Workers and Service Workers)* – Field crews complete preventative maintenance activities and mobilize and respond to notification of stoppages and SSOs (mobilize sewer cleaning equipment, by-pass pumping equipment, and portable generators).

Figure 2.2 – Sewer Overflow Response Process – Category 3 SSO

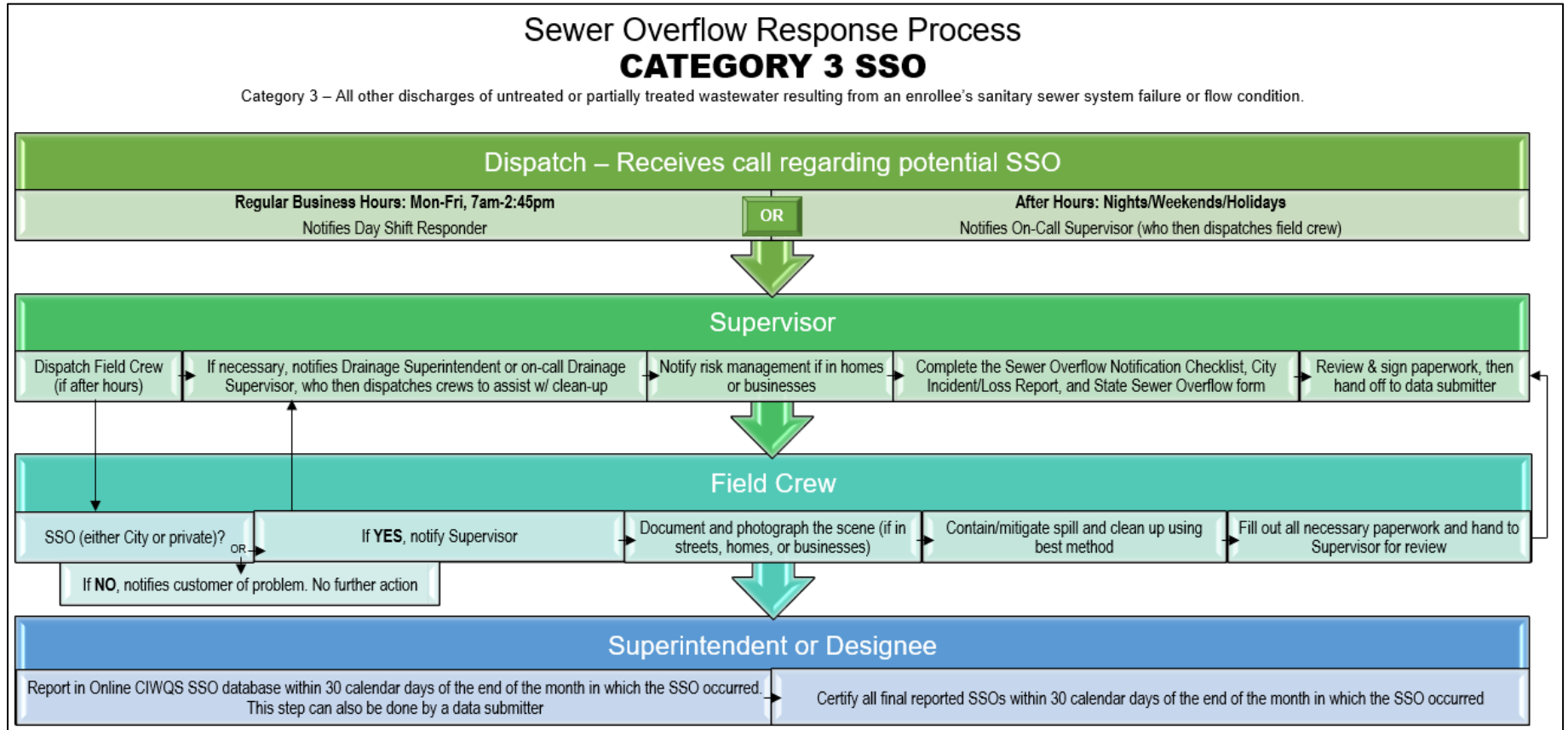


Figure 2.3 – Sewer Overflow Response Process – Category 2 SSO

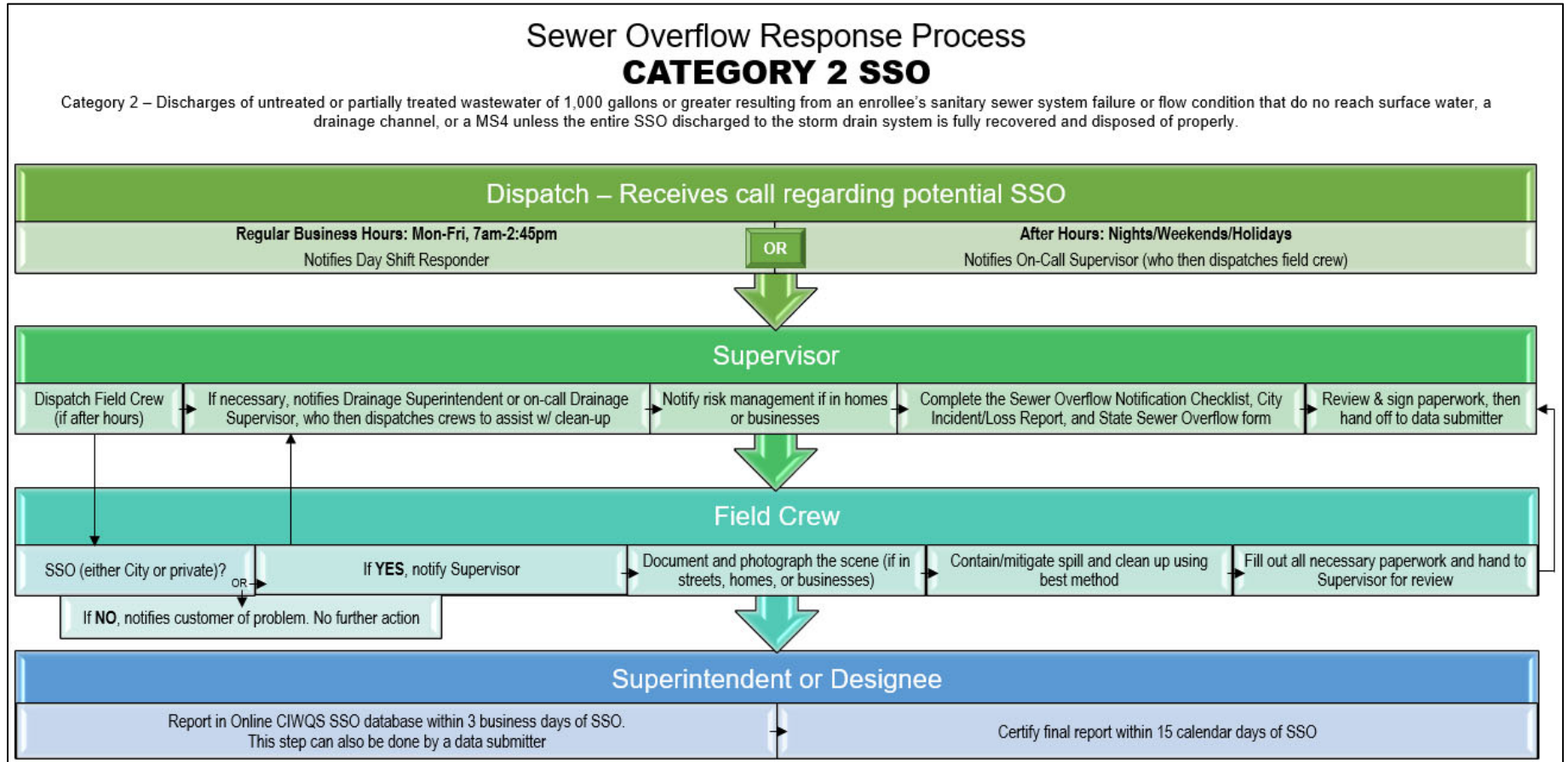


Figure 2.4 – Sewer Overflow Response Process – Category 1 SSO

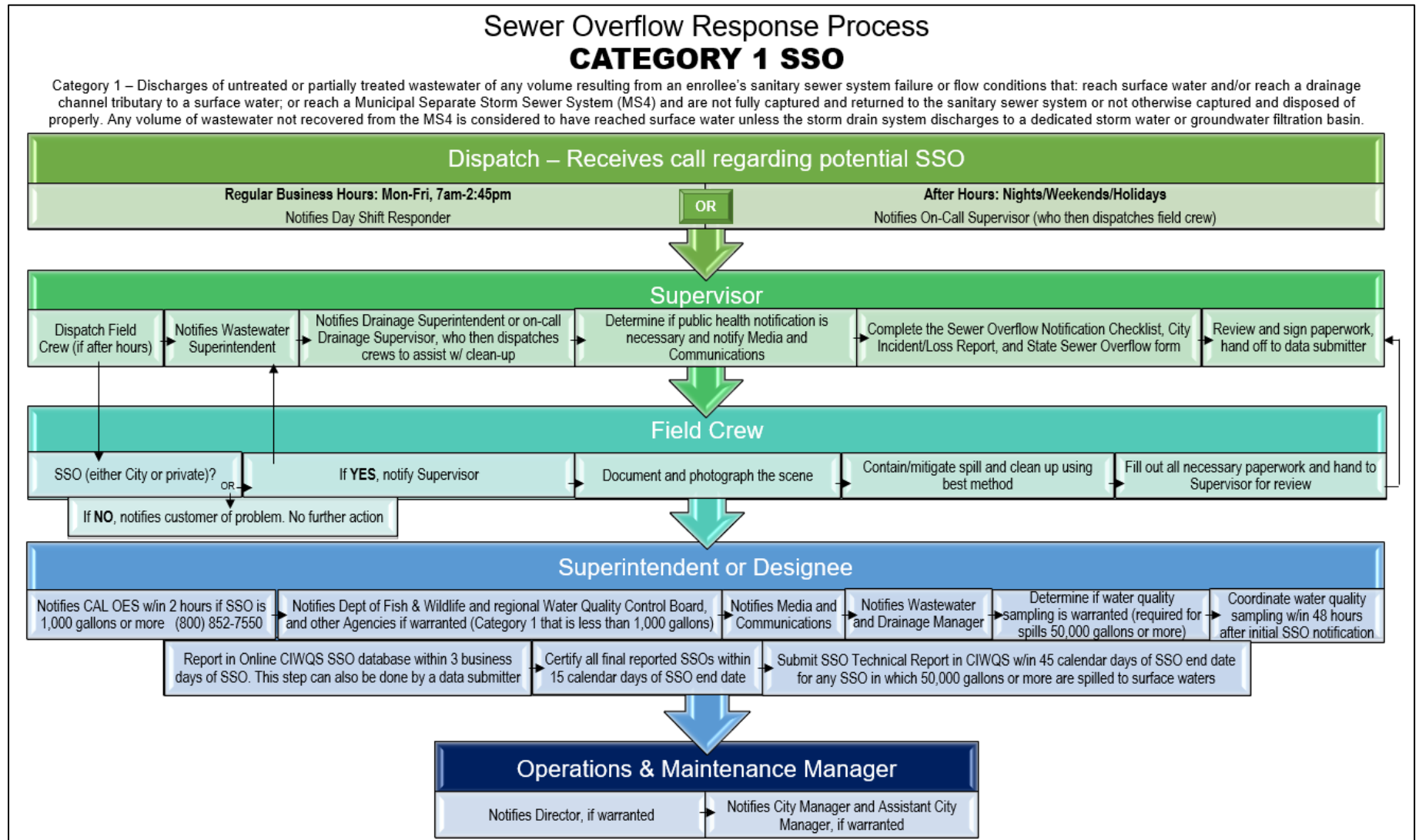
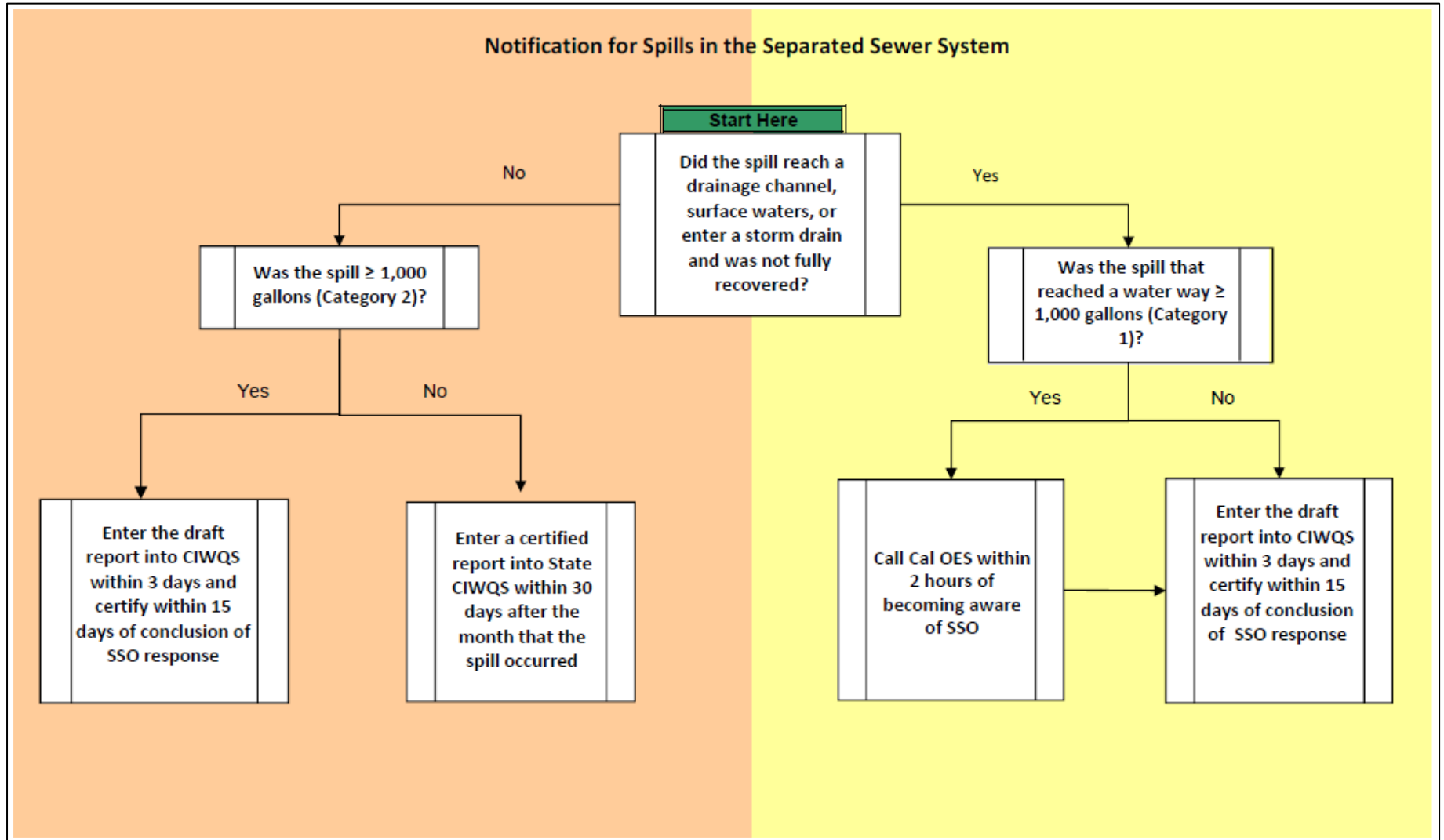


Figure 2.5 – Decision Tree for SSO State Reports



CHAPTER 3 – LEGAL AUTHORITY

This chapter of the SSMP discusses the City’s Legal Authority, including its Municipal Code and agreements with other agencies. The information presented complies with section D13 (iii) of the State WDRs, included in Appendix A. This section also cross references the legal authority required for portions of section D13 (vii) of the State WDRs.

3.1 State WDRs

For section D13 (iii) of the State WDRs, the City must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to do the following:

- (a) Prevent illicit discharges into its sanitary sewer system (examples may include Inflow/Infiltration (I/I), stormwater, 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 City;
- (d) Limit the discharge of fats, oils, and grease (FOG) and other debris that may cause blockages; and
- (e) Enforce any violation of its sewer ordinances.

In addition, for section D13 (vii) of the State WDRs, the City must demonstrate as appropriate:

- (d) Requirements to install grease removal devices (such as traps or interceptors), design standards for the grease removal devices, maintenance requirements, requirements for best management practices, record keeping and reporting requirements; and
- (e) Authority to inspect grease producing facilities, enforcement authorities, and whether the City has sufficient staff to inspect and enforce the FOG ordinance.

3.2 Compliance Summary

Table 3.1 lists the City codes providing the authority required by the State WDRs as well as the authorities provided by the SRCSD Consolidated Sewer Use Ordinance for the operation of the City collection system.

Table 3.1 - Legal Authority Summary

State WDRs for Legal Authority	
City of Sacramento Municipal Code¹	SRCSO Consolidated Ordinance²
D13 (iii)(a) Prevent illicit discharges into the sanitary sewer system (examples may include I/I, stormwater, chemical dumping, unauthorized debris and cut roots, etc.).	
13.08.040 Prohibited discharges 13.08.120 Pretreatment requirements 13.08.130 Prohibited cross connections 13.08.160 Private sewer lines—No infiltration or leaks	2.5 Regulations
D13 (iii)(b) Require that sewers and connections be properly designed and constructed.	
13.08.145 Mitigation of drainage impacts; design and procedures manual for water, sanitary sewer, storm drainage, and water quality facilities 13.08.170 Required connection to city sewer system 13.08.360 Application for installation 13.08.370 Approval of plans 13.08.380 Inspection of installation—Property of city 15.24 Amendments to the California Plumbing Code	2.5.9 Pretreatment Facilities
D13 (iii)(c) Ensure access for maintenance, inspection, or repairs for the portions of the lateral owned or maintained by the Public Agency.	
13.08.240 Structures overlying public utilities 13.08.290 Inspections 13.08.310 Control manhole for industrial wastes	2.8.1 Rights of Entry
D13 (iii)(d) Limit the discharge of fats, oils, and grease and other debris that may cause blockages.	
13.08.040 Prohibited discharges 13.08.090 Food service establishment (FSE) requirements 13.08.100 Interceptors for other businesses	2.5.4 Prohibited Substances or Characteristics 2.5.6 Potentially Regulated Discharges
D13 (iii)(e) Enforce any violation of its sewer ordinances.	
8.04 Nuisances Generally 13.08.060 Enforcement 13.08.270 Discontinuance of Service 13.08.340 Violations 13.16.020 Purpose and intent 13.16.050 Discharge of nonstormwater prohibited 13.16.080 Discharge in violation of permit 13.16.090 Illicit connection prohibited	2.9 Enforcement
D13 (vii)(d) Requirements to install grease removal devices design standards, maintenance requirements, and reporting requirements.	
13.08.100 Interceptors for other businesses 15.24 Amendments to the California Plumbing Code ³ that references section Uniform Plumbing Code	2.5.12 Grease, Oil, and Sand
D13 (vii)(e) Authority to inspect grease producing facilities and enforcement authorities.	
8.04 Nuisances Generally 8.04.050 Right of entry 8.04.110 Nuisance abatement 13.08.060 Enforcement 13.08.290 Inspections	2.8 Inspection and Monitoring 2.8.2 Inspection Warrants 2.8.3 Monitoring Facilities

¹ The numbers refer to applicable City Municipal Code sections.

² Numbers refer to the chaptered sections of the SRCSO Consolidated Ordinance as of effective date: June 21, 2019.

³ The Uniform Plumbing Code (UPC) is adopted by reference. Sections of the 1014.0 and 1015.0 of the UPC cover the design requirements for grease removal devices.

3.3 Codes, Ordinances, and Agreements

The legal authority required for the SSMP by the State WDRs is contained within the City's municipal code. Several chapters of the municipal code include various elements of the required authority and are available at <http://www.qcode.us/codes/sacramento/>. The chapters listed in Table 3.1 are included in Title 1 General Provisions, Title 8 Health and Safety, Title 13 Public Services, and Title 15 Buildings and Construction. The City operates its sewer collection system in accordance with the SRCSD Consolidated Ordinance and a Master Interagency Agreement found at <https://www.regionalsan.com/ordinances-agreements>

CHAPTER 4 – OPERATIONS AND MAINTENANCE PROGRAM

This chapter of the SSMP discusses the City’s Wastewater and Drainage Division Operations and Maintenance (O&M) Procedures, including its Rehabilitation and Replacement Asset Management Program. The information presented complies with section 13 D (iv) of the State WDRs, included in Appendix A.

4.1 State WDRs

The SSMP must include those elements listed below that are appropriate and applicable to the City’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 stormwater 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 program should have a system to document scheduled and conducted activities, such as work orders;
- (c) Develop a 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 and maintenance, and require contractors to be appropriately trained; and
- (e) Provide equipment and replacement part inventories, including identification of critical replacement parts.

4.2 Collection System Maps and Information

Chapter 4 describes the information systems and other resources utilized to maintain DOU's sewer collection system maps.

Facilities Operations Information System (FOIS)

FOIS is a web-based application available on the City's intranet that serves as DOU's repository for record drawings; improvement plans prepared by staff, outside consultants, and other agencies; specifications; operations and maintenance manuals; facility photographs, pump stations etc., as they relate to the collection system.

Computerized Maintenance Management System (CMMS)

The Wastewater and Drainage Division utilizes the Azteca™ "Cityworks" CMMS system for its linear assets and the "Maintenance Connection" CMMS system for its vertical assets (pumping stations and associated mechanical, plant operations, electrical and instrumentation). Both systems are used for: planning, requests for work (service requests), tracking SSOs and resident complaints, scheduling maintenance work (work orders) and, tracking completed work, and monitoring the type of maintenance performed on sewer assets. CMMS is used to manage data entry, reporting, scheduling, workflow, quality assurance/quality control, and security. The primary functions of the CMMS system is to:

- Maintain service request and maintenance history information for each collection system asset,
- Produce and regularly update the maintenance schedule based on feedback from the cleaning and maintenance operations,
- Generate reports that support data analysis and decision making,
- Provide documentation for use in regulatory compliance reporting, and
- Indicate pipe segments or structures that may be candidates for replacement or rehabilitation under the Capital Improvement Program (CIP).

DOU updates pipe attribute information through the map correction process and with information derived from closed-circuit television (CCTV) inspections. These updates are completed when a discrepancy is found during an inspection. A written request attached to a work order is made listing the discrepancy and the correction to be made. This update process provides a quality assurance/quality control (QA/QC) of the pipe attribute data within the CMMS system.

Improvement Plan Geographic Information System (GIS) Layer and Improvement Plan Folder

When a project Notice of Completion is filed, GIS staff receive an email notification from Public Works or DOU stating that they have added completed project drawings into the Improvement Plans folder. GIS staff adds the new infrastructure data to the GIS system by creating a project boundary in the Improvement Plan GIS layer. GIS staff then store the drawings in a folder which is linked to the project boundary. Staff can access the layer by selecting it on an online web mapping application such as One Map or the Sewer &

Drainage Viewer. This allows staff to download drawings from the folder or view the file location. At the close of the business day, all edits are uploaded to the publication version of the data and the maps will reflect the changes the next day.

Drainage/Sewer GIS Data and Map Book

DOU utilizes a GIS computer mapping system using ESRI’s ArcGIS application. DOU’s GIS staff maintain all utilities infrastructure in an enterprise version of ArcGIS. Updates and changes are made to the data regularly through map corrections from field visits, data review, internal review, and new utility projects. As a result of these updates, the CityWorks web map-based asset/work order management uses the GIS data directly for field operations.

In addition to CityWorks, GIS data for the drainage and sewer system is accessed through a web map in the internal GIS portal. The Sewer and Drainage Viewer displays DOU assets and attribute information and includes tools for querying and printing. The Viewer displays the most current data to provide staff with the most accurate information. Electronic (PDF) drainage and sewer map book pages are still available as network access may be unavailable in working conditions.

The Sewer and Drainage Viewer shows the entire separated sewer collection and drainage system and includes the information listed in Table 4.1.

Table 4.1 –Sewer Collection and Drainage System Map and Viewer Information

Facility Type	Basic Map Information
Manholes	Identification Number Location, with reference to streets Location, with reference to property line or curb Type of Manhole; Sewer, Drainage, Summit, etc. Depth of Manhole from Rim Smart Cover Locations
Pipes (Sewer and Drainage Mains)	Type of Pipe, Sewer or Drainage Owner of Pipe, City, County or Private Pipe Diameter or Size Direction of Flow Force Mains Lined Pipe Segments
Miscellaneous	Pump Stations, City Limit Line Valves and Vents Primary Sloughs, Creeks and Rivers Levees Drop Inlets and Gutter Drains Streets Parcels with Street Address Numbers

Redline map corrections are received by GIS through CityWorks attached to a work order. GIS staff regularly check the CityWorks inbox and communicate questions to field staff as needed within the work order. Map corrections are also given informally by staff without CityWorks access through email or paper, the GIS staff review the map corrections, conduct research on the changes and make the appropriate change in the

GIS database. These changes are reflected the following day in the CityWorks, One Map and the Sewer & Drainage Viewer.

Sump Book

DOU maintains a Sump Book which is also available in both hard copy format (for field crews and engineers) and electronically (on the DOU intranet). The Sump Book contains details for each sewer and drainage pump station maintained by the Wastewater and Drainage Division, including maps showing the pump station location. Information is also included regarding the number of pumps, horsepower and pumping capacity of each pump, the force main location and discharge locations, and the maximum amount of time the pumps can be out of service before the station overflows (out of service limitations). The Sump Book is updated periodically as pump stations are rehabilitated, added, and/or removed from the system.

4.3 Preventative Operation and Maintenance

Overview

DOU has developed several maintenance approaches for the separated sewer collection system with the following goals:

1. Decrease frequency of SSOs,
2. Identify primary cause of collection system blockages and develop strategies to reduce backups,
3. Operate and maintain pump stations in order to maintain reliability and efficiency,
4. Maintain operation and maintenance records for each sewer collection system asset to support asset management decision-making, and
5. Assist with the development of CIP projects directed at maintaining or rehabilitating the current sewer assets, improving system reliability, and providing adequate future capacity.

Reactive Maintenance

Reactive maintenance activities in the separated sewer system include investigation and response to any complaints regarding a manhole overflow, missing or shifted manhole covers, manhole covers that are noisy, residential plumbing troubles, pump station malfunction, sewer odor, etc. Sewer complaints received by DOU are investigated and the appropriate action is taken to resolve the source of the problem.

Preventative Maintenance

The Preventative Maintenance Program includes regular maintenance activities, scheduled cleaning, root control, FOG inspections, QA/QC and routine CCTV inspections. DOU commenced a system-wide CCTV effort in 2009 that included City of Sacramento owned separated sewer system mainlines up to 15-inches in diameter. Since that time DOU has obtained new equipment which allows for maintenance up to 30-inches in diameter. Mainlines 30-inches and greater in diameter are beyond DOU's maintenance

capabilities, thus requiring coordination with Asset Management, CIP, and Engineering for cleaning on a contract-basis. This CCTV effort was undertaken to assess and rate the infrastructure, and to prioritize and schedule preventative maintenance activities. In addition to the CCTV evaluation, other criteria upon which preventative maintenance is based include service requests (customer complaints), historical knowledge, experience, and CMMS data.

DOU’s Standard Operating Procedures (SOP) for cleaning gravity sewers is included as Appendix B. In addition to the process outlined in the SOPs, sewer maintenance field crews utilize the work orders in CMMS to document the quantity of roots, grease, and debris found in pipes during maintenance activities.

The Wastewater and Drainage Division has a scheduled cleaning program for all mainlines with a diameter less than 30-inches. These assets have been evaluated and prioritized for scheduled cleaning based on CCTV analysis, historical knowledge, and CMMS inspection data, as detailed in Section 1.3 of the Cleaning Optimization Tool (COTools) User Manual, included in Appendix F. A flowchart depicting the steps of the process overview for evaluating inspection findings and assigning next cleaning frequency can be found on page 4 of the COTools User Manual.

As of January 25, 2022, an estimated 5,132 mainlines have cleaning frequencies ranging from one month to two years and the remaining estimated 5,306 mainlines are set to a five-year cleaning frequency. Mains designated as “Unscheduled” have been recently added to the system and have not yet received their first cleaning to establish a recommended frequency. The planner/scheduler reviews the map for these mains and places them on work orders in Supervisors’ queues for cleaning, which will then establish their maintenance schedule.

Table 4.2 below represents the count of mainline cleaning frequencies and their overall percentage within the separated sewer system. As scheduled maintenance is performed, the planner/scheduler reviews the cleaning findings on a regular basis to adjust the scheduled maintenance cleaning frequencies if needed. After an SSO has occurred, the planner/scheduler and maintenance supervisors review the mainline cleaning frequency and adjust as needed.

Table 4.2 – Maintenance Frequency by Count and Percentage of Mainlines

Recommended Maintenance Frequency	Count of Mainlines	%
1 month	129	1.22%
3 months	108	1.02%
6 months	428	4.05%
12 months	1396	13.22%
24 months	3071	29.07%
60 months	5306	50.23%
Unscheduled	125	1.18%
Total	10563	100.00%

Corrective Maintenance

DOU performs many of its corrective maintenance and asset rehabilitation activities internally. This includes replacement or rehabilitation of gravity sewer mains, force mains, and pump station assets. Corrective maintenance is prioritized based on the risk of failure of the asset.

Root Control

Root intrusion is a recognized problem in the City, particularly in older residential areas with mature trees. Collection pipes in these areas are typically six inches in diameter and are often located in backyard easements. In the separated system, an approximate 200 miles of six-inch diameter pipes are located in backyard easements.

Root control program evaluation requests are made by the CCTV operators to address root control needs. Root control is the responsibility of each maintenance group which is divided into two geographic locations North and South. Mechanical root control (also referred to as rodding) is used when a pipe has a history of roots and is not on the hydro cleaning schedule. If the pipe requires a mechanical root control schedule, staff sets an initial mechanical root control frequency of one year, and this will be adjusted based on the findings from the mechanical root control inspection results.

If root problems cause structural failure, these locations are submitted to the Engineering and Water Resources Division to be considered for incorporation into a future rehabilitation or replacement project (CIP).

Fats, Oils, and Grease Control

Based on historical knowledge and CMMS data, areas of DOU's sewer system that have recurring blockages caused by FOG are placed on scheduled maintenance and jet cleaned regularly as discussed in the Preventative Maintenance section above.

Closed Circuit Television (CCTV) Inspection

DOU conducts CCTV inspection as part of its maintenance, condition assessment, and cleaning QA/QC activities. DOU utilizes a national industry standard known as the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) as a scoring tool for coding pipeline defects. PACP coding data is also used to determine rehabilitation and replacement needs, useful life, and short-term funding projections.

Occasionally before and typically after a corrective maintenance project has been completed, CCTV inspection is performed as a quality assurance and quality control measure. Also, after a blockage is removed, a CCTV inspection may be performed on the affected pipeline. The post-blockage inspection allows the Supervisor and/or Lead Worker to evaluate the effectiveness of the cleaning operation, assess whether scheduled maintenance is needed, adjust the frequency of scheduled maintenance, and inspect pipelines for structural defects. A determination is made as to whether the pipe needs repair, rehabilitation, or replacement. If a repair is warranted, Wastewater and Drainage Division staff complete the repair. If an issue is detected that cannot be remedied by a repair, the pipe is referred to Engineering and Water Resources staff.

Engineering staff evaluate the CCTV findings and, if necessary, develop a scope of work to rehabilitate or replace the pipe through an Asset Management evaluation process.

DOU has developed criteria, a process, and documentation for a cleaning QA/QC program. This program was developed by establishing an acceptable window for post-cleaning CCTV, defining a required quality level, and then developing and implementing the cleaning QA/QC plan. DOU has defined 30 days as an appropriate window to CCTV following a cleaning event and has defined a “clean pipe” as a pipe that does not have any maintenance related defects greater than 10% of the cross-sectional area at the completion of the cleaning task. In other words, at no single point along the entire pipe length shall an obstruction reduce the pipe’s design cross-section by more than 10% within 30 days of the cleaning. If the cleaning QA/QC does not pass due to grease or debris, it must be re-cleaned within 30 days. If the pipe is found to have root intrusion, it is sent to the appropriate maintenance section to be cleaned within specific timeframes depending on the severity of the defect. The QA/QC program also helps staff evaluate deficiencies and determine whether any changes are needed in our cleaning program or staff training.

Manhole Inspections

As of February 28, 2022, the City is in the early stages of implementing a program for conducting visual manhole inspections as a part of CCTV and PM activities. The City will inspect manholes using a new manhole inspection system called SPiDER, to generate NASSCO’s Manhole Assessment Certification Program (MACP) defect coding. The City also uses a GPS system in conjunction with SPiDER to geolocate manholes and make updates in the GIS software. It is estimated to take approximately 15 to 20 years to complete the surveys of all manholes. During manhole inspections, if defects are found a repair Work Order will be created.

Pump Stations

Wastewater and Drainage staff perform a monthly inspection of DOU’s pump stations to assess the operation of the pumps, structures, and wet wells. The monthly inspections are based on the “Plant Operator Station Policy” incorporated here by reference.

Routine maintenance tasks scheduled or assigned through CMMS are specific to each individual pump station and procedures vary from station to station. Maintenance strategies are based on knowledge of unique problems, inspection observations, and manufacturers’ specifications for the equipment at each sanitary sewer pump station. A copy of the monthly Wastewater Pump Station Preventative Maintenance Procedures is presented in Appendix C.

DOU’s high priority sanitary sewer pump stations (Sump 21, 36, 49, 55, 79, 85, 121, and 137) have been scheduled for more frequent inspection based on the volume of flows pumped and history of overflows.

Pump stations are monitored remotely through DOU’s Supervisory Control and Data Acquisition (SCADA) Network that provides real time station status. Remote access

allows for offsite control and monitoring of pump stations and supports the deployment of maintenance personnel to address problems that may occur.

4.4 Rehabilitation and Replacement Plan

General

Sewer system infrastructure rehabilitation and replacement are an integral part of DOU's operations and maintenance activities for the sewer collection system. The sewer system is capital intensive and requires ongoing maintenance, repair, and replacement to sustain the integrity of the infrastructure. As infrastructure assets continue to age and deteriorate, the need to restore parts of the system is becoming of higher significance to DOU. A significant portion of the infrastructure, including many of the critical pipelines and pump stations, are approaching, or have already passed, their designed life span.

DOU's Engineering & Water Resources Division has refined a CIP process to repair, replace, and/or rehabilitate aging infrastructure in a timely, cost-effective manner. This refined approach systematically incorporates infrastructure criticality; condition assessment; life cycle cost; and maintenance history. The approach includes the following:

- Identifying City-owned assets (i.e., taking inventory of all sewer assets, collecting data, and storing information in a GIS database);
- Assigning a level of relative criticality to these assets;
- Evaluating the condition of these assets to identify those nearing failure;
- Determining how and when assets are likely to fail based on collected data; and
- Prioritizing rehabilitation projects based on anticipated failure rate or potential impact of failure.

In addition, DOU adopted the following criteria for initiating a CIP project in the Wastewater Fund that is directly tied to the Capital Improvement Programming Guide:

- Required by health, safety, or regulatory requirements;
- Reduce maintenance costs;
- Improve reliability and reduce service interruptions and sanitary wastewater overflows;
- Maintain and replace existing facilities;
- Meet demands of increased growth; and
- Costs offset by grants or other revenue.

Capital Improvement Programming Guide

DOU has developed a Capital Improvement Programming Guide (Programming Guide), included here by reference, that identifies the processes, methodologies, and funding sources used in developing CIPs for the wastewater utilities. This Programming Guide provides an overview of wastewater operations and functions, explanations of criteria used to rank projects, descriptions of various types of capital improvement projects, project rankings, and project profiles for planned capital projects. In addition, the Programming Guide includes both a long-term and short-term investment strategy (30-year and 5-year) for incrementally improving the utility infrastructure of DOU.

Overall, the Programming Guide provides information on DOU's asset management approach to managing wastewater capital assets with the goal of minimizing the total cost of owning and operating the systems over time, while also delivering the desired levels of service.

Condition Assessment

As the wastewater system ages, the risk of failure inevitably increases over time. Pipe deterioration, collapse, blockage, inflow and infiltration, overflow, and service interruptions are challenges that are faced every day. In an effort to overcome these challenges and to improve the quality of the infrastructure, DOU has improved its Condition Assessment Program utilizing CCTV to develop a more sustainable rehabilitation and replacement plan.

The condition assessment CCTV inspections are prioritized to focus on those pipelines thought to have the most urgent risk factor. Additionally, maintenance history, age, and material are other factors used to prioritize the CCTV schedule. DOU's Condition Assessment Program includes the following major tasks:

- Create CMMS work order – Cityworks
- Conduct CCTV inspection – Granite XP software with PACP scoring
- Review inspection report
- Work required – spot repair, capital improvement project, or re-inspection
- Create CMMS re-inspection work order – Cityworks (scores 1, 2 and 3 only)
- CIP project – Engineering scope, cost, prioritization, and ranking (Programming Guide)
- CIP funding – forecast, review, analysis, and assessment

A CIP Project Initiation Workflow Process diagram, showing the steps of a rehabilitation, replacement or infrastructure improvement through a CIP is provided in Appendix D. This diagram shows the process beginning from when a failed critical infrastructure is identified, through the construction process, and into completion

Short-and Long-Term Rehabilitation and Replacement Plan

DOU's short- and long-term rehabilitation and replacement needs are identified in the Programming Guide that includes prioritizing and ranking methodologies of infrastructure assets (specifically pipelines) based on CCTV inspection data, maintenance history, age, criticality, and vulnerability.

Funding

Funding needs for long-term rehabilitation and replacement capital improvements of the separated system are estimated at \$13.5 million per the City's five-year CIP for FY2019-2023. The five-year CIP is published as part of the City's Annual Budget and is available on the City's website at <http://portal.cityofsacramento.org/>.

4.5 Staff Training

In most cases, equipment and operations training in the Wastewater and Drainage Division is initially provided by the vendor or manufacturer of the equipment. Ongoing technical training is provided through on-the-job training and rotation among the different maintenance crews and equipment. DOU also relies on regional and statewide training available through seminars and conferences. The training resources are shown in Table 4.3.

DOU crews receive annual maintenance training by internal staff. The training program focuses on best practices for cleaning, inspecting, operating, and maintaining its mainline sewer pipes. One purpose of the training is to provide an evaluation of functions, equipment, programs, and protocols and to assess the current effectiveness of collection system maintenance practices. This assessment enables DOU to identify possible opportunities and/or enhancements to efforts made by the Wastewater and Drainage Division that may result in more reliable collection system performance and stabilization, with a correlating reduction of SSOs and a higher level of customer service. Another purpose of the training is to introduce and reinforce maintenance best practices to DOU's sewer maintenance crews.

The City Standard Specifications require that all contractors and subcontractors be experienced with sanitary sewer work and that they fully comply with all laws, regulations, and standards governing sewer work, sanitation, and public health.

Table 4.3 – Training Resources (Conferences, Seminars, and Materials)

Sponsor	Event	Timeframe	References
California Water Environment Association (CWEA)	State Conference	April	www.cwea.org
	Northern Regional Safety Conference	September	
	Sacramento Area Collection Systems Committee	Biannual	
Tri-State Conference	Annual Conference	September	www.tristateseminar.com
California State University, Sacramento	Videos, manuals, home study courses		www.owp.csus.edu

4.6 Major Equipment and Critical Spare Parts Inventories

The inventory of major sewer maintenance equipment and critical parts is managed by the Business Services Logistics Section.

DOU continually evaluates and analyzes critical parts inventories for the pump stations. DOU maintains multiple spare submersible pumps for use in the event of a pump station failure. DOU also maintains an extensively equipped fabrication shop that can quickly fabricate nearly all critical and hard to replace parts for pumps and station equipment. This reduces downtime typically associated with ordering and receiving parts from suppliers. DOU pump stations include redundancy of critical systems to reduce the impact of failure.

CHAPTER 5 – DESIGN AND PERFORMANCE

This chapter of the SSMP identifies the design and performance provisions used by the sanitary sewer system and complies with section D13 (v) of the State WDRs, included in Appendix A.

5.1 State WDRs

Section D13 (v) of the State WDRs requires the SSMP to identify the following:

- (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.

5.2 Design Standards

DOU has two published documents that provide guidance for planners, engineers, and construction personnel for its sewer system: The City Standard Specifications (Standard Specifications) dated June 2007, and the City of Sacramento Design and Procedure Manual (DPM) dated July 2018. The latest versions of these two published documents, and any addenda, are hereby included in the City's SSMP by reference.

The Standard Specifications are periodically updated as changes are developed. A City-wide committee, comprised of representatives from each City department, evaluates the Standard Specifications on a semi-annual basis, votes on procedural changes, and issues an addendum upon approval. These changes are posted on the City's website. Ad hoc changes are consolidated into an updated document that is published to replace the previous edition as needed.

The DPM provides standards for sewer generation rates and provides general design guidelines for new sewer facilities, both pump stations and pipelines. A DPM modification was completed in July 2018 for pipelines. Major revisions were made to the sewer generation rates and performance standards. Changes made to the DPM are posted on the City's website.

A third standard, used by DOU Engineering and Water Resources Division, is the standard Special Provisions for pipeline replacement, pipe rehabilitation, and electrical switchgear replacement projects. These standards are stored on a shared drive on the DOU server and are continuously updated by DOU supervising engineers as improvements are identified during project implementation. These standard Special Provisions enable efficiency improvements by reducing the time needed to write project specifications and ensure that the latest designs benefit from ongoing experience. The City's standardized provisions for sewer pipe rehabilitation are found only in its standardized Special Provision for the work.

5.3 Inspection and Testing Standards

The City's Standard Specifications are routinely referred to in construction documents to provide quality standards for all construction in the sewer system. It is utilized both for capital improvement projects and for development related infrastructure projects. The quality control of the document is managed by a DOU Supervising Engineer. The Standard Specifications include testing standards for pipe installation. Sewer system construction is overseen by Department of Public Works inspectors for DOU capital improvement projects and development related sewer construction.

CHAPTER 6 – OVERFLOW EMERGENCY RESPONSE PLAN

This chapter of the SSMP provides an overview of the City's emergency response procedures for sewer overflows. The information presented complies with section D13 (vi) of the State WDRs, included in Appendix A.

6.1 State WDRs

Section D13 (vi) of the State WDRs requires the City 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 an 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 Monitoring and Reporting Program (MRP) of the State WDRs. All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDRs or National Pollutant Discharge Elimination System (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.

6.2 Summary of Sewer Overflow Response

DOU's overflow response is described in the Wastewater Collection Standard Operating Procedures, included by reference. These documents include information required by section D13 (vi) of the State WDR. The sewer overflow response process is described further with flow charts included in Chapter 2 of this document.

6.3 Notification

Where appropriate, the documents include notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner. This includes procedures needed to comply with both the February 2008 amendment and the September 2013 amendment of the State WDRs' MRP requirements. The 2013 amendment to the MRP included a change in the notification requirements and defined new spill categories. Notification to California's Office of Emergency Services within two hours of becoming aware of a Category 1 SSO greater than or equal to 1,000 gallons is to be made.

Chapter 2 Figure 2.5 outlines DOU's spill notification decision tree and is included as appropriate in the plans listed above.

6.4 A Program to Ensure Appropriate Overflow Response

DOU staff is trained throughout the year on sewer overflow response procedures. The training includes field staff response activities, regulatory reporting requirements, and the City procedures set forth in the Wastewater Collection Standard Operating Procedures.

6.5 Procedures for Prompt Notification

The documents listed in Chapter 6 paragraph 6.2 Summary of Sewer Overflow Response, include procedures for prompt notification, including the notification decision tree shown in Figure 2.5 with required timelines. In addition, DOU staff receive training regarding these procedures and notification requirements. The officials who receive immediate notification are included in the Wastewater Collection Standard Operating Procedures.

6.6 Ensure Staff Aware, Follow, and Trained

Appropriate City staff are trained on the, SOPs of the DOU's Emergency Response Program. Contractor personnel are trained and advised to immediately contact City staff in the situation of an overflow/outflow.

6.7 Traffic and Crowd Control and Other Activities

The Wastewater Collection Standard Operating Procedures address emergency operations, such as traffic and crowd control and other necessary response activities.

6.8 Program to Ensure Spill Containment, Prevention, and Abatement

City staff receives on-the-job training regarding reasonable steps that should be 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. Training will include such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

CHAPTER 7 – FATS, OIL, AND GREASE CONTROL PROGRAM

This chapter of the SSMP provides a description of the Fats, Oil, and Grease (FOG) Program for the SSMP and complies with section D13 (vii) of the State WDRs, included in Appendix A.

7.1 State WDRs

The City is required by section D13 (vi) of the State WDRs to evaluate its service area to determine whether a FOG control program is needed. If FOG is found to be a problem, the City must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. The FOG source control program 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 sanitary sewer overflows (SSOs) and blockages caused by FOG;
- (d) Requirements to install grease removal devices (such as traps or interceptors) design standards for the grease removal devices, maintenance requirements, requirements for best management practices, record keeping and reporting requirements;
- (e) Authority to inspect grease producing facilities, enforcement authorities, and whether the City has sufficient staff to inspect and enforce the FOG ordinance;
- (f) An identification of 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 sewer system, for each sewer system section identified in (f) above.

7.2 FOG Control Program Determination

DOU has determined that FOG continues to be a contributor to SSOs in the separated sewer system. Roughly 33% of the SSOs experienced in 2007-2018 were FOG-related SSOs. In an effort to continue reducing SSOs resulting from grease blockages, DOU implements a FOG control program that includes routine, scheduled cleaning, an

inspection program for Food Service Establishments (FSEs), and a FOG outreach program.

7.3 Public Outreach

The City has developed and implemented commercial and residential FOG outreach and educational programs as follows:

Commercial (Restaurants)

The commercial FOG outreach and education activities target FSEs (i.e., restaurants). The outreach activities were designed to educate restaurant owners and managers about the City's codes regarding the need for grease traps and interceptors, the need to maintain these traps and interceptors, and the City's inspections and enforcement methods.

The commercial FOG activities initially featured a survey to gather data about local restaurants and their current practices. DOU then developed the "Sacramento Fat Free Drains" website (www.sacramentofatfreedrains.com) that provides information about restaurant responsibilities and encourages restaurant owners/managers to work in partnership with the City to help ensure that the sewer system functions at its best. DOU also created videos, which feature local restaurant managers and owners, that inspectors use when meeting with other restaurant owners and managers to explain the process and the reason for their visit. The videos are in multiple languages to address and accommodate the City's diverse restaurant population. DOU also created information that is left with the managers and owners to help them train staff on proper FOG disposal methods and grease trap and interceptor maintenance. These materials are also located on the "Sacramento Fat Free Drains" website for ease of access by restaurant owners, managers, and staff, as needed.

Residential

The residential FOG outreach activities also utilize the "Sacramento Fat Free Drains" website and features an online video for City residents. FOG outreach activities utilize bill stuffers, door tags, promotional items, and media relations.

Bill stuffers demonstrating proper FOG disposal techniques are placed in City utility bills annually each fall. Door tags are placed on the doors of apartment complex managers or homes that have a FOG-related SSO. Door tags are also placed on the doors of homes connecting to the main upstream of the location that experienced the FOG-related SSO incident. DOU attends community events and distributes giveaways promoting proper FOG disposal. DOU also works with the media to remind residents about how to properly dispose of FOG.

DOU's "Sacramento Fat Free Drains" website is a significant component of both the commercial and residential FOG outreach and education activities. The website and FOG information is also promoted through DOU's Facebook and Twitter media networks.

DOU continues to work with regional partners, such as SRCSD and Sacramento Area Sewer District (SASD), as well as various associations when opportunities arise to ensure the message about proper FOG disposal is communicated throughout the region.

7.4 FOG Disposal

DOUs FOG disposal plan is conducted on an on-going basis. The plan includes disposal at landfills for small quantities of grease, disposal at Household Hazardous Waste Facilities for larger quantities of grease, and disposal by commercial grease hauling companies. The public is informed of these disposal options and their respective schedules by the afore-mentioned public outreach efforts. Reference can be made to “Sacramento Fat Free Drains” (www.sacramentofatfreedrains.com) for more information regarding the FOG disposal plan (options) and schedule for residents and commercial entities within the City.

7.5 Legal Authority

Chapter 3 Table 3.1 lists the City codes that provide the required legal authority to prohibit FOG discharges into the sewer system and the authority to identify measures that prevent SSOs and blockages caused by FOG.

7.6 Requirements for Grease Removal Devices

Title 15 of the Municipal Code includes requirements for the installation of grease removal devices (such as traps or interceptors), design standards for the grease removal devices, maintenance requirements, record keeping and reporting requirements. These requirements and standards are implemented by the City’s Community Development Department, Building Division. In addition, the City requires review by the County Environmental Management Department (EMD) - Environmental Health Division prior to approving a building permit for a restaurant. FSEs with grease removal devices are inspected by DOU as discussed further in the next section.

7.7 Inspection Authority

The City has the authority to inspect grease-producing facilities, enforce provisions of applicable sewer use ordinances, and sufficient staff to inspect and enforce the FOG provisions of applicable City ordinances. Refer to Chapter 3 Table 3.1 for a summary of legal authority.

DOU Wastewater and Drainage Division developed a FOG Control Inspection Program with dedicated inspection staff. This inspection staff has the primary responsibility of performing routine inspections and conducting enforcement to ensure FSEs are in compliance with the City’s ordinances and to verify the maintenance and performance of the FSE’s grease removal device. The goal of the program is to annually inspect all FSEs that are provided with City sewer collection services that have a grease interceptor or have been the cause of an SSO. The FSEs identified for inspection are prioritized based on historical SSO and maintenance information, as well as DOU’s

inspection and enforcement data. Inspection staff will conduct follow-up inspections and enforcement of FSEs that are found not maintaining their grease removal devices or implementing proper best management practices (BMPs).

7.8 Areas Subject to FOG Blockages and Cleaning

DOU prioritizes its preventative maintenance activities in the separated sewer system based on service requests (customer complaints), historical knowledge, experience, CCTV inspection, and CMMS data. The preventative maintenance programs includes FOG maintenance, and the areas of the sewer system that have recurring blockages caused by FOG are placed on scheduled maintenance and jet cleaned regularly. Wastewater Collection's planner/scheduler uses the cleaning findings on a weekly basis to adjust, as appropriate, the scheduled maintenance cleaning frequencies. For example, medium and heavy findings of grease trigger the pipe to be put on a higher frequency while clear findings trigger the pipe to be put on a lower frequency. More information on the preventative maintenance program can be found in Chapter 4 under preventative operation and maintenance section.

7.9 Source Control Measures

The source control measures for areas of the collection system that are subject to FOG blockages include public outreach, restaurant inspections, and enforcement and maintenance activities described previously in this chapter.

CHAPTER 8 – SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

This chapter of the SSMP presents the City's System Evaluation and Capacity Assurance Plan that will determine hydraulic capacity of key sanitary sewer system elements for peak flow conditions. The information presented complies with section D13 (viii) of the State WDR, which is included in Appendix A.

8.1 State WDRs

The SSMP must include those elements listed below that are appropriate and applicable to the City's system:

- (a) Evaluation: Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to a sanitary sewer overflow (SSO) discharge cause by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs that escape 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.
- (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 sizes, inflow/infiltration (I/I) reduction, 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 City 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 D14.

8.2 Background

The sanitary sewer system that serves the City is described in Section III Sewer Collection System Overview of the SSMP. The City service area is divided into 54 separated sewer basins. The sewage from 40 of these basins is pumped by individual pump stations. Sewage from ten of the basins gravity flows directly or indirectly into SRCSD interceptor pipes. Sewage from the remaining four basins gravity flows into the adjacent combined sewer system where flows are then pumped into the SRCSD interceptor pipes.

The 54 separated sewer basins are presented in Table 8.1 below.

Table 8.1 – Separated Sewer Basin Areas

Basin No.	Area (acres)	Area (sq. miles)	Basin No.	Area (acres)	Area (sq. miles)
G306	533.5	0.83	119	2635.0	4.12
G301	1442.5	2.25	121	182.8	0.29
G302	851.5	1.33	120	181.1	0.28
146	147.4	0.23	126	6.9	0.01
87	634.1	0.99	42	86.9	0.14
131	81.3	0.13	55	2312.4	3.61
106	257.5	0.40	G355	583.2	0.91
6	658.7	1.03	122	43.4	0.07
G303 (n)	1887.6	2.95	36	22.9	0.04
81	11.1	0.02	21	1167.2	1.82
85	1013.8	1.58	134	41.7	0.07
105	104.7	0.16	40	153.6	0.24
80	320.9	0.50	127	25.9	0.04
G303 (s)	180.1	0.28	G354	2167.9	3.39
79	35.8	0.06	57	23.6	0.04
G304	645.3	1.01	45	267.3	0.42
G305	382.2	0.60	137	870.6	1.36
84	26.5	0.04	143	28.6	0.04
133	14.4	0.02	136	130.6	0.20
107	27.5	0.04	135	266.1	0.42
32	443.7	0.69	145	94.9	0.15
29	23.3	0.04	49	55.1	0.09
3	32.1	0.05	88	871.7	1.36
123	12.2	0.02	53	163.7	0.26
124	9.7	0.02	CS351	539.7	0.84
125	7.0	0.01	CS352	262.5	0.41
48	326.3	0.51	CS353	1533.8	2.40

8.3 Evaluation

The actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency are described herein.

A review of the City SSOs occurring over the past several years indicates that all SSOs have been caused by tree roots, structural defects, debris and/or FOG. At this point in time, it appears that hydraulic capacity has not contributed to these recorded SSOs. Nonetheless, DOU is conducting a capacity analysis of each of the sewer basins to assess the hydraulic capacity of the trunk sewers. Flow monitoring has revealed I/I levels that could potentially impact available hydraulic capacity in the Pocket Area (City Sewer Basins 55, 127, 134, 137, 135, 136, 143 and 145). High ground water and rainfall events combined with leaking pipe joints produce higher flow in the involved sewer mains than typically seen in other basins. An overview of the City's existing and future sewer conditions along with the South Pocket I/I reduction project is summarized below.

Sewer Model – Existing Conditions

As noted in Table 8.1, each of the City's sewer basins is less than 10 square miles (6,400 acres) in area and, therefore, a capacity evaluation for each basin was developed using a spreadsheet analysis. Peak sewer flows were estimated using updated design criteria discussed in paragraph 8.4 with existing land use and connection information. The design criteria included the effects of I/I based on the age of pipe within the sewer system and documented high groundwater depths. The capacity of major trunk sewer pipes was evaluated using the computed peak sewer flows.

The analysis indicated that 15 basins have potential capacity deficiencies for existing land use conditions. Each of the studies showed surcharging above the crown of the pipe under wet weather conditions but they did not predict SSOs would result. For each of these 15 basins, DOU developed models to more accurately define flows and account for storage and routing in the pipe network. DOU has performed flow monitoring in several of the basins identified by the analysis as potentially having hydraulic capacity issues. DOU will continue flow monitoring on an annual basis in preparation of the remaining modeling. As models are completed, rehabilitation strategies are developed to either increase the hydraulic capacity of the sewer systems, implement I/I reduction measures to lessen the impacts of groundwater and rainfall on the sewer system, and/or to increase preventative maintenance programs.

Sewer Model – Future Conditions

The City's General Plan 2035 anticipates significant growth in existing or infill areas. Additional sewer connections will be made to the system and many of these connections will serve mixed-use development that have a higher sewer flow rate than the existing land use designation. The analysis is used to estimate future flow conditions and evaluate the impact to the existing collection system and what improvements may be required to accommodate future growth.

Twelve of the 15 basins identified as having potential capacity deficiencies based on existing land use conditions have been identified by the analysis as having potential capacity deficiencies when future infill and redevelopment land use conditions are considered. Also, two additional basins have been identified as potentially having capacity deficiencies when considering future land use conditions. DOU is performing additional modeling evaluations for these basins to more accurately define flows and account for storage and routing in the pipe network. Like the first 15 basins, DOU is performing annual flow monitoring in the two remaining basins to measure sewer flows so that actual dry and wet weather flow conditions can be included in the models. As models are completed DOU is creating rehabilitation strategies to either increase the hydraulic capacity of the sewer systems, implement I/I reduction measures to lessen the impacts of groundwater and rainfall on the sewer system, and/or to increase preventative maintenance programs.

South Pocket I&I Reduction Project

Although SSOs have not been identified as an issue in the Pocket Area, the reduction of I/I is a concern to the City. In an effort to identify areas producing the most I/I, DOU has performed various pilot studies using flow monitoring and CCTV. Information gained from various pilot I/I reduction projects and studies guide the City's approach in the creation of CIP projects to reduce I/I in priority sewer basins.

Once areas are identified, DOU implements specific structural techniques to reduce I/I which may include: (1) lining of sewer mains, (2) point repairs of joints, (3) lining of sewer service laterals, and (4) using resin, chemical grout, or cured-in-place material to seal sewer service lateral connections to the main. The project will measure pre-project and post-project flows in sewer mains to determine which method or combination of methods is most successful in reducing I/I.

DOU completed the South Pocket I&I reduction project in December 2016. The project identified four mini-basins near the Pocket Canal in an area previously identified to be a source of severe ground water infiltration. Flow meters were installed for each of the mini-basins to determine the average dry weather flow (ADWF) for use in estimating ground water infiltration. The ADWF determination from flow monitoring included two components: base wastewater flow and ground water infiltration. Base wastewater flow represents the sanitary and process flow contributions from residential, commercial, institutional and industrial users of the system. CCTV was conducted on wastewater mains in each of the mini-basins to seek and document ground water infiltration within the pipes and manholes and to document any structural or other defects.

A rehabilitation program was developed based on the flow monitoring and CCTV results. Cured-in-place pipe lining was conducted on pipe segments exhibiting running or gushing ground water infiltration. After the lining was completed flow meters were installed again to evaluate the effectiveness of the rehabilitation in reducing ground water infiltration.

The South Pocket I&I reduction project concluded that rehabilitation efforts will likely not significantly improve the hydraulic conditions within the mini-basin areas. Ground water infiltration reduction may provide the greatest benefit during the peak flow periods by

providing additional capacity at the City Interceptor. Also, ground water infiltration rates are directly influenced by the stage of the Sacramento River and as the river rises groundwater levels rise and cause an increase in hydraulic head.

DOU plans to complete a comprehensive hydraulic evaluation or master plan for this area. Information gained from various pilot I/I reduction projects and studies guide the City's approach in the creation of CIP projects to reduce I/I in priority sewer basins.

8.4 Design Criteria

DOU uses design parameters for calculating average dry weather flow (ADWF), peak dry weather flow (PDWF), ground water infiltration, RDI/I and peak wet weather flow (PWWF) within the City's Design and Procedures Manual. The design parameters also incorporate land use and corresponding ESD factors.

DOU's updated design criteria are consistent with published data as well as flow and planning studies performed by various agencies and cities. DOU determined that the magnitude of ground water infiltration is a function of groundwater elevation and the magnitude of RDI/I is a function of the pipe age for the selected design storm (10-year, 6-hour rainfall event). The updated design criteria for determining the various flow rates used by the spreadsheet analysis, discussed in section 8.3 above, are summarized in Table 8.2. These design criteria were updated by DOU in July 2018 and are used in developing future sewer models for the existing conditions and future conditions as discussed in paragraph 8.3. Additional sewer main design criteria are included in Design and Procedures Manual Chapter 9, linked in table 8.2.

Table 8.2 – Design Criteria for Calculating Peak Wet Weather Flow

Item	Design Flow Calculation Parameters
Land Use	ESD Factors Refer to Plate 9-6 Sewer Generation Rates (Page 9-54 thru 9-57 of the City of Sacramento Design and Procedures Manual**)
Flow Factor	310 gpd/ESD (includes Base Sanitary Flow (BSF and Ground Water infiltration (GWI))
Average Dry Weather Flow (ADWF)	ADWF = ESDs x Flow Factor
Peaking Factor (PF)	$PF = 1.7 \times (ADWF)^{-0.056}$
Peak Dry Weather Flow (PDWF)	PDWF = ADWF x PF
*Rainfall- Dependent Infiltration/Inflow (RDI/I)	1,600 gpda for sewers less than 20 years old 2,500 gpda for sewers greater than 20 years old
Peak Wet Weather Flow (PWWF)	PWWF = PDWF + GWI + RDI/I
Ratio of flow depth to inside pipe diameter (d/D)	Maximum d/D ratios shall be 0.7 for mains less than 12-inches and 1.0 for larger pipes
Notes	ESD = equivalent single family dwelling unit gpd = gallons per day gpda = gallons per day per acre * = rates not applicable for Pocket Area ** = Design and Procedures Manual Chapter 9: https://www.cityofsacramento.org/-/media/Corporate/Files/DOU/Specs-Drawings/Section9.pdf?la=en

8.5 Capacity Enhancement Measures (Capital Improvement Plan)

Improvements to the sewer system to correct hydraulic deficiencies identified in paragraph 8.3 are described herein. Funding mechanisms for these improvements will also be presented.

Hydraulic deficiencies in the sewer system can be corrected by installing larger pipes, increasing pump station capacity, providing storage, re-routing flows within the collection system, reducing I/I and/or implementing and enforcing water conservation measures. The City completed a water meter retrofit program at the end of 2021 and now has all water customers within the City metered. This program is expected to reduce water use and resultant sewer flows. This may result in a smaller peaking factor than that listed in Table 8.2 and reduce the design PWWF.

The Engineering and Water Resource Division of the DOU has planning and project delivery groups that will study various CIP alternatives to correct hydraulic deficiencies within the City’s sewer system. The DOU also has an Asset Management Section that will assist with prioritization of proposed CIPs.

Funding sources for the proposed CIPs include: monthly ratepayer charges, developer funding, and impact fees or connection fees. Rate payer charges may be used to fund rehabilitation and replacement of the existing sewer system. Projects to increase sewer capacity associated with future growth in existing sewer basins are funded by developers and/or by an impact fee (connection fee).

8.6 Schedule

A schedule of completion dates for all portions of the Capital Improvement Program delineated in paragraphs 8.3, 8.4, and 8.5 is presented herein. The schedule is shown in Table 8.3.

Table 8.3 – Completion Schedule for Capital Improvement Program

Task No.	Task	Completion Date
1	Complete South Pocket AD2 I/I Reduction project	December 2016
2	Complete modifications to sewer design criteria in the Design and Procedure Manual update	June 2018
3	Create sewer models for basins that the spreadsheet analysis indicated may have potential capacity problems.	Estimated 2024

CHAPTER 9 – MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

This chapter of the SSMP discusses the City's Monitoring, Measurement, and Program Modifications. The information presented complies with section D13 (ix) of the State WDRs, included in Appendix A.

9.1 State WDRs

The SSMP must include those elements listed below that are appropriate and applicable to the City's system:

- (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 sanitary sewer overflow (SSO) trends, including: frequency, location, and volume.

9.2 Performance Measures

The City will use the following measures to evaluate the performance of its wastewater collection system and the effectiveness of its SSMP:

- SSO Rate (SSOs/100 miles/year);
- Number of SSOs for each cause (roots, grease, debris, pipe failure, capacity, lift station failures, and other);
- Median SSO volume (gallons);
- Percentage of SSOs greater than 100 gallons;
- Percentage of SSOs reported as Category 1;
- Percentage of sewage contained compared to total volume spilled; and
- Percentage of total spilled sewage discharged to surface water.

9.3 Historical Performance Data

The City began reporting SSOs into California Integrated Water Quality System (CIWQS) on September 2, 2007. SSO Data from September 2, 2007 – December 31, 2021, which is included as Appendix E, will be used as the City's historical performance data.

9.4 Performance Monitoring and Program Changes

DOU will annually evaluate the performance of its wastewater collection system using the performance measures discussed in paragraph 9.2, above. The data will be updated and analyzed to determine whether the elements set forth in this SSMP are effective in accomplishing the established goals. The City may also use other performance measures in its evaluation. Elements of the SSMP will be modified, as appropriate, based on the results of this annual analysis of performance measures. Additionally, elements of the SSMP may be revised based on the results of the bi-annual audits conducted, as described in Section V Chapter 10 of this SSMP.

9.5 SSMP Updates

DOU conducts a review of the SSMP and updates the SSMP as needed. An update should be conducted a minimum of every five years. DOU determines the need to comprehensively review or update its SSMP more frequently based on the results of the bi-annual audit and annual performance evaluation of its sanitary sewer system, as noted above.

9.6 Trends

DOU analyzes the SSO data from CIWQS to identify trends of SSO causes, spill volumes, and recovery volumes to gauge the effectiveness of the SSMP over time. This analysis also indicates spill causes that DOU may need to focus on. The following figures and tables identify SSO trends by calendar year (CY).

Figure 9.1 - SSO Rate by Calendar Year

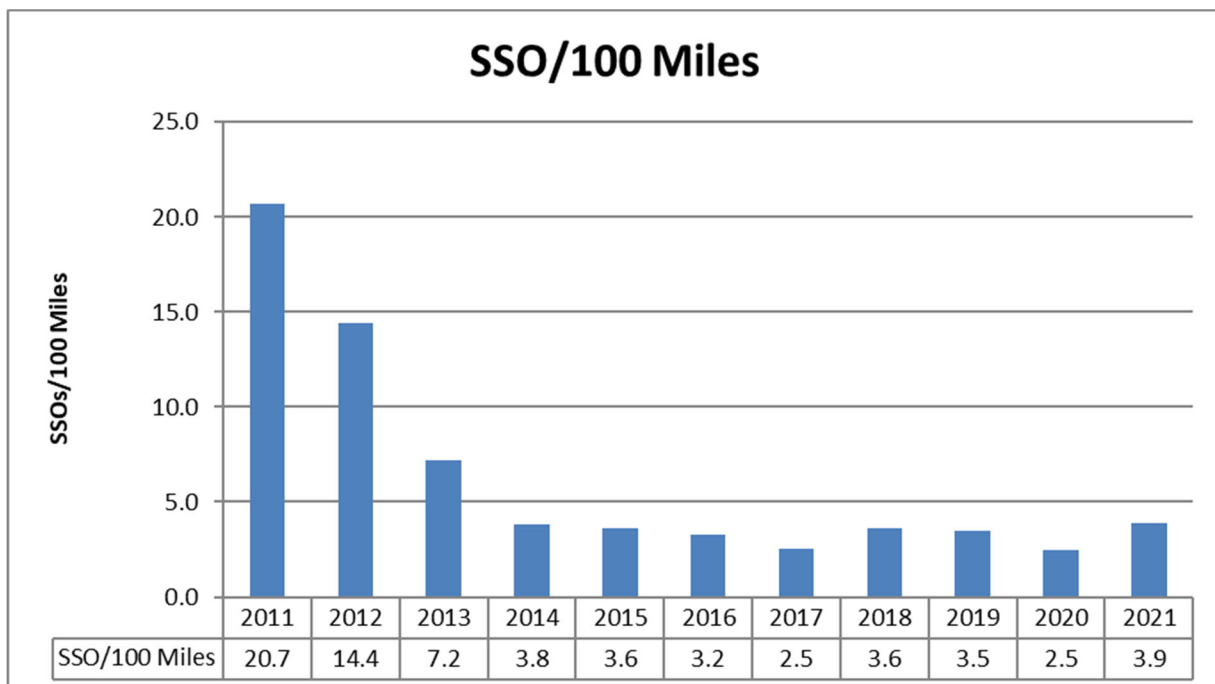


Figure 9.2 - SSO Cause by Calendar Year

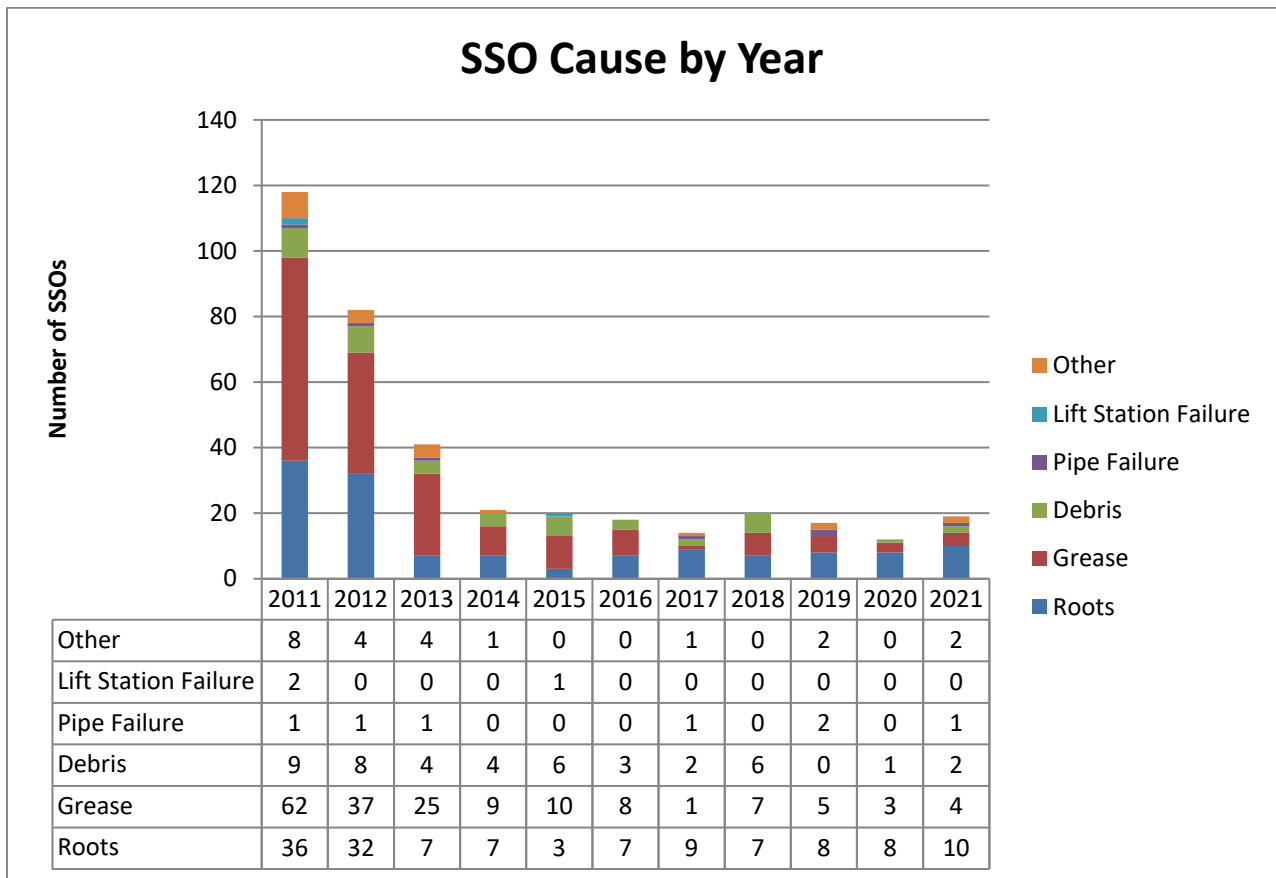


Table 9.1 – SSOs Less Than 100 Gallons

Year	Total SSOs	# of SSOs to Reach Storm Drain	% SSOs to Reach Storm Drain	SSOs ≤ 100 Gallons	% SSOs ≤ 100 Gallons
2011	118	72	61.00%	88	74.60%
2012	82	51	62.20%	65	79.30%
2013	41	22	53.70%	34	82.90%
2014	21	9	42.90%	21	100.00%
2015	20	10	50.00%	20	100.00%
2016	18	10	55.60%	18	100.00%
2017	14	9	64.30%	14	100.00%
2018	20	12	60.00%	20	100.00%
2019	17	11	64.71%	11	64.71%
2020	12	11	91.67%	6	50.00%
2021	19	17	89.47%	5	26.32%

DOU has steadily decreased SSOs in recent years. Since 2014 SSO occurrences range between twelve to twenty-one per calendar year. Percentage of SSOs that reach a storm drain have increased in the last three years, and volumes have increased on average in the same time period. These incidents are continuously monitored with additional research done at an asset and maintenance level to identify opportunities for process improvements to address metrics trending in an unfavorable direction.

A list of SSOs between September 2, 2007 and CY 2018 for the separated sewer collection system can be found in Appendix E.

CHAPTER 10 – SSMP PROGRAM AUDITS

This chapter describes the schedule and methods the City will utilize in evaluating the effectiveness of the SSMP and making revisions to the program. The information contained within this chapter complies with section D13 (x) and D14 of the State WDRs, included in Appendix A.

10.1 State WDRs

Section D13 (x) of the State WDRs requires that, as part of the SSMP, the City must 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 will focus on evaluating the effectiveness of the SSMP and the City's compliance with the SSMP requirements identified in this subsection of the State WDRs, including identification of any deficiencies in the SSMP and steps to correct them.

Section D14 of the State WDRs requires the SSMP be updated every five years, and must include any significant program changes. Re-certification by the governing board of the City is required when significant updates to the SSMP are made.

10.2 SSMP Audit Schedule and Procedures

It is DOU's intent to maintain an effective SSMP that continues 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 within the City service area.

To assure the SSMP continues to meet these goals, DOU proposes to evaluate and modify the program as follows:

- Bi-annual Audits – The DOU Environmental and Regulatory Compliance section will conduct audits of SSMP effectiveness and compliance with the State WDRs. The audits will occur every two years from the fiscal year (FY) 2008-2009 SSMP implementation. The next audit will take place in Fall 2019. The results and recommendations developed from audits will be included in the SSMP as Section VI Audit Results and Recommendations.

The criteria evaluated, analysis conducted, and audit documentation utilized in the bi-annual audit will include the performance measures discussed in Chapter 9 Monitoring, Measurement, and Program Modification of this SSMP. At a minimum the audits will include the following:

- ✓ Review of progress made in development of SSMP elements
- ✓ Review of monitoring and measurement outlined in Chapter 9
- ✓ Identification of successes of implementing SSMP elements and needed improvements

- ✓ Description of system improvements during the past year
 - ✓ Description of system improvements planned for the upcoming year, with an estimated schedule for implementation
- DOU Environmental and Regulatory Compliance section conducts a review every five years of SSMP effectiveness and State WDR compliance. The review is similar to the bi-annual audit with the exception that opportunities for long-term improvements to the SSMP will be researched. Re-certification by the City Council will be requested should the review result in significant updates to the SSMP. Significant updates generally mean SSMP updates requiring additional monies to implement the SSMP that must be approved by the governing board.

CHAPTER 11 – COMMUNICATION PROGRAM

This chapter describes the City SSMP communication program. The information presented complies with section D13 (xi) of the State WDRs, included in Appendix A.

11.1 State WDRs

The City must 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 City as the program is developed and implemented.

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

11.2 Communication Program Discussion

The City will communicate on a regular basis with the public on the implementation and performance of the SSMP using various types of outreach including print media, social media, websites (internet), and public hearings. The City will utilize DOU bill stuffers to inform customers of upcoming issues of concerns related to the SSMP (e.g., upcoming rate changes). The City also maintains a website (www.cityofsacramento.org/utilities) to inform the public about City utilities activities. The City's SSMP is published on DOU's website and will provide a forum in which the public can provide comment on the document.

The updated SSMP is certified by the City Council at a public meeting every 5 years.

The City will communicate with systems that are related to the City's sewer system by continuing to participate in California Alliance for Sewer System Excellence (CASSE). CASSE meetings are run by SASD and include other sewer agencies where both regional collection system and local collection system issues are discussed.

CHAPTER 12 – SSMP COMPLETION AND CERTIFICATION

This chapter provides the required certifications of compliance for the Sewer System Management Plan (SSMP) and complies with section D14 of the State WDRs, included in Appendix A.

12.1 State WDRs

Both the SSMP and the City's program to implement the SSMP must be certified by the City to be in compliance with the requirements set forth above and must be presented to the City's governing board for approval at a public meeting. The City shall certify that the SSMP and subparts thereof are in compliance with the general WDRs within the time frames required.

12.2 Certification Documentation

The State WDRs requires that the SSMP be updated every five years, and also requires re-certification by City Council when significant updates are made. The original SSMP was adopted by City Council April 12, 2009 and re-certified by City Council on April 22, 2014. The 2019 SSMP update was re-certified by City Council on October 22, 2019. A copy of the City Council consent to certify compliance of the 2018-2019 SSMP is included in Chapter 12 of this document.

City Council Resolution for SSMP Development Plan and
Schedule - July 2007

RESOLUTION NO. 2007-523

Adopted by the Sacramento City Council

July 17, 2007

SEWER SYSTEM MANAGEMENT PLAN – DEVELOPMENT PLAN AND SCHEDULE

BACKGROUND

- A. On May 2, 2006 the California State Water Resources Control Board (SWRCB) adopted Statewide General Waste Discharge Requirements (WDRs). Order No. 2006-0003, for all publicly owned sanitary sewer collection systems.
- B. The City applied for coverage under the WDR on November 2, 2006 for the separated sewer collection system.
- C. The WDR require publicly owned collection systems to prevent sanitary sewer overflows (SSOs), develop a Sewer System management Plan (SSMP) to eliminate SSOs, and comply with reporting requirements. In addition, the agency governing board is required to approve at a public meeting the Development Plan and Schedule for preparing the SSMP.
- D. Adoption of the proposed Sewer System Management Plan - Development Plan and Schedule (Exhibit A) will satisfy the WDR requirement.

BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE CITY COUNCIL RESOLVES AS FOLLOWS:

- Section 1. The Sewer System Management Plan – Development Plan and Schedule at Exhibit A is approved and adopted.

Table of Contents:

Exhibit A Sewer System Management Plan - Development Plan and Schedule

Adopted by the City of Sacramento City Council on July 17, 2007 by the following vote:

Ayes: Councilmembers, Fong, Hammond, McCarty, Pannell, Sheedy,
Tretheway, Waters, and Mayor Fargo.

Noes: None.

Abstain: None.

Absent: Councilmember Cohn.

Attest

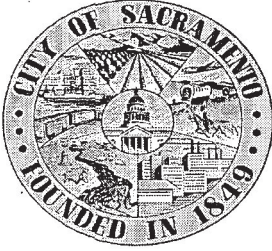
Shirley Concolino, City Clerk



Mayor, Heather Fargo

City Separated Sewer System Management Plan – Development Plan and Schedule	
Main Task	Due Date
SSMP Development Plan and Schedule	August 2, 2007
Goals and Organizational Structure	November 2, 2007
Overflow Emergency Response Plan	November 2, 2008
Legal Authority	November 2, 2008
Operation and Maintenance Program	November 2, 2008
Fats, Oils and Grease Control Program	November 2, 2008
Design and Performance	May 2, 2009
System Evaluation and Capacity Assurance Plan	May 2, 2009
Monitoring and Program Modifications	May 2, 2009
Program Audits	May 2, 2009
Communication Program	May 2, 2009
Final SSMP, incorporating all of the SSMP requirements	May 2, 2009

City Council Report SSMP Certification - April 2009



REPORT TO COUNCIL

City of Sacramento

915 I Street, Sacramento, CA 95814-2604
www.CityofSacramento.org

Consent
April 21, 2009

Honorable Mayor and
Members of the City Council

Title: Certification of a Sewer System Management Plan

Location/Council District: Citywide

Recommendation: Adopt a **Resolution** certifying compliance of the City Sewer System Management Plan with the State Waste Discharge Requirements for the City separated sewer collection system.

Contact: David L. Brent, Engineering Manager, 808-1420; Sherill Huun, Supervising Engineer, 808-1455

Presenters: N/A

Department: Department of Utilities (DOU)

Division: Engineering Services

Organization No: 14000

Description/Analysis

Issue: As required by the State, the City has coverage under the recently adopted Statewide General Waste Discharge Requirements (WDR) for all publicly owned sanitary sewer collection systems. The City is required by the State to develop and implement a Sewer System Management Plan (SSMP) to eliminate sewer overflows from the separated sewer system owned by the City (see Attachment 2). The City is also required to certify at a public meeting compliance of the SSMP with the State WDR. Adoption of the attached resolution satisfies this certification requirement.

Policy Considerations: Compliance with the WDR, specifically, the requirement to eliminate sanitary sewer overflows, is consistent with the City Council focus areas of public safety, economic development, and sustainability and livability.

Environmental Considerations: This report concerns administrative activities that will not have any significant effect on the environment and that do not constitute a "project" as defined by the California Environmental Quality Act (CEQA)[CEQA Guideline Sections 15061(b)(3); 15378(b)(2)].

Rationale for Recommendation: With the adoption of the resolution, the City

will comply with the State WDR for the City separated sewer collection system.

Financial Considerations: Oversight of SSMP implementation will be completed with existing resources; however, assessments to be completed with the SSMP may require the City spend additional resources in future years for capital improvements or additional operations and maintenance activities to reduce or eliminate sewer overflows.

Emerging Small Business Development (ESBD): none

Respectfully Submitted by: 
for David L. Brent
Engineering Services Manager

Approved by: 
Marty Hanneman
ACM/Director of Utilities

Recommendation Approved:


for Ray Kerridge
City Manager

Table of Contents:

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1 Background	pg. 3
2 Resolution	pg. 4
3 Cd copy of 2008-2009 SSMP	

Attachment 1

Background

On May 2, 2006 the California State Water Resources Control Board (SWRCB) adopted Statewide General Waste Discharge Requirements (WDR) Order No. 2006-0003 for all publicly owned sanitary sewer collection systems. The purpose of the WDR is to prevent Sewer System Overflows (SSOs). A SSO is any overflow or spill of sewage that has backed up into buildings or private property, or that has entered a waterway, or a spill that has entered the public right-of-way.

The City applied for coverage under the WDR on November 2, 2006 for the separated sewer collection system from the separated system owned by the City (see Attachment 2). The City is required to prevent SSOs from the separated system, develop and implement a Sewer System Management Plan (SSMP) to eliminate SSOs, and comply with SSO reporting requirements. The City Council is also required to certify at a public meeting that the City's SSMP complies with the requirements set forth in the WDR.

The purpose of the City SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system, and to reduce and prevent SSOs, as well as mitigate any SSOs that do occur. The SSMP is required to include specific plan components including goals, legal authority, operations and maintenance activities, design standards, emergency response plans, grease blockage best management practices, capacity studies, audits and capital improvement funding.

The WDR specify the due dates for completion of the SSMP document. The final SSMP must be certified as complying with State WDR by May 2, 2009. The 2008-2009 SSMP attached to this report in electronic format and presented for Council consideration complies with the requirements set forth in the State WDR.

Attachment 2

RESOLUTION NO.

Adopted by the Sacramento City Council

CERTIFICATION OF THE 2008-2009 SEWER SYSTEM MANAGEMENT PLAN

BACKGROUND

- A. On May 2, 2006 the California State Water Resources Control Board (SWRCB) adopted Statewide General Waste Discharge Requirements (WDR) Order No. 2006-0003 for all publicly owned sanitary sewer collection systems.
- B. The City applied for coverage under the WDR on November 2, 2006 for the City's separated sewer collection system.
- C. The City is required to prevent sanitary sewer overflows (SSOs), develop a Sewer System Management Plan (SSMP) to eliminate SSOs, and comply with reporting requirements. In addition, the City Council is required to certify at a public meeting compliance of the SSMP with the State WDR.

BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE CITY COUNCIL RESOLVES AS FOLLOWS:

- Section 1. The City's 2008-2009 Sewer System Management Plan complies with the State WDR and is approved and adopted.

City Council Report SSMP Re-Certification and Draft
Minutes- October 2019



City Council Report

915 I Street, 1st Floor
Sacramento, CA 95814

www.cityofsacramento.org

File ID: 2019-01415

October 22, 2019

Consent Item 26

Title: Re-Certification of the Updated Sewer System Management Plan

Location: Citywide

Recommendation: Pass a Motion re-certifying that the City's updated Sewer System Management Plan (SSMP) for the City's separated sewer collection system complies with the requirements specified in the Statewide General Waste Discharge Requirements (WDR) for Sanitary Sewer Systems (State Water Resources Control Board Order No. 2006-0003).

Contact: Jamie McKinley, Project Manager (916) 808-5693; Sherill Huun, Supervising Engineer (916) 808-1455; Dan Sherry, Engineering & Water Resources Division Manager, (916) 808-1419; Department of Utilities.

Presenter: None

Attachments:

1-Description/Analysis

2-2018-2019 Sewer System Management Plan

3-State Water Resources Control Board Order No. 2006-0003 and MRP Amendment Order No. WQ 2013-0058-EXEC

Description/Analysis

Issue Detail: As required by the State Water Resource Control Board for all publicly owned sanitary sewer collection systems, the City obtained coverage under the applicable Statewide General Waste Discharge Requirements (WDR) (Order No. 2006-0003) and complies with the WDR by maintaining and implementing a Sewer System Management Plan (SSMP). The WDR requires the SSMP to be updated every five years, and the City is required to re-certify when significant updates are made to the SSMP. The City certified the 2013-2014 SSMP in 2014. The City has updated the SSMP to reflect current activities, and the updated 2018-2019 SSMP is being presented for re-certification.

Policy Considerations: City Council approval is required per the State Water Resources Control Board Order No. 2006-0003, page 9, Section D.11, "The Enrollee shall develop and implement a written Sewer System Management Plan (SSMP) and make it available to the State and/or Regional Water Board upon request. A copy of this document must be publicly available at the Enrollee's office and/or available on the Internet. This SSMP must be approved by the Enrollee's governing board at a public meeting"; and page 15, Section D.14, "Both the SSMP and the Enrollee's program to implement the SSMP must be certified by the Enrollee to be in compliance with the requirements set forth above and must be presented to the Enrollee's governing board for approval at a public meeting."

Economic Impacts: None.

Environmental Considerations: The Community Development Department, Environmental Planning Services Division has reviewed the project and has determined that the project is exempt from the California Environmental Quality Act (CEQA), under section 15061 (b)(3) of the CEQA Guidelines. The activity is covered by the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.

Sustainability: The SSMP is consistent with the 2035 General Plan Goals U 3.1, U 3.1.1 and U 3.1.2 in that implementation of the SSMP provides adequate and reliable sewer and wastewater facilities that collect, treat and safely dispose of wastewater. Implementation of the SSMP also provides sufficient wastewater conveyance storage, and pumping capacity for peak sanitary sewer flows and infiltration.

Commission/Committee Action: Not applicable.

Rationale for Recommendation: Certification of the SSMP is required to comply with the State WDR that applies to the City's separated sewer collection system.

Financial Considerations: Oversight of SSMP implementation will be completed with existing resources in the Wastewater Fund (6006); however, assessments to be completed with the SSMP may require the City to spend additional resources in future years for capital improvements to maintain the assets or to perform additional Wastewater and Drainage operation and maintenance activities to reduce or eliminate sanitary sewer overflows (SSOs).

There are no General Funds allocated or planned for this project.

Local Business Enterprise (LBE): Not applicable

Background: On May 2, 2006, the California State Water Resources Control Board (SWRCB) adopted WDR Order No. 2006-0003, for all publicly owned sanitary sewer collection systems. The intent of the State WDR is to uniformly collect information on the causes and sources of SSOs. An SSO is any sewer overflow or spill of sewage that has backed up into buildings, private property or the public right-of-way or has entered a waterway. An SSO occurs when a sewer line is blocked, clogged, or otherwise obstructed. The information collected determines the full impacts of SSOs on public health and the environment and provides a primary regulatory mechanism for statewide sanitary sewer systems to prevent future SSOs. The Monitoring and Reporting Program requirements of the State WDRs were amended in September 2013. The amendments include specified SSO notification, reporting and record keeping requirements, and address compliance and enforceability of the Monitoring and Reporting Program.

The City applied for coverage under the WDR on November 2, 2006 for the separated sewer collection system owned by the City. The City is required to maintain and implement an SSMP to eliminate SSOs and comply with SSO reporting requirements. The City's SSMP provides a plan and schedule to properly manage, operate, and maintain the sanitary sewer system to reduce and prevent SSOs, as well as mitigate any SSOs that occur. The SSMP is required to include specific plan components, including goals, legal authority, operations and maintenance activities, design standards, emergency response plans, grease blockage best management practices, capacity studies, audits, and capital improvement funding.

City Council certified compliance of the original SSMP with the WDR requirements in April 2009 and re-certified the 2014 SSMP in April 2014. The WDR requires the SSMP to be updated every five years. The governing board is required to re-certify the SSMP when significant updates have been made to the SSMP. The SSMP has been updated to reflect staffing and organization changes and activities implemented to further reduce sewer

overflows. The updated 2018-2019 SSMP attached to this report is being presented to the City Council for Council consideration and re-certification in accordance with the WDR requirements.

DRAFT Minutes

City Council
Financing Authority
Housing Authority
Public Financing Authority
Redevelopment Agency Successor
Agency

City Hall-Council Chamber, 915 I Street,
1st Floor, Sacramento, CA 95814

Published by the Office of the City Clerk
(916) 808-5163

CITY COUNCIL

Darrell Steinberg, Mayor
Angelique Ashby, Mayor Pro Tem, District 1
Allen Warren, District 2
Jeff Harris, District 3
Steve Hansen, District 4
Jay Schenirer, District 5
Eric Guerra, Vice Mayor, District 6
Rick Jennings, II, District 7
Larry Carr, District 8

CHARTER OFFICERS

Mindy Cuppy, City Clerk
Susana Alcala Wood, City Attorney
Jorge Oseguera, City Auditor
Howard Chan, City Manager
John Colville, City Treasurer

Tuesday, October 22, 2019
5:00 p.m.

NOTICE TO THE PUBLIC

You are welcomed and encouraged to participate in this meeting. Public comment is taken on items listed on the agenda when they are called. Public Comment on items not listed on the agenda will be heard as noted on the agenda. Comments on controversial items may be limited and large groups are encouraged to select 3-5 speakers to represent the opinion of the group. **Speaker slips are available on the City's Website and located in racks inside the chamber and should be completed and submitted to the Assistant City Clerk.**

Government Code 54950 (The Brown Act) requires that a brief description of each item to be transacted or discussed be posted at least 72 hours prior to a regular meeting or 24 hours prior to a special meeting. The City posts meeting agendas on the City website, at City Hall as well as offsite meeting locations. **The order and estimated time for agenda items are listed for reference and may be taken in any order deemed appropriate by the legislative body.**

The agenda provides a general description and staff recommendation; however, the legislative bodies may take action other than what is recommended. Full staff reports are available for public review on the City's website and include all attachments and exhibits. "To Be Delivered" and "Supplemental" reports will be published as they are received. All meeting materials are also available at the meeting for public review. Contracts subject to the 10-day review period, as required by the Council Rules of Procedure, can be found on the City's website at: <http://portal.cityofsacramento.org/Clerk/Contract-Posting>

City Council meetings are broadcast live on Metrocable, Channel 14, AT&T Broadband Cable System and rebroadcast on the Saturday following the date of the meeting. Live video streams and indexed archives of meetings are available via the internet.

Visit the City's official website at http://sacramento.granicus.com/ViewPublisher.php?view_id=21.

Meeting facilities are accessible to persons with disabilities. If you require special assistance to participate in the meeting, notify the Office of the City Clerk at (916) 808-7200 at least 48 hours prior to the meeting.

Notice to Lobbyists: When addressing the legislative bodies you must identify yourself as a lobbyist and announce the client/business/organization you are representing (*City Code 2.15.160*).

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General Conduct for the Public Attending Council Meetings

- Members of the public attending City Council meetings shall observe the same rules and decorum applicable to the Members and staff as noted in Chapters 3 and 4 of Council Rules of Procedure.
- Stamping of feet, whistles, yells or shouting, physically threatening conduct, and/or similar demonstrations are unacceptable public behavior and will be prohibited by the Sergeant-at-Arms.
- Lobbyists must identify themselves and the client(s), business or organization they represent before speaking to the Council.
- Members of the public wishing to provide documents to the Council shall comply with Rule 7 D of the Council Rules of Procedure.

Members of the Public Addressing the City Council

Purpose of Public Comment. The City provides opportunities for the public to address the Council as a whole in order to listen to the public's opinions regarding non-agendized matters within the subject matter jurisdiction of the City during Regular meetings and regarding items on the Agenda at all other meetings.

- Public comments should not be addressed to individual Members nor to City officials, but rather to the City Council as a whole regarding City business.
- While the public may speak their opinions on City business, personal attacks on Members and City officials, use of swear words, and signs or displays of disrespect for individuals are discouraged as they impede good communication with the Council.
- Consistent with the Brown Act, the public comment periods on the Agenda are not intended to be "Question and Answer" periods or conversations with the Council and City officials. The limited circumstances under which Members may respond to public comments are set out in Rule 8 D 2 of the Council Rules of Procedure.
- Members of the public with questions concerning Consent Calendar items may contact the staff person or the Council Member whose district is identified on the report prior to the meeting to reduce the need for discussion of Consent Calendar items and to better respond to the public's questions.

Speaker Time Limits. In the interest of facilitating the Council's conduct of the business of the City, the following time limits apply to members of the public (speakers) who wish to address the Council during the meeting.

- **Matters not on the Agenda.** Two (2) minutes per speaker.
- **Consent Calendar Items.** The Consent Calendar is considered a single item, and speakers are therefore subject to the two (2) minute time limit for the entire Consent Calendar. Consent Calendar items can be pulled at a Council member's request. Such pulled Consent Calendar items will be considered individually and up to two (2) minutes of public comment per speaker on those items will be permitted.
- **Discussion Calendar Items.** Two (2) minutes per speaker.

Time Limits per Meeting In addition to the above time limits per item, the total amount of time any one individual may address the Council at any meeting is eight (8) minutes.

- Each speaker shall limit his/her remarks to the specified time allotment.
- The Presiding Officer shall consistently utilize the timing system which provides speakers with notice of their remaining time to complete their comments. A countdown display of the allotted time will appear and will flash red at the end of the allotted time.
- In the further interest of time, speakers may be asked to limit their comments to new materials and not repeat what a prior speaker said. Organized groups may choose a single spokesperson who may speak for the group but with no increase in time.
- Speakers shall not concede any part of their allotted time to another speaker.
- The Presiding Officer may further limit the time allotted for public comments per speaker or in total for the orderly conduct of the meeting and such limits shall be fairly applied.

City of Sacramento City Council

City Hall Council Chamber

915 I Street, 1st Floor

Regular Meeting DRAFT Minutes

Tuesday, October 22, 2019

5:00 p.m.

All items listed are heard and acted upon by the Sacramento City Council unless otherwise noted.

Open Session – 5:00 p.m.

Regular session called to order by Mayor Darrell Steinberg at 5:05 p.m. Tuesday, October 22, 2019 at the Sacramento City Hall Council Chamber.

Members Present: Angelique Ashby, Larry Carr, Steve Hansen, Jeff Harris, Rick Jennings, Jay Schenirer (until 9:01 p.m.), Allen Warren (until 8:54 p.m.), and Mayor Darrell Steinberg (until 8:57 p.m.).

Members Absent: Eric Guerra.

Pledge of Allegiance – Led by Mr. Williams.

Closed Session Report – None.

Special Presentation/General Communications

- A. Recognizing the 25th Anniversary of Sacramento's Alice Birney Waldorf School
Action: Resolution presented by Member Schenirer

- B. Recognizing Henry Li for Being Named Outstanding Public Transportation Manager of the Year by the American Public Transit Association
Action: Resolution presented by Member Schenirer

Consent Calendar

All items listed under the Consent Calendar are considered and acted upon by one Motion. Anyone may request an item be removed for separate consideration.

Action: Moved/Seconded: Member Hansen / Member Harris.

Yes: Members Angelique Ashby, Larry Carr, Steve Hansen, Jeff Harris, Rick Jennings, Jay Schenirer, Allen Warren, and Mayor Darrell Steinberg.

Absent: Member Eric Guerra.

A motion **passed** to adopt the Consent Calendar in one motion except as indicated at each item.

1. **(City Council / Financing Authority / Housing Authority / Public Financing Authority / Redevelopment Agency Successor Agency) Revised 2019 Meeting Schedule for City Council, Financing Authority, Housing Authority, Public Financing Authority and Redevelopment Agency Successor Agency**

File ID: 2019-01496

Location: Citywide

Action: Adopted **City Council Resolution No. 2019-0396:** a) rescinding City Council Resolution 2018-0474; and b) approving the revised 2019 City Council meeting schedule; 2) adopted **Financing Authority Resolution No. 2019-0001:** a) rescinding Financing Authority Resolution 2018-0003; and b) approving the revised 2019 Financing Authority meeting schedule; 3) adopted **Housing Authority Resolution No. 2019-0017** a) rescinding Housing Authority Resolution 2018-0023; and b) approving the revised 2019 meeting schedule; 4) adopted **Public Financing Authority Resolution No. 2019-0001:** a) rescinding Public Financing Authority Resolution 2018-0002; and b) approving the revised 2019 meeting schedule; and 5) adopted **Redevelopment Agency Successor Agency Resolution No. 2019-0002:** a) rescinding Redevelopment Agency Successor Agency Resolution 2018-0006; and b) approving the revised 2019 meeting schedule.

Contact: Mindy Cuppy, MMC, City Clerk, (916) 808-5442, Office of the City Clerk

2. **On-Call Agreements: Environmental Consulting Services**

File ID: 2019-01493

Location: Citywide

Action: Passed **Motion No. 2019-0355** authorizing the City Manager or City Manager's designee to execute Professional Services Agreements for on-call environmental consulting services with 1) AECOM Technical Services, Inc., 2) Geocon Consultants, Inc., 3) NCE, 4) Ninyo & Moore, and 5) Stantec Consulting Services, Inc., each for an initial three-year term and up to two additional one-year terms for a total amount not-to-exceed \$150,000.

Contact: Denise Malvetti, Senior Development Project Manager, (916) 808-7064, City Manager's Office of Innovation and Economic Development

3. **Approvals for Implementation of Pathways to Health + Home Program [Published for 10-Day Review 10/11/2019]**

File ID: 2019-01513

Location: Citywide

Action: Moved/Seconded: Member Hansen / Member Harris.

Yes: Members Larry Carr, Steve Hansen, Jeff Harris, Rick Jennings, Jay Schenirer, Allen Warren, and Mayor Darrell Steinberg.

Abstain (Recusal): Member Angelique Ashby.

Absent: Member Eric Guerra.

Public comment heard from Michael Harris and Pastor Gainsbrugh.

Action: Adopted **Resolution No. 2019-0397** authorizing the City Manager or City Manager's designee to: 1) execute amendment No. 1 (attached hereto as Exhibit A) to Alignment Agreement 2018-0572 with Sutter Valley Hospitals dba Sutter Medical Center to increase the contract by \$1,870,000 for a new total amount of \$8,906,925 paid to Sutter Valley Hospitals for alignment of Sutter's programs to improve the outcomes of people experiencing homelessness or those at risk of homelessness with the City's Pathways program goals; and 2) adjust revenue and expenditure budgets in the Whole Person Care Program (I02000900) fund 2703 Externally Funded as needed, to accept donations from community partners.

Contact: Emily Halcon, Homeless Services Coordinator, (916) 808-7896; Anira Khlok, Homeless Services Program Analyst, (916) 808-7948, Office of the City Manager

4. **(Pass for Publication) Ordinance to Approve a Rezone for the Luther Gardens Senior Apartments Project (P19-031)**

File ID: 2019-01306

Location: East side of Luther Drive, approximately 1,000 feet south of Florin Road and Luther Drive, APN: 049-0010-106-0000, District 8

Action: 1) Reviewed a Resolution for a General Plan Amendment to re-designate ±0.79 acres from Suburban Neighborhood Low Density to Suburban Neighborhood High Density; 2) reviewed an Ordinance rezoning ±0.79 acres from the Single-Unit Dwelling (R-1) zone to the Multi-Unit Dwelling (R-2B) zone; 3) reviewed a Resolution for an Environmental Determination and Site Plan and Design Review; and 4) passed for publication the Ordinance title as required by Sacramento City Charter 32c to be adopted November 5, 2019.

Contact: Marcus Adams, Senior Planner, (916) 808-5044, Community Development Department

5. **Ordinance Amending City Code Chapter 15.148 to Create a Special Sign District for the Entertainment and Sports Center Area (M14-004) [Passed for Publication 10/15/2019; Published 10/18/2019]**
File ID: 2019-01432
Location: District 4, area generally bounded by 3rd, 7th, J, and L Streets
Action: Adopted **Ordinance No. 2019-0035** amending the Sacramento City Code by deleting existing section 15.148.191, adding a new section 15.148.191, and amending sections 15.148.680 and 15.148.1170, all relating to signs for the Entertainment and Sports Center area.
Contact: Matthew Sites, Urban Design Staff, Associate AIA, LEED AP, (916) 808-7646; Karlo Felix, Senior Planner, (916) 808-7183; Evan Compton, Principal Planner, (916) 808-5260, Community Development Department
6. **Accepting Sacramento Area Flood Control Agency's 2019 Urban Level of Flood Protection Adequate Progress Annual Report**
File ID: 2019-01514
Location: Citywide
Action: Adopted **Resolution No. 2019-0398** accepting Sacramento Area Flood Control Agency's 2019 Urban Level of Flood Protection Adequate Progress Annual Report.
Contact: Remi Mendoza, Senior Planner, (916) 808-5003; Gregory J. Sandlund, Long Range Planning Manager, (916) 808-8931; Neal Joyce, Supervising Engineer, (916) 808-1461, Community Development Department
7. **Mills Act Contracts: Historical Property Agreements for 730 I Street (IR19-046), 1320 D Street (IR19-206), 406 8th Street (IR19-207), 2013 I Street (IR19-227), and 819 22nd Street (IR19-228)**
File ID: 2019-01429
Location: 730 I Street (006-0034-019-0000); 1320 D Street (002-0123-006-0000); 406 8th Street (002-0105-003-0000). 2013 I Street (007-0015-013-0000); and 819 22nd Street (007-0023-022-0000); District 4
Action: Passed **Motion No. 2019-0356** authorizing the City Manager or the City Manager's designee to: 1) enter into Mills Act Contracts with each of the owners of the following properties: a) 730 I Street; b) 1320 D Street; c) 406 8th Street; d) 2013 I Street; and e) 819 22nd Street, whereby the owners agree to preserve, restore, and protect their historic properties, for an initial term of ten years with automatic contract renewal each year on the anniversary of the contract execution date; and 2) execute amendments to the Rehabilitation / Restoration / Maintenance Plan (i.e. work plan) that do not result in expense to the City.
Contact: Carson Anderson, Preservation Director, (916) 808-8259; Sean de Courcy, Associate Preservation Planner, (916) 808-2796, Community Development Department

- 8. Agreement: Exclusive Utility Services Provider for Sacramento Convention Center**
File ID: 2019-01464
Location: District 4
Action: Passed **Motion No. 2019-0357** to **withdraw** a Motion to consider: 1) awarding a Professional Services Agreement for exclusive utility services at the Sacramento Convention Center to Edlen Electrical Exhibition Services, Inc. with an initial term from November 1, 2019 through October 31, 2025, with up to two additional three-year extension options; and 2) authorizing the City Manager or the City Manager's designee to execute the Professional Services Agreement.
Contact: Matthew Voreyer, General Manager, (916) 808-5503; Jody Ulich, Director, (916) 808-5105, Convention and Cultural Services Department
- 9. Agreement and Budget Transfer: North Natomas Library Tech Art Project (L19920000)**
File ID: 2019-01461
Location: District 1
Action: Adopted **Resolution No. 2019-0399:** 1) authorizing the City Manager or the City Manager's designee to transfer \$496,000 in General Funds (Fund 1001) from the expenditure budget in the North Natomas Community Center and Aquatic Complex Project (L19140410) to the expenditure budget in the Art in Public Places Program (L19920000); 2) awarding an Agreement to purchase artwork to Vincent Damyanovich in an amount not to exceed \$110,000 for the North Natomas Library Tech Art Project; and 3) authorizing the City Manager or the City Manager's designee to execute the agreement specified above.
Contact: Donald Gensler, Arts in Public Places Specialist, (916) 808-8493; Jody Ulich, Director, (916) 808-5105, Convention and Cultural Services Department
- 10. Contract Supplement: Lincoln Training Center Janitorial Services**
File ID: 2019-01384
Location: Citywide
- Action:** Moved/Seconded: Member Hansen / Member Harris.
- Yes:** Members Larry Carr, Steve Hansen, Jeff Harris, Rick Jennings, Jay Schenirer, Allen Warren, and Mayor Darrell Steinberg.
- No:** Member Angelique Ashby.
- Absent:** Member Eric Guerra.
- Action:** Passed **Motion No. 2019-0358** authorizing the City Manager or City Manager's designee to execute supplemental agreement No.25 to Contract No. 2015-1827 for janitorial services with Lincoln Training Center and Rehabilitation Workshop, approving a four-month extension and eight month-to-month extensions of the contract, and increasing the not-to-exceed amount by \$122,135, for a new not-to-exceed amount of \$3.4 million.

Contact: Gary O'Neill, Program Analyst, (916) 808-7432; Robert C. Adams, Procurement Services Manager, (916) 808-5524, Department of Finance.

11. Supplemental Agreement to Extend Citywide Web-Based Bidding Portal Contract (Two-Thirds Vote Required)

File ID: 2019-01378

Location: Citywide

Action: Passed **Motion No. 2019-0359** authorizing the City Manager or the City Manager's designee to: 1) suspend competitive bidding in the best interest of the City; and 2) execute Supplement No. 3 to Agreement 2016-0439 with PlanetBids for the City's web-based bidding portal extending the contract through October 31, 2021 and increasing the not-to-exceed amount by \$110,000, for a total not-to-exceed amount of \$238,000.

Contact: Lydia Brambila, Program Analyst, (916) 808-1229, Finance Department

12. Cooperative Purchasing Agreement: Purchase of Monitor/Defibrillators and Supplies [Two-Thirds Vote Required]

File ID: 2019-01505

Location: Citywide

Action: Passed **Motion No. 2019-0360:** 1) by two-thirds vote waiving Sacramento City Code Section 4.04.020.C and Council Rules of Procedure (Chapter 7, Section E.2.d) that mandate that all labor agreements and all agreements greater than \$1 million be made available to the public at least 10 days prior to Council action; 2) approving the use of the cooperative purchase agreement between Savvik Buying Group and Stryker for the purchase of ALS monitor/defibrillators and associated supplies; 3) authorizing the City Manager, or City Manager's designee, to execute the purchases of ALS monitor / defibrillators and associated supplies from Stryker, Inc. for a not-to-exceed amount of \$2,800,000 through November 8, 2021.

Contact: James Billiter, Assistant Chief, (916) 808-2208, Fire Department

13. Cooperative Purchasing Agreement: Personal Protection Equipment and Firefighting Tools

File ID: 2019-01506

Location: Citywide

Action: Passed **Motion No. 2019-0361:** 1) approving the use of the Public Procurement Authority/National Purchasing Partners Rescue GPO (NPPGov FRGPO) cooperative purchase agreement with a) Cascade Fire Equipment (Contract No. PS17009) for an amount not to exceed \$75,000, b) LN Curtis and Sons (Contract No. 00000170) for an amount not to exceed \$428,000, c) Municipal Emergency Services (Contract No. 00000168) for an amount not to exceed \$65,000, and d) Municipal Emergency Services (Contract No. 00000169) for an amount not to exceed \$100,000 for the purchase of Personal Protection Equipment (PPE); and 2) issuing the required purchase orders for the not-to-exceed amount specific for the vendors under each cooperative purchasing agreement for a total amount not-to-exceed \$668,000 until June 30, 2020.

Contact: John Dancart, Assistant Chief, (916) 808-1609, Fire Department

- 14. Emergency Vehicle Operations Course Modular Office Supplemental Agreement with Mobile Modular Management Corporation**
File ID: 2019-01460
Location: Citywide
Action: Passed **Motion No. 2019-0362** authorizing the City Manager or City Manager's designee to execute a Supplemental Agreement with Mobile Modular Manufacturing Corporation for the addition of a second Emergency Vehicle Operations Course (EVOC) modular office and increasing the Agreement by \$99,000 for a total amount not to exceed (NTE) amount of \$198,000.
Contact: Edward Russell, Loss Prevention Manager, 916-808-2276, Human Resources
- 15. Grant: Fiscal Year 2017 COPS Hiring Program (CHP)**
File ID: 2019-01500
Location: Citywide
Action: Adopted **Resolution No. 2019-0400** authorizing the City Manager or the City Manager's designee to: 1) establish an operating grant project for the 2017 CHP grant (G11017000); and 2) establish the revenue and expenditure budgets in the operating grant project in the amount of \$1.875 million.
Contact: Natalie Weaver, Administrative Officer, Fiscal Operations, (916) 808-0864, Police Department
- 16. Cooperative Purchase Agreement: Electric Vehicle Supply Equipment (EVSE)**
File ID: 2019-01448
Location: Citywide
Action: Passed **Motion No. 2019-0363:** 1) approving the use of the Sourcewell cooperative purchase agreement with ChargePoint, Inc. (Contract No. 051017-CPI) for the purchase of 53 electric vehicle chargers and associated setup and network access fees for an amount not to exceed \$269,767; and 2) authorizing the City Manager or the City Manager's designee to make the purchase specified above.
Contact: Joseph J. Gluvers, Senior Engineer, (916) 808-8427; Jennifer Venema, Sustainability Manager, (916) 808-1859, Department of Public Works

17. Lease Agreement: Sacramento Valley Station, 401 I Street, Suites 210 and 220

File ID: 2019-01449

Location: Sacramento Valley Station, 401 I Street, Suites 210 and 220, District 3**Action:** Passed **Motion No. 2019-0364:** 1) determining that, pursuant to City Code Section 3.68.110(D), the leasing of 401 I Street, Suites 210 and 220 without bidding is in the best interest of the City; 2) authorizing the City Manager or the City Manager's designee to execute a lease agreement with Clark Construction Group - California LP, for an initial lease term of five years for Suite 210 and an initial lease term of four years for Suite 220, with two three-year options to extend; and 3) authorizing the City Manager or the City Manager's designee to execute minor lease amendments pursuant to City Code Section 3.68.120.**Contact:** Steve Ward, Real Property Agent, (916) 808-1081; Richard Sanders, Superintendent, Department of Public Works**18. Budgetary Adjustments and Contract Award: Highway Safety Improvement Project Pedestrian Hybrid Beacons (T15166000) [Published for 10-Day Review 10/11/2019]**

File ID: 2019-01348

Location: Districts 2, 4, 5, 7, and 8**Action:** Adopted **Resolution No. 2019-0401:** 1) approving the Plans and Specifications for Highway Safety Improvement Program (HSIP) Pedestrian Hybrid Beacons Project (T15166000); 2) approving the removal of one City-owned tree, to be replaced with one new tree; 3) authorizing the City Manager or the City Manager's designee to transfer \$311,000 (New Measure A Safety, Streetscape, Pedestrian, and Bicycle Fund, Fund 2039) from the expenditure budget of the State and Federal Grant Match Program (T15007200) to the expenditure budget of the HSIP Pedestrian Hybrid Beacons Project (T15166000); 4) authorizing the City Manager or the City Manager's designee to transfer \$290,000 (Major Street Construction, Fund 2007) from available fund balance to the expenditure budget of the HSIP Pedestrian Hybrid Beacons Project (T15166000); 5) authorizing the City Manager or the City Manager's designee to increase the revenue and expenditure budgets of the HSIP Pedestrian Hybrid Beacons Project (T15166000) by \$1,482,300 (Federal Capital Grants, Fund 3703) in HSIP Funding; 6) upon Caltrans approval of additional federal funding authorization, authorizing the City Manager or the City Manager's designee to increase the revenue and expenditure budget in the HSIP Pedestrian Hybrid Beacons Project (T15166000) by \$290,000 (Federal Capital Grants, Fund 3703) in HSIP funding and to transfer \$290,000 (Major Street Construction, Fund 2007) from the expenditure budget in the HSIP Pedestrian Hybrid Beacons Project (T15166000) to available fund balance; 7) awarding the construction contract for HSIP Pedestrian Hybrid Beacons Project (T15166000) to Pacific Excavation Inc. in an amount not to exceed \$1,535,895; and 8) authorizing the City Manager or the City Manager's designee to execute the construction contract for the HSIP Pedestrian Hybrid Beacons Project (T15166000).

Contact: Adam Randolph, Senior Engineer (916) 808-7803; Judy Matsui-Drury, Supervising Engineer (916) 808-7610; Nader Kamal, Interim Engineering Services Manager (916) 808-5065, Department of Public Works

19. Professional Services Agreement: On-Call Construction Management Services for Federal Projects [Published for 10-Day Review 10/11/2019]

File ID: 2019-01394

Location: Citywide

Action: Passed **Motion No. 2019-0365:** 1) awarding a Professional Services Agreement for On-Call Construction Management Services for Federal Projects having a total amount not to exceed \$4,000,000 for three years with an option to extend for up to additional two years; and 2) authorizing the City Manager or the City Manager's designee to execute a Professional Services Agreement for On-Call Construction Management Services for Federal Projects with Salaber Associates, Inc. for a not to exceed amount of \$4,000,000 for three years with an option to extend for up to additional two years.

Contact: Elizabeth Weeks, Associate Engineer, (916) 808-2330; Judith Matsui-Drury, Supervising Engineer, (916) 808-7610, Department of Public Works

20. Riverfront Joint Powers Authority and Streetcar Successor Project

File ID: 2019-01404

Location: Districts 3 and 4

Public comment heard from Steven Bourasa.

Action: Passed **Motion No. 2019-0366** to **withdraw** a Motion directing the City Manager to: 1) develop a delivery plan with the partnering agencies for a successor light rail transit project in place of the Streetcar; and 2) collaborate with the City of West Sacramento and identify the necessary steps to dissolve the Riverfront Joint Powers Authority.

Contact: Judy Matsui-Drury, Supervising Engineer, (916) 808-7610; Nader Kamal, Interim Division Manager, (916) 808-7035; Department of Public Works

21. Establish Capital Improvement Project and Budget Adjustment for the Ninos Parkway Phase 2 Project (K15202000)

File ID: 2019-01342

Location: Ninos Parkway between San Juan Road and Rio Norte Way, District 3

Action: Adopted **Resolution No. 2019-0402:** 1) establishing the Ninos Parkway Phase 2 Project (K15202000) as a new Capital Improvement Project; and 2) authorizing the City Manager or the City Manager's designee to increase the expenditure budget for the Ninos Parkway Phase 2 Project (K15202000) by transferring \$250,000 from the Transportation Development Impact Fee (Fund 3215) available fund balance.

Contact: William Shunk, Senior Engineer (916) 808-2986; Nader Kamal, Interim Engineering Services Manager (916) 808-5065, Department of Public Works

- 22. Measure A: Acceptance of Fiscal Year 2018/19 Measure A Construction Interest Allocation and Unrecognized Balance with Sacramento Transportation Authority**
File ID: 2019-01416
Location: Citywide
Action: Adopted **Resolution No. 2019-0403:** 1) accepting the Fiscal Year (FY) 2018/19 Measure A Construction interest allocation of \$104,316 (Sacramento Transportation Sales Tax Fund, Fund 2001) from the Sacramento Transportation Authority (STA); 2) accepting the FY 2018/19 Measure A Construction unrecognized balance of \$201,458 (Fund 2001) from STA; 3) authorizing the City Manager or the City Manager's designee to increase the revenue and expense budgets in the North Natomas Community Center and Aquatic Complex Project (L19140410) by \$305,774 (Fund 2001); 4) authorizing the City Manager or the City Manager's designee to transfer \$305,774 (Major Street Construction Fund, Fund 2007) from the expense budget in the North Natomas Community Center and Aquatic Complex Project (L19140410) to available fund balance; and 5) authorizing the City Manager or the City Manager's designee to submit the FY 2018/19 Measure A Construction interest allocation funding plan to STA.
Contact: Dustin Purinton, Senior Accountant/Auditor (916) 808-5587; April Lu, Supervising Financial Analyst, (916) 808-2680, Nader Kamal, Interim Division Manager, (916) 808-7035, Department of Public Works
- 23. (Pass for Publication) Ordinance Amending the City's Fee and Charge Report for Recycling and Solid Waste Utility Service Rates**
File ID: 2019-01375
Location: Citywide
Action: 1) Reviewed an ordinance amending the City's Fee and Charge Report to increase Recycling and Solid Waste rates, consisting of an increase of 7.43%, 7.47%, 7.49% and 7.51% for FY2019/20, FY2020/21, FY2021/22, and FY2022/23 respectively; and 2) pass for publication the ordinance title as required by Sacramento City Charter §32 (c), to be submitted to the City Council for adoption on November 5, 2019.
Contact: Jerome Council, Integrated Waste General Manager, (916) 808-4949; Janice Conerly-Coleman, Support Services Manager (916) 808-2683, Department of Public Works
- 24.**
- 25. Delegation to Vote: Election of Reclamation District No. 1000 Trustees**
File ID: 2019-01497
Location: District 1
- Action:** Moved/Seconded: Member Hansen / Member Harris.
- Yes:** Members Larry Carr, Steve Hansen, Jeff Harris, Rick Jennings, Jay Schenirer, Allen Warren, and Mayor Darrell Steinberg.
- Abstain (Recusal):** Member Angelique Ashby.
- Absent:** Member Eric Guerra.

Action: Adopted **Resolution No. 2019-0404:** 1) authorizing City of Sacramento (City) representatives to vote on behalf of the City in the November 5, 2019 Election of Reclamation District No. 1000 (RD 1000) Trustees for parcels owned by the City of Sacramento located in RD1000; and 2) specifying the City's allocation of votes among the candidates.

Contact: Anne Sanger, Government Affairs Manager, (916) 808-1635; Bill Busath, Director, (916) 808-1434, Department of Utilities.

26. Agreements: On-Call Sewer Infrastructure Work Related to the Sewer Repairs Program (X14120300) [Two-Thirds Vote Required]

File ID: 2019-01427

Location: Citywide

Action: Passed **Motion No. 2019-0367:** 1) suspending competitive bidding, in the best interests of the City, for On-Call Sewer Infrastructure Work; and 2) authorizing the City Manager or the City Manager's designee to execute agreements for the On-call Sewer Infrastructure Work for the Sewer Repairs Program (X14120300) in an amount not-to-exceed \$900,000 each with a) Rawles Engineering, Inc. and b) Florez Paving, for a three-year term.

Contact: Sonia Lopez, Associate Engineer (916) 808-1456; Tony Bertrand, Supervising Engineer (916) 808-1461; Dan Sherry, Engineering & Water Resources Division Manager, (916) 808-1419; Department of Utilities

27. Re-Certification of the Updated Sewer System Management Plan

File ID: 2019-01415

Location: Citywide

Action: Passed **Motion No. 2019-0368** re-certifying that the City's updated Sewer System Management Plan (SSMP) for the City's separated sewer collection system complies with the requirements specified in the Statewide General Waste Discharge Requirements (WDR) for Sanitary Sewer Systems (State Water Resources Control Board Order No. 2006-0003).

Contact: Jamie McKinley, Project Manager (916) 808-5693; Sherill Huun, Supervising Engineer (916) 808-1455; Dan Sherry, Engineering & Water Resources Division Manager, (916) 808-1419; Department of Utilities.

- 28. Agreement: Stormwater Monitoring and Regulatory Support Services for Fiscal Year 2019/20**
File ID: 2019-01419
Location: Citywide
Action: Passed **Motion No. 2019-0369** authorizing the City Manager or the City Manager's designee to: 1) execute a Professional Services Agreement with Larry Walker Associates, Inc. to provide stormwater monitoring and regulatory support services for Fiscal Year 2019/20, for an amount not-to-exceed \$807,998; and 2) accept the agreement funding commitment and assume all obligations related to the Confluence Regional Partnership Program Agreement for an amount not-to-exceed \$140,000.
Contact: Lisa Moretti, Project Manager (916) 808-5390; Sherill Huun, Supervising Engineer (916) 808-1455; Dan Sherry, Engineering & Water Resources Division Manager, (916) 808-1419; Department of Utilities
- 29. State Department of Parks and Recreation Grant Application for Margarete "Mama" Marks Park and Hagginwood Park Projects**
File ID: 2019-01428
Location: District 2
Action: Adopted **Resolution No. 2019-0405** authorizing the City Manager or City Manager's designee to apply for funding and execute the grant agreement for Margarete "Mama" Marks Park and Hagginwood Park Projects with the State Department of Parks and Recreation.
Contact: Janelle Oishi, Program Specialist, (916)808-1016, Department of Youth, Parks & Community Enrichment
- 30. Contract for Sutter's Landing Park Restroom Project**
File ID: 2019-01380
Location: District 3
Action: Passed **Motion No. 2019-0370:** 1) approving the construction plans and specifications for the Sutter's Landing Park Restroom Project Rebid (L19167008); 2) awarding the contract to BRCO Constructors, Inc. in the amount of \$398,200; and 3) authorizing the City Manager or the City Manager's designee to execute the contract.
Contact: Tin-Wah Wong, Landscape Architect, (916) 808-5540; Raymond Costantino, Park Planning and Development Services Manager, (916) 808-1941, Department of Youth, Parks, & Community Enrichment

31. **(Housing Authority) Sacramento Housing and Redevelopment Agency Economic Opportunity Plan (Section 3)**
File ID: 2019-00853
Location: Citywide
Action: Received and filed update on Sacramento Housing and Redevelopment Agency (Agency) Economic Opportunity Plan (Section 3).
Contact: La Shelle Dozier, Executive Director, (916) 440-1319, Sacramento Housing and Redevelopment Agency
32. **Sacramento Housing and Redevelopment Agency Diversity Plan Update**
File ID: 2019-01257
Location: Citywide
Action: Received and filed.
Contact: La Shelle Dozier, Executive Director, (916) 440-1319, Sacramento Housing and Redevelopment Agency
33. **(Housing Authority) Authorization to Enter into Development Services Agreement with the Sacramento Housing Authority Repositioning Program, Inc. (SHARP) for the Rental Assistance Demonstration (RAD) Project**
File ID: 2019-01289
Location: Citywide
Action: Adopted Housing Authority **Resolution No. 2019-0018** authorizing the Executive Director to enter into a Development Services Agreement with SHARP to allow the completion of all predevelopment and development services necessary to complete the Rental Assistance Demonstration (RAD) Pilot project.
Contact: La Shelle Dozier, Executive Director, 916-440-1319, Sacramento Housing and Redevelopment Agency

Public Hearings

34. **Delta Shores Community Facilities District No. 2019-01 (Improvements): Ordinance Levying Special Taxes within the Delta Shores Community Facilities District No. 2019-01 (Improvements); Resolution Establishing Accounting Funds for the District; and Ordinance Approving Second Amendment to Development Agreement (City Agreement No. 2009-0060) [Noticed 10/11/2019; Passed for Publication 10/15/2019; Published 10/18/2019]**

File ID: 2019-00783

Location: Districts 7 and 8

Action: Moved/Seconded: Member Jennings / Member Hansen.

Yes: Members Angelique Ashby, Larry Carr, Steve Hansen, Jeff Harris, Rick Jennings, Jay Schenirer, Allen Warren, and Mayor Darrell Steinberg.

Absent: Member Eric Guerra.

Conducted a public hearing and upon conclusion: 1) adopted **Ordinance No. 2019-0036** levying a special tax on land within the Delta Shores Community Facilities District No. 2019-01 (Improvements) (the "CFD"); 2) adopted **Resolution No. 2019-0406** establishing new accounting funds for the CFD; and 3) adopted **Ordinance No. 2019-0037** approving the Second Amendment to the Development Agreement between the City of Sacramento and the M & H VI Projects, LLC, Delta Shores Wetlands, LLC and Delta Shores Detention Ponds, LLC (2009-0060).

Contact: Arwen Wacht, Program Specialist, (916) 808-7535; Sheri Smith, Special Districts Manager, (916) 808-7204, Department of Finance

35. **Central City Development Impact Fee Economic Incentive Adjustment [Noticed 10/11/2019 and 10/17/2019]**

File ID: 2019-01266

Location: District 4

Action: Moved/Seconded: Member Hansen / Member Ashby.

Yes: Members Angelique Ashby, Larry Carr, Steve Hansen, Jeff Harris, Rick Jennings, Jay Schenirer, Allen Warren, and Mayor Darrell Steinberg.

Absent: Member Eric Guerra.

Public comment heard from Zach Mosle and Crisand Giles.

Conducted a public hearing and upon conclusion adopted **Resolution No. 2019-0407** adopting the first annual economic incentive adjustment of the Central City Development Impact Fee.

Contact: Sheri Smith, Special Districts Manager, (916) 808-7204, Department of Finance, Greg Sandlund, Principal Planner, (916) 808-8931, Community Development Department

36. Authorize Submission of the Analysis of Impediments (AI); Adopt the 2020-2024 Consolidated Plan; Approval of the 2020 One-Year Action Plan for the Community Development Block Grant (CDBG), HOME Investment Partnerships Program (HOME), Emergency Solutions Grant (ESG), and Housing Opportunities for Persons With AIDS (HOPWA) Funded Projects and Programs; Approval of Amendment of Prior Years' Action Plans; Authorizing Amendment to the Sacramento Housing and Redevelopment Agency (SHRA) Budget; and Other Related Actions

File ID: 2019-01292

Location: Citywide

Action: Moved/Seconded: Member Ashby / Member Jennings.

Yes: Members Angelique Ashby, Larry Carr, Steve Hansen, Jeff Harris, Rick Jennings, Jay Schenirer, Allen Warren, and Mayor Darrell Steinberg.

Absent: Member Eric Guerra.

Adopted: 1) **City Council Resolution No. 2019-0408** a) authorizing SHRA to submit the Analysis of Impediments to the U.S. Department of Housing and Urban Development (HUD) Exhibit A; b) adopt the 2020-2024 Consolidated Plan which lays out the strategies and goals for the Community Development Block Grant (CDBG), Home Investment Partnership (HOME), Emergency Solutions Grant (ESG), and Housing for Persons with AIDS (HOPWA) programs, as set out in Exhibit B; c) approve the 2020 One-Year Action Plan and amendments to prior years' Action Plans to allocate anticipated CDBG, HOME, ESG, and HOPWA funds as described in Exhibit C; d) authorizing SHRA to amend its budget to allocate CDBG, HOME, ESG, and HOPWA funding for programs and projects in accordance with the 2020 One-Year Action Plan and amendments to the prior years' Action Plans, including amendment if the United States Department of Housing and Urban Development (HUD) grant awards are less or greater than anticipated based on the adopted HUD budget to the extent necessary to implement and ensure the timely completion of the activities; e) authorizing the City Manager or City Manager's designee to execute agreements with SHRA to carry out the activities contained in the 2020 One-Year Action Plan and amendments to the prior years' Action Plans in compliance with applicable federal laws and regulations, as approved to form by SHRA legal counsel and the City Attorney; f) authorizing and delegating authority to SHRA to act as agent on behalf of the City of Sacramento to execute grant agreements with HUD and execute agreements and contracts with the appropriate entities to carry out programs and projects in accordance with the Action Plans and in compliance with applicable federal laws and regulations as approved to form by SHRA legal counsel; g) authorizing SHRA to make any budget adjustments and execute related documents as necessary to administer

the programs as described in the Action Plans in compliance with applicable federal laws and regulations as outlined in Exhibit C; h) authorizing SHRA to submit the 2020 One-Year Action Plan and amendments to prior years' Action Plans to HUD; and 2) **City Council Resolution No. 2019-0409** establishing Capital Improvement Project (CIP) designations and grant for City projects proposed for funding in the 2020 One-Year Action Plan.

Contact: Tyrone Williams, Director of Development, (916) 440-1319, Sacramento Housing and Redevelopment Agency

Discussion Calendar

Discussion calendar items include an oral presentation including those recommending "receive and file".

37. City Council Discussion Regarding Additional Homeless Shelter Proposal Options and Update on Sacramento Housing and Redevelopment Agency's Proposed Homeless Services Five-Point Plan

File ID: 2019-01471

Location: Citywide

Public comment heard from:

- | | |
|----------------------|-----------------------------|
| 1. Tammy Vallejo | 13. Beth Southern |
| 2. Bob Erlenbusch | 14. Ryan Garcia |
| 3. Russell Rawlings | 15. Vernon Hills |
| 4. Kris Rogers | 16. Marc Cawdrey |
| 5. Pastor Gainsbrugh | 17. Caity Maple |
| 6. Betty Williams | 18. John Krintz |
| 7. John Foley | 19. Jevon Wilkes |
| 8. Ron Javor | 20. Diane Wolfe |
| 9. Craig Segall | 21. Kerrin West |
| 10. Lilly Allen | 22. Amani Rapaski |
| 11. Dan Aderholt | 23. Tommie Whitlow |
| 12. Roy Anderson | 24. Jenna Abbott |
| | 25. Ardell La'mond Harrison |

Action: Received and provided direction.

Contact: Tyrone Roderick Williams, Director of Development, (916) 440-1316; La Shelle Dozier, Executive Director, 916-440-1319, Sacramento Housing and Redevelopment Agency

Information Items

These items are for information only and not eligible for action at this time.

38. Notification of Final Map Approval for Sutter Triangle (Z18-235)

File ID: 2019-01575

Location: District 3

Action: Received and filed.

Contact: Jimmy L Byrum, City Surveyor, (916) 808-7918, Department of Public Works

39. Notification of Parcel Map Approval for 3215 3rd Avenue (Z18-139)

File ID: 2019-01576

Location: District 5

Action: Received and filed.

Contact: Jimmy L Byrum, City Surveyor, (916) 808-7918, Department of Public Works

Council Comments-Ideas, Questions, AB1234 Reports, and JPA/Board and Commission Appointments**1. Information Requests****a. Member Hansen**

1. Asked the City Manager if we can have increased traffic enforcement around school zones during school hours.
2. Asked that the Public Works department look at the Sutterville Road segment near schools to determine if the pedestrian flashing beacon is sufficient.

b. Member Harris

1. Asked the City Manager that he would like to work with Consuelo Hernandez to bring back a resolution to council to present to our state legislators about various pieces of legislation that could be funded or altered to get us to the point where we could create a detox facility, a mandated drug treatment facility.

c. Member Ashby

1. Asked Assistant City Manager Conlin to follow up with the Mayor on a Climate Change declaration.

2. Board/Commission Appointments

None.

V. SEWER SYSTEM MANAGEMENT PLAN

CHAPTER 13 – APPENDICES

Appendix A	State WDRs
Appendix B	Standard Operating Procedure for Cleaning Gravity Sewers
Appendix C	Monthly Wastewater Pump Station Preventative Maintenance Procedures
Appendix D	California Integrated Water Quality System SSO Data
Appendix E	California Integrated Water Quality System (CIWQS) SSO Data (September 2, 2007 – December 31, 2018)
Appendix F	Cleaning Optimization Tool (COTools) User Manual
Appendix G	Change Log

V. SEWER SYSTEM MANAGEMENT PLAN

Appendix A State WDRs

**STATE WATER RESOURCES CONTROL BOARD
ORDER NO. 2006-0003-DWQ**

**STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS
FOR
SANITARY SEWER SYSTEMS**

The State Water Resources Control Board, hereinafter referred to as “State Water Board”, finds that:

1. All federal and state agencies, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility in the State of California are required to comply with the terms of this Order. Such entities are hereinafter referred to as “Enrollees”.
2. Sanitary sewer overflows (SSOs) are overflows from sanitary sewer systems of domestic wastewater, as well as industrial and commercial wastewater, depending on the pattern of land uses in the area served by the sanitary sewer system. SSOs often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oxygen-demanding organic compounds, oil and grease and other pollutants. SSOs may cause a public nuisance, particularly when raw untreated wastewater is discharged to areas with high public exposure, such as streets or surface waters used for drinking, fishing, or body contact recreation. SSOs may pollute surface or ground waters, threaten public health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters.
3. Sanitary sewer systems experience periodic failures resulting in discharges that may affect waters of the state. There are many factors (including factors related to geology, design, construction methods and materials, age of the system, population growth, and system operation and maintenance), which affect the likelihood of an SSO. A proactive approach that requires Enrollees to ensure a system-wide operation, maintenance, and management plan is in place will reduce the number and frequency of SSOs within the state. This approach will in turn decrease the risk to human health and the environment caused by SSOs.
4. Major causes of SSOs include: grease blockages, root blockages, sewer line flood damage, manhole structure failures, vandalism, pump station mechanical failures, power outages, excessive storm or ground water inflow/infiltration, debris blockages, sanitary sewer system age and construction material failures, lack of proper operation and maintenance, insufficient capacity and contractor-caused damages. Many SSOs are preventable with adequate and appropriate facilities, source control measures and operation and maintenance of the sanitary sewer system.

SEWER SYSTEM MANAGEMENT PLANS

5. To facilitate proper funding and management of sanitary sewer systems, each Enrollee must develop and implement a system-specific Sewer System Management Plan (SSMP). To be effective, SSMPs must include provisions to provide proper and efficient management, operation, and maintenance of sanitary sewer systems, while taking into consideration risk management and cost benefit analysis. Additionally, an SSMP must contain a spill response plan that establishes standard procedures for immediate response to an SSO in a manner designed to minimize water quality impacts and potential nuisance conditions.
6. Many local public agencies in California have already developed SSMPs and implemented measures to reduce SSOs. These entities can build upon their existing efforts to establish a comprehensive SSMP consistent with this Order. Others, however, still require technical assistance and, in some cases, funding to improve sanitary sewer system operation and maintenance in order to reduce SSOs.
7. SSMP certification by technically qualified and experienced persons can provide a useful and cost-effective means for ensuring that SSMPs are developed and implemented appropriately.
8. It is the State Water Board's intent to gather additional information on the causes and sources of SSOs to augment existing information and to determine the full extent of SSOs and consequent public health and/or environmental impacts occurring in the State.
9. Both uniform SSO reporting and a centralized statewide electronic database are needed to collect information to allow the State Water Board and Regional Water Quality Control Boards (Regional Water Boards) to effectively analyze the extent of SSOs statewide and their potential impacts on beneficial uses and public health. The monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program No. 2006-0003-DWQ, are necessary to assure compliance with these waste discharge requirements (WDRs).
10. Information regarding SSOs must be provided to Regional Water Boards and other regulatory agencies in a timely manner and be made available to the public in a complete, concise, and timely fashion.
11. Some Regional Water Boards have issued WDRs or WDRs that serve as National Pollution Discharge Elimination System (NPDES) permits to sanitary sewer system owners/operators within their jurisdictions. This Order establishes minimum requirements to prevent SSOs. Although it is the State Water Board's intent that this Order be the primary regulatory mechanism for sanitary sewer systems statewide, Regional Water Boards may issue more stringent or more

prescriptive WDRs for sanitary sewer systems. Upon issuance or reissuance of a Regional Water Board's WDRs for a system subject to this Order, the Regional Water Board shall coordinate its requirements with stated requirements within this Order, to identify requirements that are more stringent, to remove requirements that are less stringent than this Order, and to provide consistency in reporting.

REGULATORY CONSIDERATIONS

12. California Water Code section 13263 provides that the State Water Board may prescribe general WDRs for a category of discharges if the State Water Board finds or determines that:

- The discharges are produced by the same or similar operations;
- The discharges involve the same or similar types of waste;
- The discharges require the same or similar treatment standards; and
- The discharges are more appropriately regulated under general discharge requirements than individual discharge requirements.

This Order establishes requirements for a class of operations, facilities, and discharges that are similar throughout the state.

13. The issuance of general WDRs to the Enrollees will:

- a) Reduce the administrative burden of issuing individual WDRs to each Enrollee;
- b) Provide for a unified statewide approach for the reporting and database tracking of SSOs;
- c) Establish consistent and uniform requirements for SSMP development and implementation;
- d) Provide statewide consistency in reporting; and
- e) Facilitate consistent enforcement for violations.

14. The beneficial uses of surface waters that can be impaired by SSOs include, but are not limited to, aquatic life, drinking water supply, body contact and non-contact recreation, and aesthetics. The beneficial uses of ground water that can be impaired include, but are not limited to, drinking water and agricultural supply. Surface and ground waters throughout the state support these uses to varying degrees.

15. The implementation of requirements set forth in this Order will ensure the reasonable protection of past, present, and probable future beneficial uses of water and the prevention of nuisance. The requirements implement the water quality control plans (Basin Plans) for each region and take into account the environmental characteristics of hydrographic units within the state. Additionally, the State Water Board has considered water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect

water quality in the area, costs associated with compliance with these requirements, the need for developing housing within California, and the need to develop and use recycled water.

16. The Federal Clean Water Act largely prohibits any discharge of pollutants from a point source to waters of the United States except as authorized under an NPDES permit. In general, any point source discharge of sewage effluent to waters of the United States must comply with technology-based, secondary treatment standards, at a minimum, and any more stringent requirements necessary to meet applicable water quality standards and other requirements. Hence, the unpermitted discharge of wastewater from a sanitary sewer system to waters of the United States is illegal under the Clean Water Act. In addition, many Basin Plans adopted by the Regional Water Boards contain discharge prohibitions that apply to the discharge of untreated or partially treated wastewater. Finally, the California Water Code generally prohibits the discharge of waste to land prior to the filing of any required report of waste discharge and the subsequent issuance of either WDRs or a waiver of WDRs.
17. California Water Code section 13263 requires a water board to, after any necessary hearing, prescribe requirements as to the nature of any proposed discharge, existing discharge, or material change in an existing discharge. The requirements shall, among other things, take into consideration the need to prevent nuisance.
18. California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:
 - a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
 - b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
 - c. Occurs during, or as a result of, the treatment or disposal of wastes.
19. This Order is consistent with State Water Board Resolution No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California) in that the Order imposes conditions to prevent impacts to water quality, does not allow the degradation of water quality, will not unreasonably affect beneficial uses of water, and will not result in water quality less than prescribed in State Water Board or Regional Water Board plans and policies.
20. The action to adopt this General Order is exempt from the California Environmental Quality Act (Public Resources Code §21000 et seq.) because it is an action taken by a regulatory agency to assure the protection of the environment and the regulatory process involves procedures for protection of the environment. (Cal. Code Regs., tit. 14, §15308). In addition, the action to adopt

this Order is exempt from CEQA pursuant to Cal.Code Regs., title 14, §15301 to the extent that it applies to existing sanitary sewer collection systems that constitute “existing facilities” as that term is used in Section 15301, and §15302, to the extent that it results in the repair or replacement of existing systems involving negligible or no expansion of capacity.

21. The Fact Sheet, which is incorporated by reference in the Order, contains supplemental information that was also considered in establishing these requirements.
22. The State Water Board has notified all affected public agencies and all known interested persons of the intent to prescribe general WDRs that require Enrollees to develop SSMPs and to report all SSOs.
23. The State Water Board conducted a public hearing on February 8, 2006, to receive oral and written comments on the draft order. The State Water Board received and considered, at its May 2, 2006, meeting, additional public comments on substantial changes made to the proposed general WDRs following the February 8, 2006, public hearing. The State Water Board has considered all comments pertaining to the proposed general WDRs.

IT IS HEREBY ORDERED, that pursuant to California Water Code section 13263, the Enrollees, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder, shall comply with the following:

A. DEFINITIONS

1. **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 that are caused by blockages or flow conditions within the publicly owned portion of a sanitary sewer system.
2. **Sanitary sewer system** – Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a wastewater treatment plant headworks used to collect and convey wastewater to the publicly owned treatment facility. Temporary storage and conveyance facilities (such as vaults, temporary piping, construction trenches, wet wells, impoundments, tanks, etc.) are considered to be part of the sanitary sewer system, and discharges into these temporary storage facilities are not considered to be SSOs.

For purposes of this Order, sanitary sewer systems include only those systems owned by public agencies that are comprised of more than one mile of pipes or sewer lines.

3. **Enrollee** - A federal or state agency, municipality, county, district, and other public entity that owns or operates a sanitary sewer system, as defined in the general WDRs, and that has submitted a complete and approved application for coverage under this Order.
4. **SSO Reporting System** – Online spill reporting system that is hosted, controlled, and maintained by the State Water Board. The web address for this site is <http://ciwqs.waterboards.ca.gov>. This online database is maintained on a secure site and is controlled by unique usernames and passwords.
5. **Untreated or partially treated wastewater** – Any volume of waste discharged from the sanitary sewer system upstream of a wastewater treatment plant headworks.
6. **Satellite collection system** – The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility to which the sanitary sewer system is tributary.
7. **Nuisance** - California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:
 - a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
 - b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
 - c. Occurs during, or as a result of, the treatment or disposal of wastes.

B. APPLICATION REQUIREMENTS

1. **Deadlines for Application** – All public agencies that currently own or operate sanitary sewer systems within the State of California must apply for coverage under the general WDRs within six (6) months of the date of adoption of the general WDRs. Additionally, public agencies that acquire or assume responsibility for operating sanitary sewer systems after the date of adoption of this Order must apply for coverage under the general WDRs at least three (3) months prior to operation of those facilities.
2. **Applications under the general WDRs** – In order to apply for coverage pursuant to the general WDRs, a legally authorized representative for each agency must submit a complete application package. Within sixty (60) days of adoption of the general WDRs, State Water Board staff will send specific instructions on how to

apply for coverage under the general WDRs to all known public agencies that own sanitary sewer systems. Agencies that do not receive notice may obtain applications and instructions online on the Water Board's website.

3. Coverage under the general WDRs – Permit coverage will be in effect once a complete application package has been submitted and approved by the State Water Board's Division of Water Quality.

C. PROHIBITIONS

1. Any SSO that results in a discharge of untreated or partially treated wastewater to waters of the United States is prohibited.
2. Any SSO that results in a discharge of untreated or partially treated wastewater that creates a nuisance as defined in California Water Code Section 13050(m) is prohibited.

D. PROVISIONS

1. The Enrollee must comply with all conditions of this Order. Any noncompliance with this Order constitutes a violation of the California Water Code and is grounds for enforcement action.
2. It is the intent of the State Water Board that sanitary sewer systems be regulated in a manner consistent with the general WDRs. Nothing in the general WDRs shall be:
 - (i) Interpreted or applied in a manner inconsistent with the Federal Clean Water Act, or supersede a more specific or more stringent state or federal requirement in an existing permit, regulation, or administrative/judicial order or Consent Decree;
 - (ii) Interpreted or applied to authorize an SSO that is illegal under either the Clean Water Act, an applicable Basin Plan prohibition or water quality standard, or the California Water Code;
 - (iii) Interpreted or applied to prohibit a Regional Water Board from issuing an individual NPDES permit or WDR, superseding this general WDR, for a sanitary sewer system, authorized under the Clean Water Act or California Water Code; or
 - (iv) Interpreted or applied to supersede any more specific or more stringent WDRs or enforcement order issued by a Regional Water Board.
3. The Enrollee shall take all feasible steps to eliminate SSOs. In the event that an SSO does occur, the Enrollee shall take all feasible steps to contain and mitigate the impacts of an SSO.
4. In the event of an SSO, the Enrollee shall take all feasible steps to prevent untreated or partially treated wastewater from discharging from storm drains into

flood control channels or waters of the United States by blocking the storm drainage system and by removing the wastewater from the storm drains.

5. All SSOs must be reported in accordance with Section G of the general WDRs.
6. In any enforcement action, the State and/or Regional Water Boards will consider the appropriate factors under the duly adopted State Water Board Enforcement Policy. And, consistent with the Enforcement Policy, the State and/or Regional Water Boards must consider the Enrollee's efforts to contain, control, and mitigate SSOs when considering the California Water Code Section 13327 factors. In assessing these factors, the State and/or Regional Water Boards will also consider whether:
 - (i) The Enrollee has complied with the requirements of this Order, including requirements for reporting and developing and implementing a SSMP;
 - (ii) The Enrollee can identify the cause or likely cause of the discharge event;
 - (iii) There were no feasible alternatives to the discharge, such as temporary storage or retention of untreated wastewater, reduction of inflow and infiltration, use of adequate backup equipment, collecting and hauling of untreated wastewater to a treatment facility, or an increase in the capacity of the system as necessary to contain the design storm event identified in the SSMP. It is inappropriate to consider the lack of feasible alternatives, if the Enrollee does not implement a periodic or continuing process to identify and correct problems.
 - (iv) The discharge was exceptional, unintentional, temporary, and caused by factors beyond the reasonable control of the Enrollee;
 - (v) The discharge could have been prevented by the exercise of reasonable control described in a certified SSMP for:
 - Proper management, operation and maintenance;
 - Adequate treatment facilities, sanitary sewer system facilities, and/or components with an appropriate design capacity, to reasonably prevent SSOs (e.g., adequately enlarging treatment or collection facilities to accommodate growth, infiltration and inflow (I/I), etc.);
 - Preventive maintenance (including cleaning and fats, oils, and grease (FOG) control);
 - Installation of adequate backup equipment; and
 - Inflow and infiltration prevention and control to the extent practicable.
 - (vi) The sanitary sewer system design capacity is appropriate to reasonably prevent SSOs.

- (vii) The Enrollee took all reasonable steps to stop and mitigate the impact of the discharge as soon as possible.
7. When a sanitary sewer overflow occurs, the Enrollee shall take all feasible steps and necessary remedial actions to 1) control or limit the volume of untreated or partially treated wastewater discharged, 2) terminate the discharge, and 3) recover as much of the wastewater discharged as possible for proper disposal, including any wash down water.

The Enrollee shall implement all remedial actions to the extent they may be applicable to the discharge and not inconsistent with an emergency response plan, including the following:

- (i) Interception and rerouting of untreated or partially treated wastewater flows around the wastewater line failure;
 - (ii) Vacuum truck recovery of sanitary sewer overflows and wash down water;
 - (iii) Cleanup of debris at the overflow site;
 - (iv) System modifications to prevent another SSO at the same location;
 - (v) Adequate sampling to determine the nature and impact of the release; and
 - (vi) Adequate public notification to protect the public from exposure to the SSO.
8. The Enrollee shall properly, manage, operate, and maintain all parts of the sanitary sewer system owned or operated by the Enrollee, and shall ensure that the system operators (including employees, contractors, or other agents) are adequately trained and possess adequate knowledge, skills, and abilities.
9. The Enrollee shall allocate adequate resources for the operation, maintenance, and repair of its sanitary sewer system, by establishing a proper rate structure, accounting mechanisms, and auditing procedures to ensure an adequate measure of revenues and expenditures. These procedures must be in compliance with applicable laws and regulations and comply with generally acceptable accounting practices.
10. The Enrollee shall provide adequate capacity to convey base flows and peak flows, including flows related to wet weather events. Capacity shall meet or exceed the design criteria as defined in the Enrollee's System Evaluation and Capacity Assurance Plan for all parts of the sanitary sewer system owned or operated by the Enrollee.
11. The Enrollee shall develop and implement a written Sewer System Management Plan (SSMP) and make it available to the State and/or Regional Water Board upon request. A copy of this document must be publicly available at the Enrollee's office and/or available on the Internet. This SSMP must be approved by the Enrollee's governing board at a public meeting.

12. In accordance with the California Business and Professions Code sections 6735, 7835, and 7835.1, all engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. Specific elements of the SSMP that require professional evaluation and judgments shall be prepared by or under the direction of appropriately qualified professionals, and shall bear the professional(s)' signature and stamp.
13. The mandatory elements of the SSMP are specified below. However, if the Enrollee believes that any element of this section is not appropriate or applicable to the Enrollee's sanitary sewer system, the SSMP program does not need to address that element. The Enrollee must justify why that element is not applicable. The SSMP must be approved by the deadlines listed in the SSMP Time Schedule below.

Sewer System Management Plan (SSMP)

- (i) **Goal:** 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.
- (ii) **Organization:** The SSMP must identify:
 - (a) The name of the responsible or authorized representative as described in Section J of this Order.
 - (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 (OES)).
- (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 I/I, stormwater, 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.
- (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 stormwater 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 a 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 and maintenance, and require contractors to be appropriately trained; and

- (e) Provide equipment and replacement part inventories, including identification of critical replacement parts.

(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.

(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 an 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 WDRs 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.

- (vii) **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 establishment of 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.
- (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 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.
- (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.
- (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.

- (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.

14. Both the SSMP and the Enrollee's program to implement the SSMP must be certified by the Enrollee to be in compliance with the requirements set forth above and must be presented to the Enrollee's governing board for approval at a public meeting. The Enrollee shall certify that the SSMP, and subparts thereof, are in compliance with the general WDRs within the time frames identified in the time schedule provided in subsection D.15, below.

In order to complete this certification, the Enrollee's authorized representative must complete the certification portion in the Online SSO Database Questionnaire by checking the appropriate milestone box, printing and signing the automated form, and sending the form to:

State Water Resources Control Board
Division of Water Quality
Attn: SSO Program Manager
P.O. Box 100
Sacramento, CA 95812

The SSMP must be updated every five (5) years, and must include any significant program changes. Re-certification by the governing board of the Enrollee is required in accordance with D.14 when significant updates to the SSMP are made. To complete the re-certification process, the Enrollee shall enter the data in the Online SSO Database and mail the form to the State Water Board, as described above.

15. The Enrollee shall comply with these requirements according to the following schedule. This time schedule does not supersede existing requirements or time schedules associated with other permits or regulatory requirements.

Sewer System Management Plan Time Schedule

<u>Task and Associated Section</u>	Completion Date			
	Population > 100,000	Population between 100,000 and 10,000	Population between 10,000 and 2,500	Population < 2,500
Application for Permit Coverage Section C	6 months after WDRs Adoption			
Reporting Program Section G	6 months after WDRs Adoption ¹			
SSMP Development Plan and Schedule No specific Section	9 months after WDRs Adoption ²	12 months after WDRs Adoption ²	15 months after WDRs Adoption ²	18 months after WDRs Adoption ²
Goals and Organization Structure Section D 13 (i) & (ii)	12 months after WDRs Adoption ²		18 months after WDRs Adoption ²	
Overflow Emergency Response Program Section D 13 (vi)	24 months after WDRs Adoption ²	30 months after WDRs Adoption ²	36 months after WDRs Adoption ²	39 months after WDRs Adoption ²
Legal Authority Section D 13 (iii)				
Operation and Maintenance Program Section D 13 (iv)				
Grease Control Program Section D 13 (vii)	36 months after WDRs Adoption	39 months after WDRs Adoption	48 months after WDRs Adoption	51 months after WDRs Adoption
Design and Performance Section D 13 (v)				
System Evaluation and Capacity Assurance Plan Section D 13 (viii)				
Final SSMP, incorporating all of the SSMP requirements Section D 13				

1. In the event that by July 1, 2006 the Executive Director is able to execute a memorandum of agreement (MOA) with the California Water Environment Association (CWEA) or discharger representatives outlining a strategy and time schedule for CWEA or another entity to provide statewide training on the adopted monitoring program, SSO database electronic reporting, and SSMP development, consistent with this Order, then the schedule of Reporting Program Section G shall be replaced with the following schedule:

Reporting Program Section G	
Regional Boards 4, 8, and 9	8 months after WDRs Adoption
Regional Boards 1, 2, and 3	12 months after WDRs Adoption
Regional Boards 5, 6, and 7	16 months after WDRs Adoption

If this MOU is not executed by July 1, 2006, the reporting program time schedule will remain six (6) months for all regions and agency size categories.

2. In the event that the Executive Director executes the MOA identified in note 1 by July 1, 2006, then the deadline for this task shall be extended by six (6) months. The time schedule identified in the MOA must be consistent with the extended time schedule provided by this note. If the MOA is not executed by July 1, 2006, the six (6) month time extension will not be granted.

E. WDRs and SSMP AVAILABILITY

1. A copy of the general WDRs and the certified SSMP shall be maintained at appropriate locations (such as the Enrollee’s offices, facilities, and/or Internet homepage) and shall be available to sanitary sewer system operating and maintenance personnel at all times.

F. ENTRY AND INSPECTION

1. The Enrollee shall allow the State or Regional Water Boards or their authorized representative, upon presentation of credentials and other documents as may be required by law, to:
 - a. Enter upon the Enrollee’s premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order;

- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
- d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order or as otherwise authorized by the California Water Code, any substances or parameters at any location.

G. GENERAL MONITORING AND REPORTING REQUIREMENTS

1. The Enrollee shall furnish to the State or Regional Water Board, within a reasonable time, any information that the State or Regional Water Board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Enrollee shall also furnish to the Executive Director of the State Water Board or Executive Officer of the applicable Regional Water Board, upon request, copies of records required to be kept by this Order.
2. The Enrollee shall comply with the attached Monitoring and Reporting Program No. 2006-0003 and future revisions thereto, as specified by the Executive Director. Monitoring results shall be reported at the intervals specified in Monitoring and Reporting Program No. 2006-0003. Unless superseded by a specific enforcement Order for a specific Enrollee, these reporting requirements are intended to replace other mandatory routine written reports associated with SSOs.
3. All Enrollees must obtain SSO Database accounts and receive a "Username" and "Password" by registering through the California Integrated Water Quality System (CIWQS). These accounts will allow controlled and secure entry into the SSO Database. Additionally, within 30 days of receiving an account and prior to recording spills into the SSO Database, all Enrollees must complete the "Collection System Questionnaire", which collects pertinent information regarding a Enrollee's collection system. The "Collection System Questionnaire" must be updated at least every 12 months.
4. Pursuant to Health and Safety Code section 5411.5, any person who, without regard to intent or negligence, causes or permits any untreated wastewater or other waste to be discharged in or on any waters of the State, or discharged in or deposited where it is, or probably will be, discharged in or on any surface waters of the State, as soon as that person has knowledge of the discharge, shall immediately notify the local health officer of the discharge. Discharges of untreated or partially treated wastewater to storm drains and drainage channels, whether man-made or natural or concrete-lined, shall be reported as required above.

Any SSO greater than 1,000 gallons discharged in or on any waters of the State, or discharged in or deposited where it is, or probably will be, discharged in or on any surface waters of the State shall also be reported to the Office of Emergency Services pursuant to California Water Code section 13271.

H. CHANGE IN OWNERSHIP

1. This Order is not transferable to any person or party, except after notice to the Executive Director. The Enrollee shall submit this notice in writing at least 30 days in advance of any proposed transfer. The notice must include a written agreement between the existing and new Enrollee containing a specific date for the transfer of this Order's responsibility and coverage between the existing Enrollee and the new Enrollee. This agreement shall include an acknowledgement that the existing Enrollee is liable for violations up to the transfer date and that the new Enrollee is liable from the transfer date forward.

I. INCOMPLETE REPORTS

1. If an Enrollee becomes aware that it failed to submit any relevant facts in any report required under this Order, the Enrollee shall promptly submit such facts or information by formally amending the report in the Online SSO Database.

J. REPORT DECLARATION

1. All applications, reports, or information shall be signed and certified as follows:
 - (i) All reports required by this Order and other information required by the State or Regional Water Board shall be signed and certified by a person designated, for a municipality, state, federal or other public agency, as either a principal executive officer or ranking elected official, or by a duly authorized representative of that person, as described in paragraph (ii) of this provision. (For purposes of electronic reporting, an electronic signature and accompanying certification, which is in compliance with the Online SSO database procedures, meet this certification requirement.)
 - (ii) An individual is a duly authorized representative only if:
 - (a) The authorization is made in writing by a person described in paragraph (i) of this provision; and
 - (b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity.

K. CIVIL MONETARY REMEDIES FOR DISCHARGE VIOLATIONS

1. The California Water Code provides various enforcement options, including civil monetary remedies, for violations of this Order.
2. The California Water Code also provides that any person failing or refusing to furnish technical or monitoring program reports, as required under this Order, or

falsifying any information provided in the technical or monitoring reports is subject to civil monetary penalties.

L. SEVERABILITY

1. The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Order, shall not be affected thereby.
2. This order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Enrollee from liability under federal, state or local laws, nor create a vested right for the Enrollee to continue the waste discharge.

CERTIFICATION

The undersigned Clerk to the State Water Board does hereby certify that the foregoing is a full, true, and correct copy of general WDRs duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 2, 2006.

AYE: Tam M. Doduc
Gerald D. Secundy

NO: Arthur G. Baggett

ABSENT: None

ABSTAIN: None



Song Her
Clerk to the Board

STATE OF CALIFORNIA
WATER RESOURCES CONTROL BOARD
ORDER NO. WQ 2013-0058-EXEC

AMENDING MONITORING AND REPORTING PROGRAM
FOR
STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR
SANITARY SEWER SYSTEMS

The State of California, Water Resources Control Board (hereafter State Water Board) finds:

1. The State Water Board is authorized to prescribe statewide general Waste Discharge Requirements (WDRs) for categories of discharges that involve the same or similar operations and the same or similar types of waste pursuant to Water Code section 13263(i).
2. Water Code section 13193 *et seq.* requires the Regional Water Quality Control Boards (Regional Water Boards) and the State Water Board (collectively, the Water Boards) to gather Sanitary Sewer Overflow (SSO) information and make this information available to the public, including but not limited to, SSO cause, estimated volume, location, date, time, duration, whether or not the SSO reached or may have reached waters of the state, response and corrective action taken, and an enrollee's contact information for each SSO event. An enrollee is defined as the public entity having legal authority over the operation and maintenance of, or capital improvements to, a sanitary sewer system greater than one mile in length.
3. Water Code section 13271, *et seq.* requires notification to the California Office of Emergency Services (Cal OES), formerly the California Emergency Management Agency, for certain unauthorized discharges, including SSOs.
4. On May 2, 2006, the State Water Board adopted Order 2006-0003-DWQ, "Statewide Waste Discharge Requirements for Sanitary Sewer Systems"¹ (hereafter SSS WDRs) to comply with Water Code section 13193 and to establish the framework for the statewide SSO Reduction Program.
5. Subsection G.2 of the SSS WDRs and the Monitoring and Reporting Program (MRP) provide that the Executive Director may modify the terms of the MRP at any time.
6. On February 20, 2008, the State Water Board Executive Director adopted a revised MRP for the SSS WDRs to rectify early notification deficiencies and ensure that first responders are notified in a timely manner of SSOs discharged into waters of the state.
7. When notified of an SSO that reaches a drainage channel or surface water of the state, Cal OES, pursuant to Water Code section 13271(a)(3), forwards the SSO notification information² to local government agencies and first responders including local public health officials and the applicable Regional Water Board. Receipt of notifications for a single SSO event from both the SSO reporter

¹ Available for download at:

http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2006/wqo/wqo2006_0003.pdf

² Cal OES Hazardous Materials Spill Reports available Online at:

[http://w3.calema.ca.gov/operational/mal haz.nsf/\\$defaultview](http://w3.calema.ca.gov/operational/mal haz.nsf/$defaultview) and <http://w3.calema.ca.gov/operational/mal haz.nsf>

and Cal OES is duplicative. To address this, the SSO notification requirements added by the February 20, 2008 MRP revision are being removed in this MRP revision.

8. In the February 28, 2008 Memorandum of Agreement between the State Water Board and the California Water and Environment Association (CWEA), the State Water Board committed to re-designing the CIWQS³ Online SSO Database to allow "event" based SSO reporting versus the original "location" based reporting. Revisions to this MRP and accompanying changes to the CIWQS Online SSO Database will implement this change by allowing for multiple SSO appearance points to be associated with each SSO event caused by a single asset failure.
9. Based on stakeholder input and Water Board staff experience implementing the SSO Reduction Program, SSO categories have been revised in this MRP. In the prior version of the MRP, SSOs have been categorized as Category 1 or Category 2. This MRP implements changes to SSO categories by adding a Category 3 SSO type. This change will improve data management to further assist Water Board staff with evaluation of high threat and low threat SSOs by placing them in unique categories (i.e., Category 1 and Category 3, respectively). This change will also assist enrollees in identifying SSOs that require Cal OES notification.
10. Based on over six years of implementation of the SSS WDRs, the State Water Board concludes that the February 20, 2008 MRP must be updated to better advance the SSO Reduction Program⁴ objectives, assess compliance, and enforce the requirements of the SSS WDRs.

IT IS HEREBY ORDERED THAT:

Pursuant to the authority delegated by Water Code section 13267(f), Resolution 2002-0104, and Order 2006-0003-DWQ, the MRP for the SSS WDRs (Order 2006-0003-DWQ) is hereby amended as shown in Attachment A and shall be effective on September 9, 2013.

8/6/13

Date



Thomas Howard
Executive Director

³ California Integrated Water Quality System (CIWQS) publicly available at <http://www.waterboards.ca.gov/ciwqs/publicreports.shtml>

⁴ Statewide Sanitary Sewer Overflow Reduction Program information is available at: http://www.waterboards.ca.gov/water_issues/programs/ssol/

ATTACHMENT A

STATE WATER RESOURCES CONTROL BOARD ORDER NO. WQ 2013-0058-EXEC

AMENDING MONITORING AND REPORTING PROGRAM FOR STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER SYSTEMS

This Monitoring and Reporting Program (MRP) establishes monitoring, record keeping, reporting and public notification requirements for Order 2006-0003-DWQ, “Statewide General Waste Discharge Requirements for Sanitary Sewer Systems” (SSS WDRs). This MRP shall be effective from September 9, 2013 until it is rescinded. The Executive Director may make revisions to this MRP at any time. These revisions may include a reduction or increase in the monitoring and reporting requirements. All site specific records and data developed pursuant to the SSS WDRs and this MRP shall be complete, accurate, and justified by evidence maintained by the enrollee. Failure to comply with this MRP may subject an enrollee to civil liabilities of up to \$5,000 a day per violation pursuant to Water Code section 13350; up to \$1,000 a day per violation pursuant to Water Code section 13268; or referral to the Attorney General for judicial civil enforcement. The State Water Resources Control Board (State Water Board) reserves the right to take any further enforcement action authorized by law.

A. SUMMARY OF MRP REQUIREMENTS

Table 1 – Spill Categories and Definitions

CATEGORIES	DEFINITIONS [see Section A on page 5 of Order 2006-0003-DWQ, for Sanitary Sewer Overflow (SSO) definition]
CATEGORY 1	Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee’s sanitary sewer system failure or flow condition that: <ul style="list-style-type: none"> • Reach surface water and/or reach a drainage channel tributary to a surface water; or • Reach a Municipal Separate Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).
CATEGORY 2	Discharges of untreated or partially treated wastewater of 1,000 gallons or greater resulting from an enrollee’s sanitary sewer system failure or flow condition that do not reach surface water, a drainage channel, or a MS4 unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.
CATEGORY 3	All other discharges of untreated or partially treated wastewater resulting from an enrollee’s sanitary sewer system failure or flow condition.
PRIVATE LATERAL SEWAGE DISCHARGE (PLSD)	Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee’s sanitary sewer system or from other private sewer assets. PLSDs that the enrollee becomes aware of may be voluntarily reported to the California Integrated Water Quality System (CIWQS) Online SSO Database.

Table 2 – Notification, Reporting, Monitoring, and Record Keeping Requirements

ELEMENT	REQUIREMENT	METHOD
NOTIFICATION (see section B of MRP)	<ul style="list-style-type: none"> • Within two hours of becoming aware of any Category 1 SSO greater than or equal to 1,000 gallons discharged to surface water or spilled in a location where it probably will be discharged to surface water, notify the California Office of Emergency Services (Cal OES) and obtain a notification control number. 	Call Cal OES at: (800) 852-7550
REPORTING (see section C of MRP)	<ul style="list-style-type: none"> • Category 1 SSO: Submit draft report within three business days of becoming aware of the SSO and certify within 15 calendar days of SSO end date. • Category 2 SSO: Submit draft report within 3 business days of becoming aware of the SSO and certify within 15 calendar days of the SSO end date. • Category 3 SSO: Submit certified report within 30 calendar days of the end of month in which SSO the occurred. • SSO Technical Report: Submit within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater are spilled to surface waters. • “No Spill” Certification: Certify that no SSOs occurred within 30 calendar days of the end of the month or, if reporting quarterly, the quarter in which no SSOs occurred. • Collection System Questionnaire: Update and certify every 12 months. 	Enter data into the CIWQS Online SSO Database (http://ciwqs.waterboards.ca.gov/), certified by enrollee’s Legally Responsible Official(s).
WATER QUALITY MONITORING (see section D of MRP)	<ul style="list-style-type: none"> • Conduct water quality sampling within 48 hours after initial SSO notification for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters. 	Water quality results are required to be uploaded into CIWQS for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters.
RECORD KEEPING (see section E of MRP)	<ul style="list-style-type: none"> • SSO event records. • Records documenting Sanitary Sewer Management Plan (SSMP) implementation and changes/updates to the SSMP. • Records to document Water Quality Monitoring for SSOs of 50,000 gallons or greater spilled to surface waters. • Collection system telemetry records if relied upon to document and/or estimate SSO Volume. 	Self-maintained records shall be available during inspections or upon request.

B. NOTIFICATION REQUIREMENTS

Although Regional Water Quality Control Boards (Regional Water Boards) and the State Water Board (collectively, the Water Boards) staff do not have duties as first responders, this MRP is an appropriate mechanism to ensure that the agencies that have first responder duties are notified in a timely manner in order to protect public health and beneficial uses.

1. For any Category 1 SSO greater than or equal to 1,000 gallons that results in a discharge to a surface water or spilled in a location where it probably will be discharged to surface water, either directly or by way of a drainage channel or MS4, the enrollee shall, as soon as possible, but not later than two (2) hours after (A) the enrollee has knowledge of the discharge, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures, notify the Cal OES and obtain a notification control number.
2. To satisfy notification requirements for each applicable SSO, the enrollee shall provide the information requested by Cal OES before receiving a control number. Spill information requested by Cal OES may include:
 - i. Name of person notifying Cal OES and direct return phone number.
 - ii. Estimated SSO volume discharged (gallons).
 - iii. If ongoing, estimated SSO discharge rate (gallons per minute).
 - iv. SSO Incident Description:
 - a. Brief narrative.
 - b. On-scene point of contact for additional information (name and cell phone number).
 - c. Date and time enrollee became aware of the SSO.
 - d. Name of sanitary sewer system agency causing the SSO.
 - e. SSO cause (if known).
 - v. Indication of whether the SSO has been contained.
 - vi. Indication of whether surface water is impacted.
 - vii. Name of surface water impacted by the SSO, if applicable.
 - viii. Indication of whether a drinking water supply is or may be impacted by the SSO.
 - ix. Any other known SSO impacts.
 - x. SSO incident location (address, city, state, and zip code).
3. Following the initial notification to Cal OES and until such time that an enrollee certifies the SSO report in the CIWQS Online SSO Database, the enrollee shall provide updates to Cal OES regarding substantial changes to the estimated volume of untreated or partially treated sewage discharged and any substantial change(s) to known impact(s).
4. PLSDs: The enrollee is strongly encouraged to notify Cal OES of discharges greater than or equal to 1,000 gallons of untreated or partially treated wastewater that result or may result in a discharge to surface water resulting from failures or flow conditions within a privately owned sewer lateral or from other private sewer asset(s) if the enrollee becomes aware of the PLSD.

C. **REPORTING REQUIREMENTS**

1. **CIWQS Online SSO Database Account:** All enrollees shall obtain a CIWQS Online SSO Database account and receive a “Username” and “Password” by registering through CIWQS. These accounts allow controlled and secure entry into the CIWQS Online SSO Database.
2. **SSO Mandatory Reporting Information:** For reporting purposes, if one SSO event results in multiple appearance points in a sewer system asset, the enrollee shall complete one SSO report in the CIWQS Online SSO Database which includes the GPS coordinates for the location of the SSO appearance point closest to the failure point, blockage or location of the flow condition that caused the SSO, and provide descriptions of the locations of all other discharge points associated with the SSO event.
3. **SSO Categories**
 - i. **Category 1** – Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee’s sanitary sewer system failure or flow condition that:
 - a. Reach surface water and/or reach a drainage channel tributary to a surface water; or
 - b. Reach a MS4 and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).
 - ii. **Category 2** – Discharges of untreated or partially treated wastewater greater than or equal to 1,000 gallons resulting from an enrollee’s sanitary sewer system failure or flow condition that does not reach a surface water, a drainage channel, or the MS4 unless the entire SSO volume discharged to the storm drain system is fully recovered and disposed of properly.
 - iii. **Category 3** – All other discharges of untreated or partially treated wastewater resulting from an enrollee’s sanitary sewer system failure or flow condition.
4. **Sanitary Sewer Overflow Reporting to CIWQS - Timeframes**
 - i. **Category 1 and Category 2 SSOs** – All SSOs that meet the above criteria for Category 1 or Category 2 SSOs shall be reported to the CIWQS Online SSO Database:
 - a. Draft reports for Category 1 and Category 2 SSOs shall be submitted to the CIWQS Online SSO Database within three (3) business days of the enrollee becoming aware of the SSO. Minimum information that shall be reported in a draft Category 1 SSO report shall include all information identified in section 8.i.a. below. Minimum information that shall be reported in a Category 2 SSO draft report shall include all information identified in section 8.i.c below.
 - b. A final Category 1 or Category 2 SSO report shall be certified through the CIWQS Online SSO Database within 15 calendar days of the end date of the SSO. Minimum information that shall be certified in the final Category 1 SSO report shall include all information identified in section 8.i.b below. Minimum information that shall be certified in a final Category 2 SSO report shall include all information identified in section 8.i.d below.

- ii. **Category 3 SSOs** – All SSOs that meet the above criteria for Category 3 SSOs shall be reported to the CIWQS Online SSO Database and certified within 30 calendar days after the end of the calendar month in which the SSO occurs (e.g., all Category 3 SSOs occurring in the month of February shall be entered into the database and certified by March 30). Minimum information that shall be certified in a final Category 3 SSO report shall include all information identified in section 8.i.e below.
- iii. **“No Spill” Certification** – If there are no SSOs during the calendar month, the enrollee shall either 1) certify, within 30 calendar days after the end of each calendar month, a “No Spill” certification statement in the CIWQS Online SSO Database certifying that there were no SSOs for the designated month, or 2) certify, quarterly within 30 calendar days after the end of each quarter, “No Spill” certification statements in the CIWQS Online SSO Database certifying that there were no SSOs for each month in the quarter being reported on. For quarterly reporting, the quarters are Q1 - January/ February/ March, Q2 - April/May/June, Q3 - July/August/September, and Q4 - October/November/December.

If there are no SSOs during a calendar month but the enrollee reported a PLSD, the enrollee shall still certify a “No Spill” certification statement for that month.
- iv. **Amended SSO Reports** – The enrollee may update or add additional information to a certified SSO report within 120 calendar days after the SSO end date by amending the report or by adding an attachment to the SSO report in the CIWQS Online SSO Database. SSO reports certified in the CIWQS Online SSO Database prior to the adoption date of this MRP may only be amended up to 120 days after the effective date of this MRP. After 120 days, the enrollee may contact the SSO Program Manager to request to amend an SSO report if the enrollee also submits justification for why the additional information was not available prior to the end of the 120 days.

5. **SSO Technical Report**

The enrollee shall submit an SSO Technical Report in the CIWQS Online SSO Database within 45 calendar days of the SSO end date for any SSO in which 50,000 gallons or greater are spilled to surface waters. This report, which does not preclude the Water Boards from requiring more detailed analyses if requested, shall include at a minimum, the following:

- i. **Causes and Circumstances of the SSO:**
 - a. Complete and detailed explanation of how and when the SSO was discovered.
 - b. Diagram showing the SSO failure point, appearance point(s), and final destination(s).
 - c. Detailed description of the methodology employed and available data used to calculate the volume of the SSO and, if applicable, the SSO volume recovered.
 - d. Detailed description of the cause(s) of the SSO.
 - e. Copies of original field crew records used to document the SSO.
 - f. Historical maintenance records for the failure location.
- ii. **Enrollee’s Response to SSO:**
 - a. Chronological narrative description of all actions taken by enrollee to terminate the spill.
 - b. Explanation of how the SSMP Overflow Emergency Response plan was implemented to respond to and mitigate the SSO.

- c. Final corrective action(s) completed and/or planned to be completed, including a schedule for actions not yet completed.

iii. **Water Quality Monitoring:**

- a. Description of all water quality sampling activities conducted including analytical results and evaluation of the results.
- b. Detailed location map illustrating all water quality sampling points.

6. **PLSDs**

Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sanitary sewer system assets may be voluntarily reported to the CIWQS Online SSO Database.

- i. The enrollee is also encouraged to provide notification to Cal OES per section B above when a PLSD greater than or equal to 1,000 gallons has or may result in a discharge to surface water. For any PLSD greater than or equal to 1,000 gallons regardless of the spill destination, the enrollee is also encouraged to file a spill report as required by Health and Safety Code section 5410 et. seq. and Water Code section 13271, or notify the responsible party that notification and reporting should be completed as specified above and required by State law.
- ii. If a PLSD is recorded in the CIWQS Online SSO Database, the enrollee must identify the sewage discharge as occurring and caused by a private sanitary sewer system asset and should identify a responsible party (other than the enrollee), if known. Certification of PLSD reports by enrollees is not required.

7. **CIWQS Online SSO Database Unavailability**

In the event that the CIWQS Online SSO Database is not available, the enrollee must fax or e-mail all required information to the appropriate Regional Water Board office in accordance with the time schedules identified herein. In such event, the enrollee must also enter all required information into the CIWQS Online SSO Database when the database becomes available.

8. **Mandatory Information to be Included in CIWQS Online SSO Reporting**

All enrollees shall obtain a CIWQS Online SSO Database account and receive a "Username" and "Password" by registering through CIWQS which can be reached at CIWQS@waterboards.ca.gov or by calling (866) 792-4977, M-F, 8 A.M. to 5 P.M. These accounts will allow controlled and secure entry into the CIWQS Online SSO Database. Additionally, within thirty (30) days of initial enrollment and prior to recording SSOs into the CIWQS Online SSO Database, all enrollees must complete a Collection System Questionnaire (Questionnaire). The Questionnaire shall be updated at least once every 12 months.

i. **SSO Reports**

At a minimum, the following mandatory information shall be reported prior to finalizing and certifying an SSO report for each category of SSO:

- a. **Draft Category 1 SSOs**: At a minimum, the following mandatory information shall be reported for a draft Category 1 SSO report:
1. SSO Contact Information: Name and telephone number of enrollee contact person who can answer specific questions about the SSO being reported.
 2. SSO Location Name.
 3. Location of the overflow event (SSO) by entering GPS coordinates. If a single overflow event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the SSO appearance point explanation field.
 4. Whether or not the SSO reached surface water, a drainage channel, or entered and was discharged from a drainage structure.
 5. Whether or not the SSO reached a municipal separate storm drain system.
 6. Whether or not the total SSO volume that reached a municipal separate storm drain system was fully recovered.
 7. Estimate of the SSO volume, inclusive of all discharge point(s).
 8. Estimate of the SSO volume that reached surface water, a drainage channel, or was not recovered from a storm drain.
 9. Estimate of the SSO volume recovered (if applicable).
 10. Number of SSO appearance point(s).
 11. Description and location of SSO appearance point(s). If a single sanitary sewer system failure results in multiple SSO appearance points, each appearance point must be described.
 12. SSO start date and time.
 13. Date and time the enrollee was notified of, or self-discovered, the SSO.
 14. Estimated operator arrival time.
 15. For spills greater than or equal to 1,000 gallons, the date and time Cal OES was called.
 16. For spills greater than or equal to 1,000 gallons, the Cal OES control number.
- b. **Certified Category 1 SSOs**: At a minimum, the following mandatory information shall be reported for a certified Category 1 SSO report, in addition to all fields in section 8.i.a :
1. Description of SSO destination(s).
 2. SSO end date and time.
 3. SSO causes (mainline blockage, roots, etc.).
 4. SSO failure point (main, lateral, etc.).
 5. Whether or not the spill was associated with a storm event.
 6. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the overflow; and a schedule of major milestones for those steps.
 7. Description of spill response activities.
 8. Spill response completion date.
 9. Whether or not there is an ongoing investigation, the reasons for the investigation and the expected date of completion.

10. Whether or not a beach closure occurred or may have occurred as a result of the SSO.
 11. Whether or not health warnings were posted as a result of the SSO.
 12. Name of beach(es) closed and/or impacted. If no beach was impacted, NA shall be selected.
 13. Name of surface water(s) impacted.
 14. If water quality samples were collected, identify parameters the water quality samples were analyzed for. If no samples were taken, NA shall be selected.
 15. If water quality samples were taken, identify which regulatory agencies received sample results (if applicable). If no samples were taken, NA shall be selected.
 16. Description of methodology(ies) and type of data relied upon for estimations of the SSO volume discharged and recovered.
 17. SSO Certification: Upon SSO Certification, the CIWQS Online SSO Database will issue a final SSO identification (ID) number.
- c. **Draft Category 2 SSOs**: At a minimum, the following mandatory information shall be reported for a draft Category 2 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO.
- d. **Certified Category 2 SSOs**: At a minimum, the following mandatory information shall be reported for a certified Category 2 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO and Items 1-9, and 17 in section 8.i.b above for Certified Category 1 SSO.
- e. **Certified Category 3 SSOs**: At a minimum, the following mandatory information shall be reported for a certified Category 3 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO and Items 1-5, and 17 in section 8.i.b above for Certified Category 1 SSO.

ii. **Reporting SSOs to Other Regulatory Agencies**

These reporting requirements do not preclude an enrollee from reporting SSOs to other regulatory agencies pursuant to state law. In addition, these reporting requirements do not replace other Regional Water Board notification and reporting requirements for SSOs.

iii. **Collection System Questionnaire**

The required Questionnaire (see subsection G of the SSS WDRs) provides the Water Boards with site-specific information related to the enrollee's sanitary sewer system. The enrollee shall complete and certify the Questionnaire at least every 12 months to facilitate program implementation, compliance assessment, and enforcement response.

iv. **SSMP Availability**

The enrollee shall provide the publicly available internet web site address to the CIWQS Online SSO Database where a downloadable copy of the enrollee's approved SSMP, critical supporting documents referenced in the SSMP, and proof of local governing board approval of the SSMP is posted. If all of the SSMP documentation listed in this subsection is not publicly available on the Internet, the enrollee shall comply with the following procedure:

- a. Submit an **electronic** copy of the enrollee's approved SSMP, critical supporting documents referenced in the SSMP, and proof of local governing board approval of the SSMP to the State Water Board, within 30 days of that approval and within 30 days of any subsequent SSMP re-certifications, to the following mailing address:

State Water Resources Control Board
Division of Water Quality
Attn: SSO Program Manager
1001 I Street, 15th Floor, Sacramento, CA 95814

D. WATER QUALITY MONITORING REQUIREMENTS:

To comply with subsection D.7(v) of the SSS WDRs, the enrollee shall develop and implement an SSO Water Quality Monitoring Program to assess impacts from SSOs to surface waters in which 50,000 gallons or greater are spilled to surface waters. The SSO Water Quality Monitoring Program, shall, at a minimum:

1. Contain protocols for water quality monitoring.
2. Account for spill travel time in the surface water and scenarios where monitoring may not be possible (e.g. safety, access restrictions, etc.).
3. Require water quality analyses for ammonia and bacterial indicators to be performed by an accredited or certified laboratory.
4. Require monitoring instruments and devices used to implement the SSO Water Quality Monitoring Program to be properly maintained and calibrated, including any records to document maintenance and calibration, as necessary, to ensure their continued accuracy.
5. Within 48 hours of the enrollee becoming aware of the SSO, require water quality sampling for, at a minimum, the following constituents:
 - i. Ammonia
 - ii. Appropriate Bacterial indicator(s) per the applicable Basin Plan water quality objective or Regional Board direction which may include total and fecal coliform, enterococcus, and e-coli.

E. RECORD KEEPING REQUIREMENTS:

The following records shall be maintained by the enrollee for a minimum of five (5) years and shall be made available for review by the Water Boards during an onsite inspection or through an information request:

1. General Records: The enrollee shall maintain records to document compliance with all provisions of the SSS WDRs and this MRP for each sanitary sewer system owned including any required records generated by an enrollee's sanitary sewer system contractor(s).
2. SSO Records: The enrollee shall maintain records for each SSO event, including but not limited to:
 - i. Complaint records documenting how the enrollee responded to all notifications of possible or actual SSOs, both during and after business hours, including complaints that do not

result in SSOs. Each complaint record shall, at a minimum, include the following information:

- a. Date, time, and method of notification.
 - b. Date and time the complainant or informant first noticed the SSO.
 - c. Narrative description of the complaint, including any information the caller can provide regarding whether or not the complainant or informant reporting the potential SSO knows if the SSO has reached surface waters, drainage channels or storm drains.
 - d. Follow-up return contact information for complainant or informant for each complaint received, if not reported anonymously.
 - e. Final resolution of the complaint.
- ii. Records documenting steps and/or remedial actions undertaken by enrollee, using all available information, to comply with section D.7 of the SSS WDRs.
 - iii. Records documenting how all estimate(s) of volume(s) discharged and, if applicable, volume(s) recovered were calculated.
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.
 4. Electronic monitoring records relied upon for documenting SSO events and/or estimating the SSO volume discharged, including, but not limited to records from:
 - i. Supervisory Control and Data Acquisition (SCADA) systems
 - ii. Alarm system(s)
 - iii. Flow monitoring device(s) or other instrument(s) used to estimate wastewater levels, flow rates and/or volumes.

F. CERTIFICATION

1. All information required to be reported into the CIWQS Online SSO Database shall be certified by a person designated as described in subsection J of the SSS WDRs. This designated person is also known as a Legally Responsible Official (LRO). An enrollee may have more than one LRO.
2. Any designated person (i.e. an LRO) shall be registered with the State Water Board to certify reports in accordance with the CIWQS protocols for reporting.
3. Data Submitter (DS): Any enrollee employee or contractor may enter draft data into the CIWQS Online SSO Database on behalf of the enrollee if authorized by the LRO and registered with the State Water Board. However, only LROs may certify reports in CIWQS.
4. The enrollee shall maintain continuous coverage by an LRO. Any change of a registered LRO or DS (e.g., retired staff), including deactivation or a change to the LRO's or DS's contact information, shall be submitted by the enrollee to the State Water Board within 30 days of the change by calling (866) 792-4977 or e-mailing help@ciwqs.waterboards.ca.gov.

5. A registered designated person (i.e., an LRO) shall certify all required reports under penalty of perjury laws of the state as stated in the CIWQS Online SSO Database at the time of certification.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of an order amended by the Executive Director of the State Water Resources Control Board.

7/30/13

Date



Jeanine Townsend
Clerk to the Board

V. SEWER SYSTEM MANAGEMENT PLAN

Appendix B Standard Operating Procedures for Cleaning Gravity Sewers

STANDARD OPERATING PROCEDURE: JET CLEANING



STANDARD OPERATING PROCEDURE

Wastewater Section -Scheduled Maintenance: Jet Cleaning Version: June 2018

Objectives: Jet Cleaning maintenance activity (scheduled or reactive) is performed to; ensure the City’s Sanitary Sewer System sustains unimpeded flow, adhere to all jurisdictional regulatory mandates, and prevent sanitary sewer overflows which can be harmful to both the public and the environment.

Current Version	June 2018
Prior Version	April 2017
History of Change / Reason for Revision	Revision to clarify a few points (safety, cleaning quantity, supervisor dispatching priority)
Approval Signature	_____
	Date: _____

* * * * *

Mandatory Personal Safety Equipment:

All standard OSHA approved Personal Protective Equipment (PPE) includes, but not limited to: hardhat, safety toed work boots, gloves, safety glasses, full face protection, hearing protection and safety vests.

- **Hard Hats:** All full time and limited term employees are required to have hard hats in their possession always. Hard hats are REQUIRED to be worn always when employees are in the exclusion zones (work areas) or if they are in areas where hazards from above are present.
- **Gloves:** Gloves are required when handling tools, or when hands are exposed to cuts, abrasions, bruises, or burns, except for working around machinery where they might be caught in gears or moving parts (DO NOT wear gloves when working around machinery with gears or moving parts). Chemical resistant gloves are required when hands are exposed to corrosives and/or chemicals.
- **High Visibility Clothing:** High visibility clothing is required whenever employees are exposed to vehicular traffic (day or night). Safety vests must comply with ANSI (American National Standards Institute) Class II (<50 mph) or Class III (>50 mph or during hours of darkness). They shall be worn properly – kept closed on the front and sides to ensure

visibility from 360 degrees. They shall not be modified to avoid the class certification. They shall be kept in good and clean condition and be replaced when worn or dirty to preclude their function as high visibility clothing.

- **First Aid Kits:** One kit per vehicle to be stored in truck with location clearly marked and kept stocked. Operator or designated personnel shall inspect first aid kits monthly to remove and replenish expired items

Job Site Safety Equipment:

Job site safety equipment will include, but is not limited to: calibrated gas detector, safety cones, barricades and flags, signs or other traffic control devices. Note: The City will provide all safety equipment, as needed or requested, even if the equipment is not used.

General Tools and Equipment:

Tools and equipment include but are not limited to: Combo (Jet/Vacuum) Truck, Water Truck (as needed), various sewer cleaning nozzles, flailing nozzle, pipe pole, debris baskets (appropriately sized), manhole hooks, measuring wheel, metal locating device, various/miscellaneous hand tools and CMMS enabled laptop.

Please note: All emergency equipment (such as first aid kits, fire extinguishers and reflectors) shall be accessible. Lead workers or designated personnel shall inspect first aid kits monthly to remove and replenish expired items. Fire extinguishers shall be inspected monthly and documented on the monthly inspection tag. Lead workers or designated personnel shall ensure that hard or electronic copies of Safety Data Sheet (SDS) are immediately accessible.

Erosion Controls:

Not Applicable

Reference Materials:

CMMS work order (Scheduled or reactive); Daily Work Sheet form; Red and Blue Border Damage report forms; Daily Vehicle Inspection Report (if not Zonar equipped).

Major Tasks and Work Steps:

Prior to Leaving the Yard:

1. As it pertains to Jet Cleaning, reactive work takes priority and is performed before any scheduled work. Scheduled work is assigned by need and by date. Work orders for short cycled segments (1, 3 and 6 month) are priority. The Supervisor assigns work orders by area to avoid unnecessary driving by field staff.
2. Lead Worker or Out of Class Service Worker receives assigned Work Order(s) from Supervisor.

3. After reviewing assigned work, the Lead Worker will conduct a tailgate meeting with crew member(s) to brief them on the work to be performed.
4. Lead Worker and/or Service Worker will inspect assigned vehicle and equipment to be used for the day pursuant to established Vehicle Inspection Procedures. This includes inspecting the cleaning nozzles for wear, replacing any nozzles that are excessively worn, and visually inspecting the hose and couplings for damage and wear.

At the Job Site:

1. Before any work begins, each crew member in the work zone will be equipped with and utilizing all personal safety equipment (personal protective equipment [PPE]) required for safe job performance. This is to be strictly enforced at all times.
2. Lead Worker will analyze the job site to determine if traffic control is needed. If it is determined that traffic control is needed, the area will be temporarily set up and controlled pursuant to parameters established by OSHA, Cal-OSHA, California Department of Transportation's Manual on Uniform Traffic Control Devices, and any other such regulatory and/or safety measures established and enforced by the City. Traffic control will be continuously monitored by the Lead Worker and enhanced as needed to ensure safety (public, crew, and jobsite). Traffic Control Plan must be kept at the jobsite for work done in the street or alley. The City Operator (311) and Control 10 will be advised of any complete street closures or detours, and the estimated time for re-opening.
3. Lead Worker will also make note of any details that should be documented in the CMMS Work Order.
4. Fill the water tank at or near the first job site. (Fill Water Truck if needed).
5. Lead Worker will determine and confirm location of upstream and downstream manholes (use street addresses and sewer map book, if possible), and plan jet cleaning activity so that it starts in the upstream portion of the area and moves downstream, at which point a designated downstream manhole will be utilized to clean and vacuum debris.
6. Look for any overhead utilities that may come into contact with the vacuum boom during the cleaning operation.
7. Move the cleaning unit into the traffic-controlled area so that the hose reel is positioned over the manhole.
8. Before opening the manhole, check the atmosphere through the pick hole.
 - a. If anything unsafe or out of the ordinary is detected, cease activity and immediately contact Supervisor for instructions as to how to proceed.
 - b. If nothing of concern is noted and it is safe to proceed, open the manhole using the proper tool.
9. Install Tiger Tail on hose in all areas where hose can be damaged.
10. Determine pipe size so that appropriate equipment can be used.
11. Install the sewer cleaning nozzle or the flailing nozzle on the hose.

Cleaning Operation:

1. Start the auxiliary engine.
2. Lower the hose, with a guide or roller to protect the hose, into the manhole and direct it upstream into the sewer pipe to be cleaned.
3. Start the high-pressure pump and open the water valve.
4. Set the engine speed at a speed that will provide adequate pressure for cleaning, being careful to consider any risks of damage to residences or businesses.
5. Start the hose reel and proceed up the sewer main. The hose speed should not exceed three (3) feet per minute.
6. Allow the hose to advance to 25% of the length of the sewer (or 50-foot minimum, whichever is greater) and pull the hose back.
7. Insert the appropriately-sized debris trap in the downstream manhole.
8. If there is little or no debris, allow the hose to proceed to the upstream manhole.
9. If there is moderate to heavy debris, set up vacuum tubing at this point and clean the remaining portion of the sewer in increments not to exceed 25% of the length of the sewer (or 50-foot minimums, whichever is greater).
10. If the hose successfully makes it to the next manhole, open the manhole and visually verify that the nozzle is at or past the manhole.
11. Using the Debris Table below as a guide, observe the nature and the quantity of debris being pulled back to the manhole, and use the codes shown in the Table to document and report the nature of the debris.
12. Remove the debris from the manhole using the vacuum unit.
13. The sewer has been adequately cleaned when successive passes with a cleaning nozzle do not produce any additional debris.
14. In the event the hose cannot make it to the next manhole, the smallest cleaning nozzle will be utilized and the process repeated.
 - a. If the hose still cannot make it to the next manhole after the nozzle change, the crew will cease work and create a CCTV Work Order in CMMS to CCTV the main for problem location and condition assessment.
15. Upon reaching the next manhole, retract the hose on the reel.
16. Remove the debris trap.
17. Clean the mating surface and close the manhole, ensuring that the manhole is properly seated.
18. Move the cleaning unit from the traffic controlled area and break down traffic controls pursuant to parameters established by OSHA, Cal-OSHA, California Department of Transportation's Manual on Uniform Traffic Control Devices, and any other such regulatory and/or safety measures established and enforced by the City.
19. Accurately and comprehensively enter all preliminary site assessments and cleaning results on the relevant work order.
20. Proceed to the next cleaning jobsite.
21. Crew will dump debris tank at end of shift or sooner dependent upon tank level.

NATURE AND QUANTITY OF DEBRIS REMOVED DURING CLEANING (Per asset)				
NATURE	QUANTITY			
	CLR (≤15 inch - No observable debris >15 inch – no observable debris)	Light (≥15 inch - Minor amount of debris >15 inch – Minor amount of debris)	Medium (≥15 inch - less than 5 gallons of debris >15 inch – more than a 5 gallons of debris)	Heavy (≥15 inch - more than 5 gallons of debris >15 inch – more than 10 gallons of debris)
Debris (Sand, Grit, Rock)	CLR	DL	DM	DH
Grease	CLR	GL	GM	GH
Roots	CLR	RL	RM	RH

At the End of the Day:

1. All tools and equipment will be cleaned and stored in trucks in their proper places.
2. Fuel the vehicle prior to parking in the yard.
3. Once parked, inspect equipment and tools for problems. If any issues are found, report them to the Supervisor.
4. Clean out vehicle cab of litter and personal effects
5. Fully restock truck as needed.
6. Report any problems with jobs performed that day to the Supervisor.
7. Submit daily completed work orders to the Supervisor at end of shift.
8. Research of next day's job(s) should commence at this time.

NOTES

2018

STANDARD OPERATING PROCEDURE: RODDING



6/1/2018

STANDARD OPERATING PROCEDURE

Wastewater Section - Scheduled Maintenance: Rodding Version: June 2018

Objectives:

Rodding maintenance activity (scheduled or reactive), is performed to: ensure the City’s Sanitary Sewer System sustains unimpeded flow, adhere to all jurisdictional regulatory mandates, and mitigate sanitary sewer overflows.

Current Version	June 2018
Prior Version	April 2017
History of Change / Reason for Revision	This Standard Operating Procedure was significantly amended for content.
Approval Signature	_____ Date: _____

* * * * *

Mandatory Personal Safety Equipment:

All standard OSHA approved Personal Protective Equipment (PPE) includes, but not limited to: hardhat, safety toed work boots, gloves, safety glasses, full face protection, hearing protection and safety vests.

- **Hard Hats:** All full time and limited term employees are required to have hard hats in their possession always. Hard hats are REQUIRED to be worn always when employees are in the exclusion zones (work areas) or if they are in areas where hazards from above are present.
- **Gloves:** Gloves are required when handling tools, or when hands are exposed to cuts, abrasions, bruises, or burns, except for working around machinery where they might be caught in gears or moving parts (DO NOT wear gloves when working around machinery with gears or moving parts). Chemical resistant gloves are required when hands are exposed to corrosives and/or chemicals.
- **High Visibility Clothing:** High visibility clothing is required whenever employees are exposed to vehicular traffic (day or night). Safety vests must comply with ANSI (American National Standards Institute) Class II (<50 mph) or Class III (>50 mph or during hours of darkness). They shall be worn properly – kept closed on the front and sides to ensure

visibility from 360 degrees. They shall not be modified to avoid the class certification. They shall be kept in good and clean condition and be replaced when worn or dirty to preclude their function as high visibility clothing.

- **First Aid Kits:** One kit per vehicle to be stored in truck with location clearly marked and kept stocked. Operator or designated personnel shall inspect first aid kits monthly to remove and replenish expired items.

Job Site Safety Equipment:

Job site safety equipment will include, but is not limited to: calibrated gas detector, safety cones, barricades and flags, signs or other traffic control devices. Note: The City will provide all safety equipment, as needed or requested, even if the equipment is not used.

General Tools and Equipment:

Tools and equipment include but are not limited to: Rodding vehicle or 'rodder', various cutting, boring and specialty tools, pipe pole, manhole hooks, measuring wheel, metal locating device, various/miscellaneous hand tools, portable welding kit with accessories and CMMS connected laptop.

Please note: All emergency equipment (such as first aid kits, fire extinguishers and reflectors) shall be accessible. Lead workers or designated personnel shall inspect first aid kits monthly to remove and replenish expired items. Fire extinguishers shall be inspected monthly and documented on the monthly inspection tag. Lead workers or designated personnel shall ensure that hard or electronic copies of Safety Data Sheet (SDS) are immediately accessible.

Erosion Controls:

Not Applicable

Reference Materials:

Sanitary Sewer System Map Book; "S_MAIN_ROD_SCH" or S_MAIN_RODDING_REACTIVE CMMS Work Order; Daily Work Sheet form; Red and Blue Border Damage Report forms, Daily Vehicle Inspection Report (if not Zonar-equipped).

Major Tasks and Work Steps:

Prior to Leaving the Yard:

1. As it pertains to rodding, reactive work takes priority and is performed before any scheduled work. Scheduled work is assigned area to avoid unnecessary driving (best effort to complete by projected start date). The Supervisor makes Work Order assignments.
2. Lead Worker receives assigned Work Order(s) from Supervisor.

3. Lead Worker will preliminarily analyze work location in CMMS to determine if the specified main is in the street or in a right of way.
4. After reviewing assigned work, the Lead Worker will conduct a tailgate meeting with crew member(s) to brief them on the work to be performed. For main segments located in the street, Lead Worker will advise Service Worker so that he/she can load proper traffic control equipment to be taken to job site. For main segments located in right of ways, crew will notify property owner/homeowner and/or tenants of the crew's need to access their back yards; this notification should provide at least 48 hours of notice unless deemed an emergency. However, the notice will not be less than 24 hours.
5. Inspect assigned vehicle(s) and equipment to be used for the day pursuant to established Vehicle Inspection Procedures. Lead Worker or Service Worker will make sure all proper and necessary cutting blades, cork screws, and root saws needed for the job they are doing that day are safely stored on the truck.

At the Job Site:

1. Before any work begins, each crew member in the work zone will be equipped with and utilizing all PPE required for safe job performance. This is to be strictly enforced at all times.
2. Lead Worker will analyze the job site to determine whether traffic control is needed. If it is determined that traffic control is needed, the area will be temporarily set up and controlled pursuant to parameters established by OSHA, Cal-OSHA, California Department of Transportation's Manual on Uniform Traffic Control Devices, and any other such regulatory and/or safety measures established and enforced by the City. Traffic control will be continuously monitored by the Lead Worker and enhanced as needed to ensure safety (public, crew, and jobsite). The City Operator (311) and Control 10 will be advised of any complete street closures or detours, and the estimated time for re-opening.
3. Lead Worker/Service Worker will make note of any details that should be documented in the CMMS Work Order.
4. Lead Worker/Service Worker will determine and confirm location of upstream and downstream manholes (use street addresses and sewer map book, if possible). Although rodding can be performed from either upstream or downstream manholes, rodding activity is usually planned so that it starts in the upstream portion of the area and moves downstream. Determining rodding activity setup should consider any efficiency in cleaning as many lines as possible from set up manhole.
5. Move and position the rodding unit into the traffic-controlled area so that the guide hose is positioned over the manhole. Appropriately chock the tires.
6. Before opening the manhole, check the atmosphere through the pick hole.
 - a. If anything unsafe or out of the ordinary is detected, cease activity and immediately contact Supervisor for instructions as to how to proceed.

- b. If nothing of concern is noted and it is safe to proceed, open the manhole using the proper tool.
7. Determine pipe size so that appropriate equipment can be used. It is important to note the Lead Worker/Service Worker must have knowledge of the various rodding tools and respective uses. Selecting the wrong tool can cause damage to the rod, tool, pipe, rodder, or the operator.

Rodding Operation:

1. Pull the guide hose off the side of the truck and run the rod out through the hose and fasten a cork screw on the end of the rod.
2. The turning and advancement of the rod up the sewer line is controlled by the rodding operator using a single lever control valve called a “dead man” control located on the Rodding vehicle.
3. Put the rod into the manhole, easing it into the main segment.
4. Zero out the footage counter and begin pushing the rod to the next manhole.
5. If you are unable to reach the desired manhole:
 - a. Back the rod up approximately five (5) feet; rotate the rod clockwise (watch/listen to be sure the rod is turning); push the rod back and forth slowly, attempting to move it further into the main each time.
 - b. Once you have passed the debris/blockage, draw the rod back, remove it from the line, and remove the debris.
 - c. Begin working toward the upstream manhole again, repeating this process if you are unsuccessful.
6. When the rod is visible in the upstream manhole, Service Worker will radio back to the Lead Worker/Operator to advise that the rod is visible.
7. Service Worker will ask the Lead Worker/Operator to “dead push” the rod without rotating it so that he/she can pull the rod out through the manhole and place a three-blade cutter on the end.
8. The Service Worker will advise the Lead Worker/Operator to pull the rod back into the manhole and into the main.
9. Once the rod is back in the main, the Service Worker will ask the operator to start spinning the rod ***(seven (7) to eight (8) revolutions per foot)*** to begin cutting back to the beginning manhole. It is important to listen for the consistent sound of the rod turning and cutting roots through the sewer main as this assists in determining findings and the location of possible structural defects. Irregular rodding sounds may also be indicative of a broken or damaged rod or attachment.
10. In the event of a broken rod or rod attachment stop all rodding operation and contact the Supervisor who will determine corrective strategy.

NEVER ENTER A MANHOLE WITHOUT PROPER Authorization
11. While the rod is on its way back to the beginning manhole, all applicable data entry regarding this job can be accurately and comprehensively entered into CMMS. The data entry can be completed by either crew member (Lead Worker or Service Worker). Data to capture includes completing all main segment inspections,

completing all equipment and labor time, and any comments (as noted above) that need to be entered. Enter all preliminary site assessments and cleaning results (see chart below) on the relevant work order. Once the Work Order has been completed properly, it can be put into “completed” status for Supervisor review and closing.

12. Once the cutter blade arrives at the downstream manhole, the rod can be pulled out of the main.
13. Cut off any roots left on the rod.
14. Clean the matting surface and close the manhole, ensuring that the manhole is properly sealed.
15. Move the Rodder from the traffic controlled area and break down traffic controls pursuant to parameters established by OSHA, Cal-OSHA, California Department of Transportation’s Manual on Uniform Traffic Control Devices, and any other such regulatory and/or safety measures established and enforced by the City. If you notified 311 or Control 10 that you would be closing streets or diverting traffic to other places, update them that the situation has returned to normal.

NATURE AND QUANTITY OF DEBRIS REMOVED DURING CLEANING				
NATURE	QUANTITY			
	CLR (No Debris)	Light (Less than ½ of 5 Gallon Bucket)	Medium (Equal to ½ of 5 Gallon Bucket)	Heavy (Greater than ½ of 5 Gallon Bucket)
Debris (Sand, Grit, Rock)	CLR	DL	DM	DH
Grease	CLR	GL	GM	GH
Roots	CLR	RL	RM	RH
Other (Specify)	CLR	OL	OM	OH

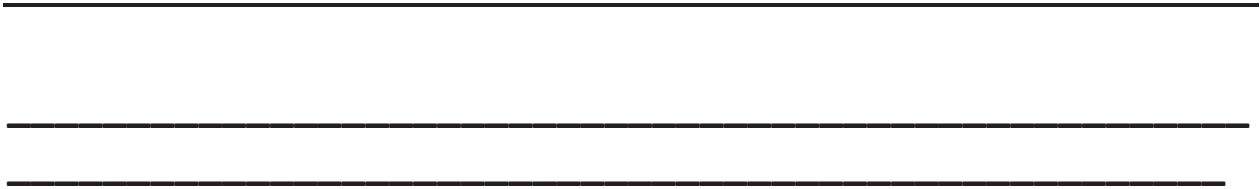
16. Proceed to the next rodding jobsite.

At the End of the Day:

1. All tools and equipment will be cleaned and stored in trucks in their proper places.
2. Fuel the vehicle prior to parking in the yard.
3. Once parked, inspect equipment and tools for problems. If any issues are found, report them to the Supervisor.
4. Clean out vehicle cab of litter and personal effects

5. Fully restock truck as needed.
6. Report any problems with jobs performed that day to the Supervisor.
7. Submit daily completed work orders to the Supervisor at end of shift.
8. Research of next day's job(s) should commence at this time.

NOTES



V. SEWER SYSTEM MANAGEMENT PLAN

Appendix C Monthly Wastewater Pump Station Preventative Maintenance Procedures

MONTHLY WASTEWATER PUMP STATION PREVENTATIVE MAINTENANCE PROCEDURES

Separated Wastewater Control System

Sump 003	Procedures
	Blow clean int. of electronics to remove dust and lint. Inspect high sump float.
Sump 006	Procedures
	Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent valve on Pump 1. Exercise effluent valve on Pump 1. Exercise influent valve on Pump 2. Exercise effluent valve on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.
Sump 021	Procedures
	Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Clean building. Inspect station lighting outside. Inspect station lighting inside. Exercise influent valve on Pump 1. Exercise effluent valve on Pump 1. Exercise influent valve on Pump 2. Exercise effluent valve on Pump 2. Exercise influent valve on Pump 3. Exercise effluent valve on Pump 3. Exercise influent valve on Pump 4. Exercise effluent valve on Pump 4. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed. Derag Pump 3 as needed. Derag Pump 4 as needed.
Sump 029	Procedures
	inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent valve on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.

Sump 032	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>
Sump 036	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>
Sump 040	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>
Sump 042	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Wash down wetwell. Lubricate locks.</p>

Sump 045	Procedures
	<p>Task Group #1</p> <p>Replace grease canisters as needed on Pump 1. Replace grease canisters as needed on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>
Sump 048	Procedures
	<p>Task Group #1</p> <p>Replace grease canister as needed on Pump 1. Replace grease canister as needed on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check valve. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks. Check ventilation fan(s).</p>
Sump 049	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>

Sump 053	Procedures
	<p>Task Group #1</p> <p>Replace grease canisters as needed on Pump 1. Replace grease canisters as needed on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>
Sump 055	Procedures
	<p>Inspect fencing, gates, openings, etc. Inspect and clean roof drains, downspouts, and gutters. Inspect MCC air filters. Inspect lighting. Inspect and clean deck. Inspect high sump float. Inspect piping, fittings, valves, etc. for damage and leaks. Blow clean int. of electronics to remove dust and lint.</p>
Sump 057	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>

Sump 079	Procedures
	<p>Task Group #1</p> <p>Replace grease canisters as needed on Pump 1. Replace grease canisters as needed on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>
Sump 080	Procedures
	<p>Task Group #1</p> <p>Replace grease canisters as needed on Pump 1. Replace grease canisters as needed on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>
Sump 081	Procedures
	<p>inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>

Sump 084	Procedures
	<p> inspect high sump float. Inspect and purge air compressor 1. Inspect and purge air compressor 2. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean cotnrol cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed. </p>
Sump 085	Procedures
	<p> Task Group #1 Grease pump bearings on Pump 1 Grease pump bearings on Pump 2 Grease pump bearings on Pump 3 Grease pump bearings on Pump 4 Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect Sump Pump 1. Inspect Sump Pump 2. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Exercise influent vavle on Pump 3. Exercise effluent vavle on Pump 3. Exercise influent vavle on Pump 4. Exercise effluent vavle on Pump 4. Inspect check valves on Pump 1. Inspect check valves on Pump 2. Inspect check valves on Pump 3. Inspect check valves on Pump 4. Derag Pump 1 as needed. Derag Pump 2 as needed. Derag Pump 3 as needed. Derag Pump 4 as needed. Lubricate locks. Inspect spill kit. Inspect fuel tank. Clean generator room. Inspect ICE log book. </p>

Sump 087	Procedures
	<p>Task Group #1</p> <p>Replace and grease canister as needed on Pump 1. Replace and grease canister as needed on Pump 2. Replace and grease canister as needed on Pump 3. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Exercise influent vavle on Pump 3. Exercise effluent vavle on Pump 3. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Inspect check vavles on Pump 3. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Derag Pump 3 as needed. Lubricate locks.</p>
Sump 088	Procedures
	<p>Task Group #1</p> <p>Replace grease canisters as needed on Pump 1. Replace grease canisters as needed on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>
Sump 107	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect station lighting outside. Inspect station lighting inside. Wash down wetwell. Lubricate locks.</p>

Sump 119	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect station lighting. Inspect intake air filters Inspect fencing, gates, openings, etc. Inspect piping, fittings, valves, etc. for damage and leaks. Blow clean int. of electronics to remove dust and lint.</p>
Sump 120	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Exercise influent vavle on Pump 3. Exercise effluent vavle on Pump 3. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>
Sump 121	Procedures
	<p>Inspect and clean deck. Inspect high sump float. Inspect fencing, gates, openings, etc. Inspect lighting. Blow clean int. of electronics to remove dust and lint.</p>
Sump 122	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>
Sump 123	Procedures
	<p>Blow clean int. of electronics to remove dust and lint. Inspect high sump float.</p>
Sump 124	Procedures
	<p>Blow clean int. of electronics to remove dust and lint. Inspect high sump float.</p>
Sump 125	Procedures
	<p>Blow clean int. of electronics to remove dust and lint. Inspect high sump float.</p>

Sump 126	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>
Sump 127	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Inspect locks. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>
Sump 131	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>
Sump 133	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>

Sump 134	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed. Inspect exhaust fan.</p>
Sump 135	Procedures
	<p>Task Group #1 Replace grease canisters as needed on Pump 1. Replace grease canisters as needed on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>
Sump 136	Procedures
	<p>Task Group #1 Replace grease canisters as needed on Pump 1. Replace grease canisters as needed on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>

| Lubricate locks. |

Sump 137	Procedures
	<p>Task Group #1</p> <p>Grease pump bearings on Pump 1. Grease pump bearings on Pump 2. Grease pump bearings on Pump 3. Grease pump bearings on Pump 4. Inspect and purge air compressor. Inspect and grease driveshaft u joints on pump #1. Inspect and grease driveshaft u joints on pump #2. Inspect and grease u joints on pump #1. Inspect and grease driveshaft u joints on pump #4. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Exercise influent vavle on Pump 3. Exercise effluent vavle on Pump 3. Exercise influent vavle on Pump 4. Exercise effluent vavle on Pump 4. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Inspect check vavles on Pump 3. Inspect check vavles on Pump 4. Lubricate locks. Wash down wetwell. Inspect spill kit. Inspect fuel tank. Clean generator. Inspect ICE log book.</p>
Sump 143	Procedures
	<p>Task Group #1</p> <p>Grease pump bearings on Pump 1. Grease pump bearings on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavle 1. Inspect check vavle 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>

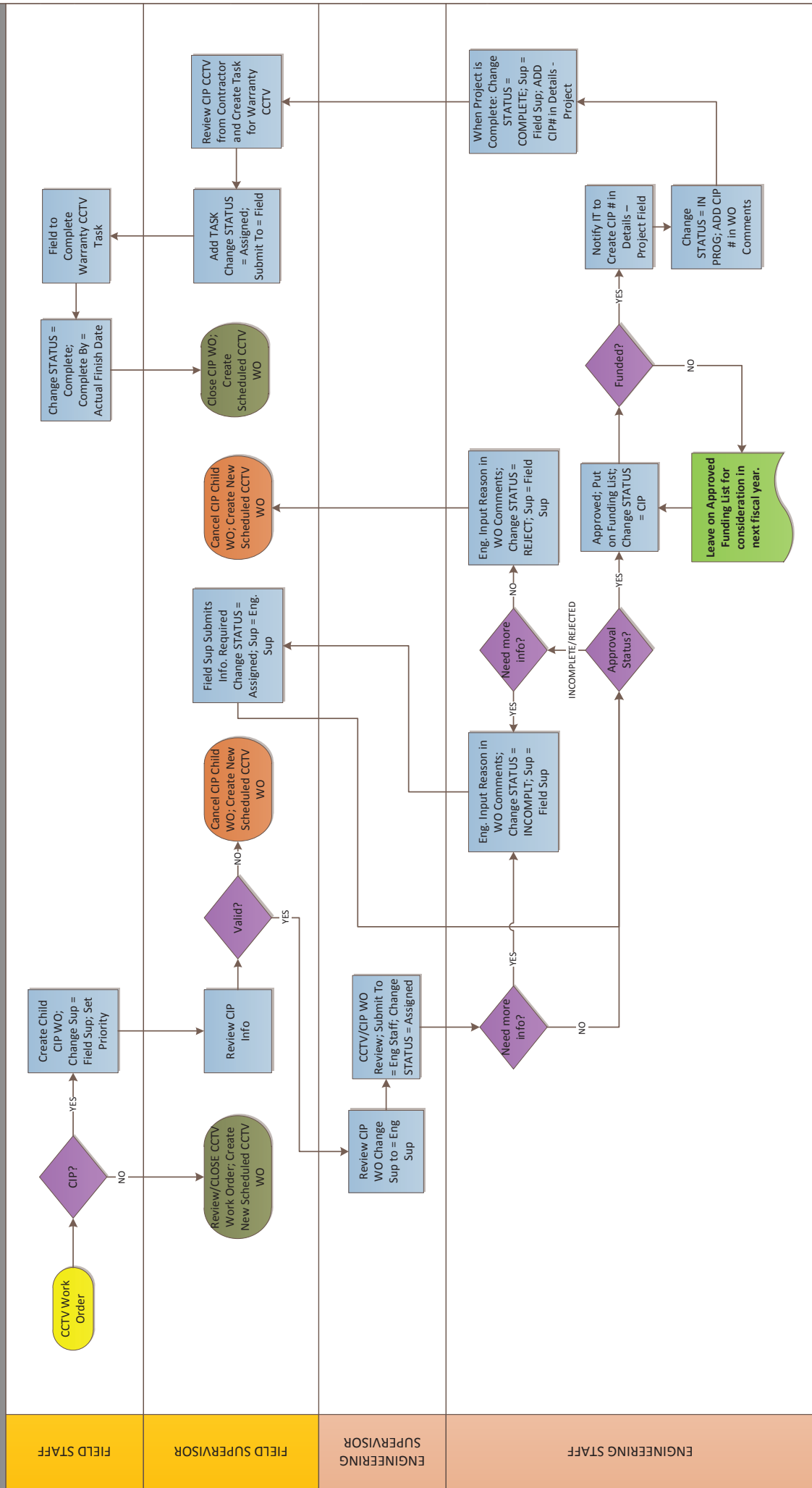
Sump 145	Procedures
	<p>Task Group #1</p> <p>Replace grease canister as needed on Pump 1. Replace grease canister as needed on Pump 2. Inspect and grease driveshaft u joints on pump #1. Inspect and grease driveshaft u joints on pump #2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavle 1. Inspect check vavle 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>
Sump 146	Procedures
	<p>Task Group #1</p> <p>Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavle 1. Inspect check vavle 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>

V. SEWER SYSTEM MANAGEMENT PLAN

Appendix D CIP Project Initiation Workflow Process Diagram

Goal: CCTV Work Order
Future CCTV Schedule
CIP Project Initiation
Initiating Event:
Outcome:

CIP PROJECT INITIATION WORKFLOW PROCESS



V. SEWER SYSTEM MANAGEMENT PLAN

Appendix E California Integrated Water Quality System (CIWQS) SSO Data (September 2, 2007 – December 31, 2018)

**California Integrated Water Quality System SSO Data
September 2007 - December 2018**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
657342	12-Sep-07	679	679	6001 43rd Ave.	Grease deposition (FOG)
705991	22-Oct-07	50	50	2076 Acoma St.	Grease deposition (FOG)
706002	22-Oct-07	127	127	1761 59TH AVE	Root intrusion
706810	30-Oct-07	144	144	2600 Fairfield Street	Grease deposition (FOG)
707499	9-Nov-07	85	85	42 Riverstar Circle	Grease deposition (FOG)
707500	9-Nov-07	50	50	7000 Catlen Way	Grease deposition (FOG)
707686	14-Nov-07	100	100	4511 Crestwood	Root intrusion
707902	19-Nov-07	300	300	400 R STREET	Debris
707933	20-Nov-07	550	550	1199 43RD AVENUE	Grease deposition (FOG)
708164	26-Nov-07	20	20	2155 Bernard Way	Root intrusion
708390	29-Nov-07	50	50	3900 FRANKLIN BLVD.	Grease deposition (FOG)
708391	29-Nov-07	600	600	2282 Craig Ave.	Grease deposition (FOG)
708909	10-Dec-07	150	150	7300 Stockdale Street	Grease deposition (FOG)
709623	17-Dec-07	750	750	Sutterville Road & Babich Ave.	Root intrusion
709624	17-Dec-07	35	35	2387 ERICKSON ST.	Root intrusion
709625	17-Dec-07	65	65	2842 SWIFT WAY	Grease deposition (FOG)
710387	26-Dec-07	10	10	3675 REDDING AVE.	Grease deposition (FOG)
710389	26-Dec-07	400	400	3501 BELDEN ST	Grease deposition (FOG)
710390	26-Dec-07	250	250	6745 PENDLETON ST	Grease deposition (FOG)
710574	2-Jan-08	100	100	7020 WILSHIRE CIR	Grease deposition (FOG)
710575	2-Jan-08	100	100	7394 STRATFORD ST	Grease deposition (FOG)
711314	16-Jan-08	150	150	7079 REMO WAY	Grease deposition (FOG)
711315	16-Jan-08	150	150	7651 LAURIE WAY	Grease deposition (FOG)
711316	16-Jan-08	160	160	4591 76TH ST	Grease deposition (FOG)
711317	16-Jan-08	300	300	325 EL CAMINO AVE	Root intrusion
711460	22-Jan-08	60	60	15 Stanislaus Circle	Grease deposition (FOG)
711591	23-Jan-08	125	125	6200 FORDHAM WAY	Root intrusion
711939	28-Jan-08	50	50	6985 Flintwood Way	Grease deposition (FOG)
712047	30-Jan-08	50	50	1466 Janrick Ave.	Grease deposition (FOG)
712248	4-Feb-08	332	332	517 38th STREET	Root intrusion
712249	4-Feb-08	150	150	4230 WARREN AVE	Root intrusion
713035	19-Feb-08	175	175	515 Redwood Ave.	Grease deposition (FOG)
713036	19-Feb-08	150	150	2981 Loma Verde Way	Grease deposition (FOG)
713178	20-Feb-08	400	400	7279 AMHERST	Grease deposition (FOG)
713933	26-Feb-08	65	65	7400 BALFOUR WAY	Grease deposition (FOG)
714046	27-Feb-08	125	125	2665 DEL PASO BLVD	Grease deposition (FOG)
714390	3-Mar-08	50	50	5051 DARIEL DR.	Grease deposition (FOG)
714442	4-Mar-08	25	25	6690 GOLF VIEW DR.	Grease deposition (FOG)
714547	5-Mar-08	75	75	6142 BELLEAU WOOD LN	Grease deposition (FOG)
714937	17-Mar-08	10	10	357 DU BOIS AVE	Grease deposition (FOG)
714942	17-Mar-08	100	100	1009 OLIVERA WAY	Debris

**California Integrated Water Quality System SSO Data
September 2007 - December 2018**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
714943	17-Mar-08	25	25	1055 JOHNFER WAY	Vandalism
715233	24-Mar-08	10	10	5001 E STREET	Root intrusion
715234	24-Mar-08	50	50	1264 NOONAN DRIVE	Root intrusion
715652	1-Apr-08	425	425	2436 38th AVE	Grease deposition (FOG)
716106	14-Apr-08	15	15	3830 U STREET	Grease deposition (FOG)
716236	17-Apr-08	10	10	476 BLACKWOOD ST	Root intrusion
716731	29-Apr-08	114	114	6401 Hogan Drive	Root intrusion
716825	1-May-08	60	60	1241 MONTE VISTA WAY	Root intrusion
716930	5-May-08	55	55	3234 20th AVE	Grease deposition (FOG)
717570	19-May-08	25	25	15 DON MERLINO CT.	Grease deposition (FOG)
717649	20-May-08	10	10	5620 KINGSTON WAY	Other (specify below)
717724	21-May-08	34	34	6795 Riptide Way	Grease deposition (FOG)
718992	5-Jun-08	50	50	1801 MATSON DR.	Grease deposition (FOG)
719828	18-Jun-08	40	40	7536 Eddylee Way	Grease deposition (FOG)
721807	9-Jul-08	165	165	2328 66th AVE	Root intrusion
722180	14-Jul-08	499	499	2376 CRAIG AVE	Grease deposition (FOG)
723556	25-Jul-08	75	75	6801 DEMARET DR.	Grease deposition (FOG)
724462	11-Aug-08	20	20	4300 ASTORIA ST	Grease deposition (FOG)
724785	18-Aug-08	5	5	6485 OAKRIDGE WAY	Root intrusion
725793	4-Sep-08	75	75	6717 DEMARET DR.	Root intrusion
725795	4-Sep-08	25	25	6637 23RD ST	Grease deposition (FOG)
725854	5-Sep-08	185	185	6717 DEMARET DR	Root intrusion
726243	15-Sep-08	125	125	5712 SURF WAY	Root intrusion
727440	6-Oct-08	20	20	4931 FLORA VISTA LANE	Root intrusion
727768	13-Oct-08	50	50	1000 KATZ AVE	Grease deposition (FOG)
727769	13-Oct-08	175	175	2301 51ST AVE	Root intrusion
728668	29-Oct-08	30	30	7244 AMHERST ST	Root intrusion
728780	31-Oct-08	250	250	5213 G ST	Root intrusion
728876	3-Nov-08	105	105	11 GRANVILLE CT.	Grease deposition (FOG)
728880	3-Nov-08	5	5	7586 MYRTLE VISTA	Root intrusion
729182	12-Nov-08	10	10	400 L STREET	Grease deposition (FOG)
729301	17-Nov-08	440	440	7409 BRAERIDGE WAY	Root intrusion
729302	17-Nov-08	90	90	4120 FRUITA CT	Grease deposition (FOG)
729414	19-Nov-08	30	30	833 PARKLIN AVE.	Grease deposition (FOG)
729964	1-Dec-08	275	275	6500 GREENHAVEN DR	Grease deposition (FOG)
729967	1-Dec-08	95	95	2062 EDGEWATER RD	Grease deposition (FOG)
730194	4-Dec-08	200	200	6691 21st ST	Grease deposition (FOG)
730434	11-Dec-08	105	105	1304 Silver Ridge Way	Grease deposition (FOG)
730435	11-Dec-08	100	100	7255 Riverwind	Grease deposition (FOG)
730530	15-Dec-08	25	25	2984 DEL PASO BLVD	Grease deposition (FOG)
730531	15-Dec-08	50	50	2781 CROMWELL WAY	Grease deposition (FOG)
730532	15-Dec-08	55	55	1043 JOHNFER WAY	Grease deposition (FOG)

**California Integrated Water Quality System SSO Data
September 2007 - December 2018**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
730534	15-Dec-08	50	50	6589 DEMARET DR	Grease deposition (FOG)
730539	15-Dec-08	60	60	6715 MIDDLECOFF WAY	Grease deposition (FOG)
730596	16-Dec-08	81	81	596 YORK ST	Grease deposition (FOG)
730706	18-Dec-08	100	100	4511 CRESTWOOD WAY	Root intrusion
730719	18-Dec-08	45	45	4208 CANBY WAY	Root intrusion
731446	5-Jan-09	25	25	4308 F ST	Root intrusion
731673	9-Jan-09	500	500	1338 PALOMAR CIRCLE	Grease deposition (FOG)
731719	12-Jan-09	90	90	4861 34TH ST	Grease deposition (FOG)
731999	16-Jan-09	375	375	6510 13TH ST	Root intrusion
732001	16-Jan-09	225	225	4690 CABANA WAY	Grease deposition (FOG)
732168	20-Jan-09	17	17	5191 24TH ST	Root intrusion
732175	21-Jan-09	18	18	2361 GIBSON ST	Grease deposition (FOG)
732176	21-Jan-09	89	89	2152 EDISON AVE	Grease deposition (FOG)
732720	28-Jan-09	45	45	866 EDGEWOOD AVE	Grease deposition (FOG)
732826	30-Jan-09	55	55	2241 HOOKE WAY	Root intrusion
733199	6-Feb-09	200	200	5100 D STREET	Root intrusion
733915	20-Feb-09	60	60	2230 34th ave	Root intrusion
733916	20-Feb-09	50	50	2158 CALLECITA ST	Grease deposition (FOG)
733917	20-Feb-09	150	150	4431 STANDRICH ST	Grease deposition (FOG)
733918	20-Feb-09	30	30	2500 26TH AVE	Root intrusion
733919	20-Feb-09	325	325	2501 ATLAS AVE	Grease deposition (FOG)
733922	20-Feb-09	100	100	3100 ST JOSEPHS DR	Root intrusion
733942	23-Feb-09	500	500	4240 DYMIC WAY	Grease deposition (FOG)
733947	23-Feb-09	60	60	98 ARCADE BLVD	Root intrusion
734820	11-Mar-09	550	550	2293 BABBETTE WAY	Debri-General
734898	12-Mar-09	65	65	5281 25TH ST	Root intrusion
735480	26-Mar-09	25	25	7079 REMO WAY	Grease deposition (FOG)
735481	26-Mar-09	225	225	2293 BABBETTE WAY	Grease deposition (FOG)
735724	31-Mar-09	100	100	Norwood Ave & Silver Eagle Road	Grease deposition (FOG)
736248	13-Apr-09	350	350	777 BELASCO AVE	Grease deposition (FOG)
736929	29-Apr-09	30	30	2466 18th AVE	Grease deposition (FOG)
737292	11-May-09	25	25	1421 CAMPBELL LANE	Grease deposition (FOG)
737293	11-May-09	25	25	4100 28TH ST	Debri-Rags
737328	12-May-09	5	5	7388 WILLOW LAKE WAY	Grease deposition (FOG)
737341	12-May-09	200	200	6300 FENNWOOD CT	Grease deposition (FOG)
737910	26-May-09	125	125	1034 NOGALES ST	Grease deposition (FOG)
738511	4-Jun-09	750	750	STILLBREEZE WAY & 638 LAKEFRONT DRIVE	Debri-General
738660	8-Jun-09	150	150	1861 GLENROSE AVE	Grease deposition (FOG)
738823	9-Jun-09	50	50	1369 LAS LOMITAS CIR.	Root intrusion
738883	10-Jun-09	15	15	3000 SAINT JOSEPH DR.	Grease deposition (FOG)

**California Integrated Water Quality System SSO Data
September 2007 - December 2018**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
740747	7-Jul-09	30	30	7304 BENBOW ST	Grease deposition (FOG)
740905	9-Jul-09	150	150	7551 GREENHAVEN DR	Pump station failure
743080	14-Aug-09	50	50	7000 23rd STREET	Grease deposition (FOG)
743877	27-Aug-09	40	40	7522 FLORES WAY	Root intrusion
743881	27-Aug-09	200	200	1861 NIAN TIC WAY	Root intrusion
743945	28-Aug-09	50	50	2225 63RD AVE	Grease deposition (FOG)
743947	28-Aug-09	109	109	53 DEAN ROAD	Grease deposition (FOG)
744091	1-Sep-09	300	300	1440 OAKHURST WAY	Debri-General
744301	4-Sep-09	50	50	7135 LYNHOLLEN WAY	Grease deposition (FOG)
744412	9-Sep-09	300	300	3951 14TH AVE	Root intrusion
744981	24-Sep-09	50	50	7055 REMO WAY	Root intrusion
744983	24-Sep-09	50	50	2981 LOMA VERDE WAY	Grease deposition (FOG)
745104	28-Sep-09	20	20	1527 LINDA VISTA DR	Root intrusion
745105	28-Sep-09	40	40	2992 ALTOS AVE	Grease deposition (FOG)
745617	14-Oct-09	65	65	7572 COSGROVE WAY	Grease deposition (FOG)
745652	15-Oct-09	150	150	686 ARCADE BLVD	Root intrusion
745715	19-Oct-09	350	350	781 WOODLAKE DR	Root intrusion
745741	19-Oct-09	100	100	6475 GREENHAVEN DR	Grease deposition (FOG)
746641	9-Nov-09	10	10	111 52ND ST	Grease deposition (FOG)
746768	16-Nov-09	80	80	2095 OXFORD ST	Grease deposition (FOG)
746769	16-Nov-09	100	100	341 BELLO RIO WAY	Grease deposition (FOG)
746770	16-Nov-09	100	100	7471 CARELLA	Grease deposition (FOG)
746809	17-Nov-09	75	75	1045 GRAND AVE	Grease deposition (FOG)
746861	18-Nov-09	100	100	4991 CABANA WAY	Grease deposition (FOG)
747189	30-Nov-09	25	25	1008 CONGRESS AVE	Root intrusion
747190	30-Nov-09	100	100	797 BELASCO AVE	Grease deposition (FOG)
747339	7-Dec-09	20	20	4640 S LAND PARK DR.	Root intrusion
747388	8-Dec-09	70	70	7040 13TH ST	Grease deposition (FOG)
747484	14-Dec-09	200	200	1000 KATZ AVE	Grease deposition (FOG)
747510	15-Dec-09	240	240	2020 QUINCY AVE	Grease deposition (FOG)
747612	17-Dec-09	300	300	936 DONDRA WAY	Grease deposition (FOG)
747790	22-Dec-09	60	60	6556 24TH ST	Root intrusion
747882	28-Dec-09	200	200	1840 60TH AVE	Root intrusion
748338	14-Jan-10	50	50	1421 34TH AVE	Grease deposition (FOG)
749009	1-Feb-10	10	10	1145 34th AVE	Grease deposition (FOG)
749282	11-Feb-10	60	60	7416 19TH ST	Grease deposition (FOG)
749571	22-Feb-10	80	80	7720 25TH ST	Grease deposition (FOG)
749742	24-Feb-10	10	10	834 PROW CT	Root intrusion
749743	24-Feb-10	50	50	1370 PALOMAR CIR	Root intrusion
749920	1-Mar-10	100	100	4221 32ND ST	Grease deposition (FOG)
749921	1-Mar-10	100	100	153 JOHNSTON RD	Root intrusion
749922	1-Mar-10	100	100	637 PLAZA AVE	Grease deposition (FOG)

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Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
749961	2-Mar-10	50	50	317 ARCADE AVE	Root intrusion
750170	5-Mar-10	30	30	3528 OSMER LANE	Grease deposition (FOG)
750172	5-Mar-10	30	30	7013 MIATA CIR	Grease deposition (FOG)
750532	12-Mar-10	60	60	1500 FLORIN ROAD	Other (specify below)
750545	15-Mar-10	75	75	4490 BOLLENBACHER AVE	Grease deposition (FOG)
750602	16-Mar-10	30	30	4361 CURTIS AVE.	Root intrusion
750611	16-Mar-10	20	20	671 LAS PALMAS AVE	Grease deposition (FOG)
751118	30-Mar-10	5	5	3460 MARJORIE WAY	Debri-General
751158	31-Mar-10	50	50	4308 ULRICH WAY	Root intrusion
751247	2-Apr-10	150	150	7788 FREEPORT BLVD.	Debri-General
751310	6-Apr-10	10	10	145 GLOBE AVE	Debri-General
751311	6-Apr-10	30	30	5484 CARLSON DR	Root intrusion
751397	8-Apr-10	20	20	200 39TH ST	Root intrusion
751736	16-Apr-10	46	46	2512 CASA LINDA DR	Debri-General
751781	20-Apr-10	60	60	5600 FRANKLIN BLVD	Grease deposition (FOG)
751811	21-Apr-10	20	20	1095 ARCADE BLVD	Grease deposition (FOG)
751877	22-Apr-10	20	20	735 SANTIAGO AVE	Grease deposition (FOG)
752069	30-Apr-10	1	1	5484 CARLSON DR	Root intrusion
752105	3-May-10	10	10	6142 BELLEAU WOOD LANE	Root intrusion
752490	17-May-10	75	75	7362 STOCKDALE ST	Root intrusion
752565	20-May-10	20	20	7269 CAMINO DEL REY	Grease deposition (FOG)
752566	20-May-10	20	20	2985 DEL PASO BLVD	Other (specify below)
752732	27-May-10	1	1	29 CASWELL CT	Grease deposition (FOG)
753316	14-Jun-10	150	150	500 LAS PALMAS AVE	Grease deposition (FOG)
753317	14-Jun-10	200	200	7415 21ST ST	Grease deposition (FOG)
753719	22-Jun-10	100	100	2124 ROANOKE AVE	Grease deposition (FOG)
754025	28-Jun-10	5	5	5172 TEICHERT AVE	Root intrusion
754026	28-Jun-10	400	400	4901 RIO LINDA BLVD	Grease deposition (FOG)
754359	2-Jul-10	80	80	100 FAIRGROUNDS DR	Root intrusion
754423	6-Jul-10	3	3	949 ACACIA AVE	Grease deposition (FOG)
754704	9-Jul-10	10	10	7 SANTIAGO AVE	Root intrusion
755310	20-Jul-10	50	50	9 RIVERSTAR CIR	Grease deposition (FOG)
755313	20-Jul-10	30	30	2231 KENWORTHY WAY	Grease deposition (FOG)
755340	21-Jul-10	20	20	1634 GLENROSE AVE	Grease deposition (FOG)
755381	22-Jul-10	50	50	1401 CAMPBELL LN	Root intrusion
755449	26-Jul-10	10	10	2241 MURIETA WAY	Root intrusion
756111	17-Aug-10	30	30	1724 FREINZA	Grease deposition (FOG)
756131	18-Aug-10	10	10	207 JOHNSTON ROAD	Root intrusion
756172	19-Aug-10	25	25	2771 FRUITRIDGE RD	Root intrusion
756252	23-Aug-10	100	100	6151 14th ST	Root intrusion
756413	26-Aug-10	10	10	801 ARCADE BLVD	Root intrusion

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Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
756476	30-Aug-10	1	1	150 JOHNSTON ROAD	Grease deposition (FOG)
756509	1-Sep-10	5	5	6516 HOGAN DR	Grease deposition (FOG)
756637	7-Sep-10	100	100	1543 STERLING ST	Root intrusion
756973	20-Sep-10	60	60	7515 21ST ST	Grease deposition (FOG)
757062	22-Sep-10	50	50	26 SMOKEY LEAF CT	Debri-General
757289	1-Oct-10	65	65	836 57th ST	Grease deposition (FOG)
757396	6-Oct-10	200	200	2226 67TH AVE	Grease deposition (FOG)
757462	8-Oct-10	10	10	2055 CANTERBURY RD	Root intrusion
757463	8-Oct-10	100	100	777 BELASCO	Grease deposition (FOG)
757627	13-Oct-10	5	5	2320 CRAIG AVE	Grease deposition (FOG)
757628	13-Oct-10	25	25	604 DITTMAR WAY	Root intrusion
758098	25-Oct-10	10	10	451 ELEANOR AVE	Grease deposition (FOG)
758180	27-Oct-10	20	20	2001 BERG AVE	Grease deposition (FOG)
758387	5-Nov-10	20	20	7300 24TH ST	Root intrusion
758390	5-Nov-10	100	100	2530 RIO LINDA BLVD	Grease deposition (FOG)
758434	9-Nov-10	10	10	7355 22ND ST	Grease deposition (FOG)
758435	9-Nov-10	50	50	5961 NEWMAN CT	Root intrusion
758458	10-Nov-10	1	1	7553 32ND ST	Grease deposition (FOG)
758734	18-Nov-10	55	55	2225 HOOKE WAY	Root intrusion
759039	2-Dec-10	170	170	3937 PALMETTO ST.	Grease deposition (FOG)
759040	2-Dec-10	500	500	11 GRANVILLE CT.	Grease deposition (FOG)
759041	2-Dec-10	20	20	3848 KROY WAY	Root intrusion
759042	2-Dec-10	15	15	1842 67TH AVE	Grease deposition (FOG)
759044	2-Dec-10	30	30	10 NOAH CT.	Grease deposition (FOG)
759045	2-Dec-10	1	1	6965 MCQUILLAN CIR.	Debri-General
759159	7-Dec-10	100	100	1004 OLIVERA WAY	Grease deposition (FOG)
759160	7-Dec-10	80	80	2412 37TH AVE	Root intrusion
759280	10-Dec-10	10	10	7534 SKELTON WAY	Grease deposition (FOG)
759502	17-Dec-10	15	15	6201 ELVAS AVE	Root intrusion
759611	20-Dec-10	60	60	1871 FERRAN AVE	Grease deposition (FOG)
759614	20-Dec-10	200	200	7554 LOMA VERDE WAY	Grease deposition (FOG)
759615	20-Dec-10	400	400	7443 WINKLEY WAY	Grease deposition (FOG)
759646	21-Dec-10	50	50	7307 22ND ST	Grease deposition (FOG)
759978	29-Dec-10	20	20	5010 DEL RIO RD	Root intrusion
760002	30-Dec-10	100	100	4933 CRESTWOOD WAY	Root intrusion
760088	3-Jan-11	10	10	2605 FAIRFIELD STREET	Grease deposition (FOG)
760090	3-Jan-11	50	50	4661 LARSON WAY	Root intrusion
760372	7-Jan-11	110	110	615 LAMPASAS AVE	Grease deposition (FOG)
760373	7-Jan-11	100	100	7501 MUIRFIELD WAY	Grease deposition (FOG)
760808	11-Jan-11	100	100	1021 JOHNFER WAY	Grease deposition (FOG)
760809	11-Jan-11	60	60	1104 SILVER RIDGE WAY	Root intrusion
760810	11-Jan-11	200	200	7684 19 TH STREET	Grease deposition (FOG)

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Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
760811	11-Jan-11	75	75	1636 ROANOKE AVE	Root intrusion
761379	19-Jan-11	20	20	73 DEAN ROAD	Grease deposition (FOG)
761380	19-Jan-11	150	150	81 DEAN ROAD	Grease deposition (FOG)
761381	19-Jan-11	50	50	2935 CLAY STREET	Grease deposition (FOG)
761583	21-Jan-11	20	20	2573 LEXINGTON ST.	Grease deposition (FOG)
762220	31-Jan-11	30	30	142 BAXTER AVE	Root intrusion
762222	31-Jan-11	25	25	1182 SILVER RIDE WAY	Root intrusion
762224	31-Jan-11	200	200	2297 BABETTE WAY	Grease deposition (FOG)
762226	31-Jan-11	85	85	6507 4TH AVE	Grease deposition (FOG)
762473	4-Feb-11	50	50	5661 DANA WAY	Grease deposition (FOG)
762474	4-Feb-11	25	25	700 SOUTHGATE RD.	Root intrusion
762521	7-Feb-11	100	100	2285 BABETTE WAY	Root intrusion
762522	7-Feb-11	30	30	4350 BURGESS DR.	Grease deposition (FOG)
762524	7-Feb-11	35	35	2780 WOOD VIOLET WAY	Grease deposition (FOG)
762875	11-Feb-11	30	30	2009 EDISON AVE	Grease deposition (FOG)
762880	11-Feb-11	10	10	567 GARDEN ST.	Other (specify below)
763104	16-Feb-11	20	20	85 BAY DR	Debri-General
763105	16-Feb-11	10	10	7540 18TH ST	Grease deposition (FOG)
763117	16-Feb-11	20	20	2009 EDISON AVE	Grease deposition (FOG)
763343	22-Feb-11	50	50	2225 22nd Ave	Root intrusion
763344	22-Feb-11	50	50	6475 DRIFTWOOD ST.	Grease deposition (FOG)
763690	25-Feb-11	50	50	2547 EDGEWATER RD.	Grease deposition (FOG)
763691	25-Feb-11	25	25	6205 RIVERSIDE BLVD	Grease deposition (FOG)
763692	25-Feb-11	200	200	3925 DRY CREEK RD.	Grease deposition (FOG)
763695	25-Feb-11	250	250	107 GOSS CT.	Grease deposition (FOG)
763789	28-Feb-11	200	200	7208 21ST STREET	Root intrusion
763943	2-Mar-11	20	20	930 ROEDER WAY	Grease deposition (FOG)
764069	7-Mar-11	23	23	5451 PLEASANT DR	Root intrusion
764339	14-Mar-11	85	85	1771 59TH AVE	Root intrusion
764341	14-Mar-11	50	50	7421 CANDLEWOOD WAY	Root intrusion
764606	22-Mar-11	50	50	1125 GLENROSE AVE	Debri-Rags
764607	22-Mar-11	150	150	2621 BEAUMONT ST	Grease deposition (FOG)
764608	22-Mar-11	120	120	5601 CAZADERO WAY	Root intrusion
764663	23-Mar-11	65	65	7437 COSGROVE WAY	Grease deposition (FOG)
764870	29-Mar-11	2500	2500	7600 Green Haven Dr.	Surcharged pipe (Combined CS Only)
764977	31-Mar-11	300	300	2765 FAIRFIELD ST.	Pump station failure
764978	31-Mar-11	100	100	6861 DIEGLE CIR	Grease deposition (FOG)
764980	31-Mar-11	50	50	6985 FLINTWOOD WAY	Flow exceeded capacity (Separate CS Only)
765195	6-Apr-11	100	100	171 51ST STREET	Root intrusion
765535	14-Apr-11	100	100	2424 40th AVENUE	Grease deposition (FOG)
765552	15-Apr-11	25	25	2166 53rd AVE	Other (specify below)

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Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
765799	26-Apr-11	75	75	47 SANDBURG DR	Other (specify below)
765941	29-Apr-11	80	80	5669 EL GRANERO WAY	Debri-Rags
765942	29-Apr-11	35	35	1840 FLORIN RD.	Root intrusion
765972	2-May-11	20	20	7331 CRANSTON WAY	Grease deposition (FOG)
766158	4-May-11	200	200	6655 14TH ST	Grease deposition (FOG)
766159	4-May-11	100	100	1052 GRAND AVE	Grease deposition (FOG)
766250	9-May-11	118	118	808 UNION ST	Grease deposition (FOG)
766315	11-May-11	110	110	5200 RIVERSIDE BLVD	Grease deposition (FOG)
766395	12-May-11	75	75	2166 53RD AVE	Root intrusion
766544	16-May-11	200	200	1134 NOGALES ST	Grease deposition (FOG)
766743	19-May-11	50	50	4318 F STREET	Root intrusion
767236	8-Jun-11	46	46	2941 DEL PASO BLVD	Pump station failure
767483	15-Jun-11	46	46	2724 DEL PASO BLVD	Debri-General
767538	16-Jun-11	76	76	2270 COLFAX ST	Debri-General
767661	21-Jun-11	200	200	1109 LAKE GLEN WAY	Pipe structural problem/failure
767770	23-Jun-11	10	10	3847 SAN CARLOS WAY	Other (specify below)
768032	30-Jun-11	56	56	1239 GRAND AVE	Grease deposition (FOG)
768033	30-Jun-11	50	50	4762 NORM CIR.	Grease deposition (FOG)
768122	5-Jul-11	20	20	6601 FORDHAM WAY	Root intrusion
768167	6-Jul-11	25	25	6801 DEMARET DR.	Grease deposition (FOG)
768238	8-Jul-11	10	10	5961 13th ST	Root intrusion
768335	12-Jul-11	55	55	2964 DEL PASO ROAD	Other (specify below)
768336	12-Jul-11	50	50	6473 OAKRIDGE WAY	Root intrusion
768985	26-Jul-11	200	200	7029 13th ST	Grease deposition (FOG)
769003	27-Jul-11	100	100	763 HAYES AVE	Grease deposition (FOG)
769320	1-Aug-11	300	300	2512 RIO LINDA BLVD	Grease deposition (FOG)
769662	10-Aug-11	16	16	6849 DEMARET DR	Root intrusion
769755	12-Aug-11	3	3	7023 CROMWELL WAY	Grease deposition (FOG)
770039	22-Aug-11	100	100	7320 FLOWERWOOD WAY	Grease deposition (FOG)
770450	30-Aug-11	10	10	762 DIXIEANNE AVE	Grease deposition (FOG)
770509	31-Aug-11	20	20	4631 ATTAWA AVE	Root intrusion
770633	1-Sep-11	23	23	5704 ROSEDALE WAY	Root intrusion
770692	6-Sep-11	200	200	2665 DEL PASO BLVD	Other (specify below)
771011	14-Sep-11	5	5	3936 FELL ST.	Grease deposition (FOG)
771241	20-Sep-11	15	15	1831 60TH AVE	Debri-General
771432	26-Sep-11	20	20	7393 FLORES WAY	Grease deposition (FOG)
771434	26-Sep-11	200	200	5641 JAMES WAY	Grease deposition (FOG)
771564	29-Sep-11	256	256	1654 69th AVENUE	Grease deposition (FOG)
771565	29-Sep-11	22	22	57 STARLIT CIRCLE	Debri-Rags
771583	30-Sep-11	30	30	7466 21st ST.	Grease deposition (FOG)
771636	3-Oct-11	100	100	7200 TAMOSHANTER WAY	Grease deposition (FOG)

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Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
771637	3-Oct-11	10	10	3908 SAN CARLOS WAY	Grease deposition (FOG)
771638	3-Oct-11	5	5	42 RIVERSTAR CIRCLE	Grease deposition (FOG)
771729	5-Oct-11	15	15	2610 NORWOOD AVE	Root intrusion
771947	12-Oct-11	150	150	1311 NORMANDY LANE	Root intrusion
772191	19-Oct-11	20	20	5121 25th ST	Grease deposition (FOG)
772285	24-Oct-11	5	5	457 SOUTHGATE ROAD	Root intrusion
772358	26-Oct-11	130	130	2334 CORK CIRCLE	Root intrusion
772465	28-Oct-11	50	50	14 DON MERLINO CT	Grease deposition (FOG)
772469	28-Oct-11	86	86	1907 SOUTH AVE	Grease deposition (FOG)
772555	31-Oct-11	374	374	5021 FREEPORT BLVD	Grease deposition (FOG)
772929	9-Nov-11	10	10	2301 51st AVE	Root intrusion
773086	14-Nov-11	134	134	2040 56th AVE	Root intrusion
773372	22-Nov-11	1515	1415	716 Grand Ave.	Grease deposition (FOG)
773496	28-Nov-11	135	100	2611 23rd AVE	Root intrusion
773554	29-Nov-11	10	10	3050 ST JOSEPHS DR	Grease deposition (FOG)
773733	5-Dec-11	366	366	2394 GLEN ELLEN CIRCLE	Grease deposition (FOG)
773761	6-Dec-11	10	10	3072 CALLECITA ST.	Grease deposition (FOG)
773816	8-Dec-11	4	4	3725 CYPRESS ST	Root intrusion
774041	13-Dec-11	30	30	7386 CRANSTON WAY	Root intrusion
774042	13-Dec-11	400	400	420 SANDBURG DR	Root intrusion
774043	13-Dec-11	21	21	2129 56TH AVE	Root intrusion
774045	13-Dec-11	10	8	2163 51ST AVE	Root intrusion
774129	15-Dec-11	45	45	2250 24th AVE	Debri-General
774583	22-Dec-11	20	20	2671 BEESTON AVE	Grease deposition (FOG)
774760	27-Dec-11	42	42	6867 GREENHAVEN DR.	Grease deposition (FOG)
774761	27-Dec-11	30	25	1315 TUGGLE WAY	Grease deposition (FOG)
774762	27-Dec-11	10	10	5014 ASHLAND WAY	Debri-Rags
774765	27-Dec-11	1	1	3250 PALMER ST.	Grease deposition (FOG)
774932	29-Dec-11	185	165	2771 63RD ST.	Root intrusion
775331	4-Jan-12	1	1	781 WOODLAKE DR	Root intrusion
775332	4-Jan-12	7	7	772 LAMPASAS DR	Grease deposition (FOG)
775355	5-Jan-12	249	249	2140 34th AVE	Debri-General
775717	11-Jan-12	10	8	285 ELANOR AVE	Grease deposition (FOG)
775985	18-Jan-12	65	60	1217 RIDGEWAY DRIVE	Grease deposition (FOG)
775986	18-Jan-12	3	0	2256 ARLISS WAY	Root intrusion
776030	19-Jan-12	49	49	5488 CARLSON DR	Root intrusion
776370	25-Jan-12	80	80	1956 NEWPORT AVE	Root intrusion
776372	25-Jan-12	40	40	4605 SUNSET DR	Root intrusion
776556	30-Jan-12	163	163	6260 BELLEAU WOOD LANE	Grease deposition (FOG)
776572	30-Jan-12	182	182	5709 MONTEREY WAY	Root intrusion
776794	2-Feb-12	565	565	925 SECRET RIVER DR	Grease deposition (FOG)
776851	6-Feb-12	5	5	1600 ALVINA AVE	Debri-General

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Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
777089	9-Feb-12	6	5	2075 OXFORD ST	Root intrusion
777111	10-Feb-12	30	30	2208 AMANDA WAY	Root intrusion
777396	13-Feb-12	1	1	6985 FLINTWOOD WAY	Grease deposition (FOG)
777397	13-Feb-12	2	2	2147 60TH AVE	Grease deposition (FOG)
777398	13-Feb-12	2	2	3447 63RD ST	Root intrusion
777577	16-Feb-12	31	25	453 S. LAND PARK DR	Root intrusion
777578	16-Feb-12	147	140	7031 REMO WAY	Grease deposition (FOG)
777855	23-Feb-12	9	9	4301 EUCLID AVE	Root intrusion
777856	23-Feb-12	2	2	4601 LARSON WAY	Root intrusion
777857	23-Feb-12	21	21	7352 STRATFORD ST	Grease deposition (FOG)
777858	23-Feb-12	73	73	2124 KIRK WAY	Grease deposition (FOG)
777859	23-Feb-12	31	31	7352 STRATFORD ST	Grease deposition (FOG)
777900	24-Feb-12	5	5	5200 RIVERSIDE BLVD	Grease deposition (FOG)
778329	5-Mar-12	139	139	2220 67th AVE	Root intrusion
778330	5-Mar-12	37	37	2152 EDISON AVE	Root intrusion
778331	5-Mar-12	47	47	4691 CABANA WAY	Root intrusion
778642	14-Mar-12	480	480	1504 34th AVE	Root intrusion
778848	20-Mar-12	165	165	173 LOVELAND AVE	Grease deposition (FOG)
778955	22-Mar-12	128	128	1256 47th AVE	Root intrusion
778956	22-Mar-12	48	46	5306 GILGUNN WAY	Grease deposition (FOG)
778957	22-Mar-12	8	6	4108 MCKINLEY BLVD	Root intrusion
779111	27-Mar-12	14	14	4695 FRANCIS CT	Root intrusion
779144	27-Mar-12	45	45	2682 GARY WAY	Grease deposition (FOG)
779215	29-Mar-12	14	14	4661 LARSON WAY	Grease deposition (FOG)
779475	4-Apr-12	278	278	2297BABETTE WAY	Grease deposition (FOG)
779825	10-Apr-12	42	20	4037 MARYSVILLE BLVD	Root intrusion
780468	23-Apr-12	552	552	4520 CRESTWOOD WAY	Debri-General
780690	26-Apr-12	386	386	2432 40th AVE	Grease deposition (FOG)
780812	1-May-12	10	10	5673 LA CAMPANA WAY	Debri-General
780818	1-May-12	19	19	5430 PLEASANT DR	Root intrusion
780819	1-May-12	7	7	7470 29TH ST	Grease deposition (FOG)
781080	9-May-12	99	99	1256 47TH AVE	Debri-General
781081	9-May-12	37	37	2174 56TH AVE	Root intrusion
781157	10-May-12	353	353	1224 40TH AVE	Root intrusion
781377	16-May-12	24	24	3730 MODELL WAY	Grease deposition (FOG)
781499	21-May-12	4	0	4100 ARLINGTON AVE	Root intrusion
782232	18-Jun-12	57	43	5830 BELLEAU WOOD LANE	Grease deposition (FOG)
782558	27-Jun-12	10	10	4591 76th st.	Grease deposition (FOG)
782719	2-Jul-12	3	3	2224 HOOKE WAY	Root intrusion
783262	11-Jul-12	40	40	4270 ATTAWA AVE	Debri-General
783917	23-Jul-12	67	67	5451 PLEASANT DR	Root intrusion
784698	6-Aug-12	12	0	1212 43rd AVE	Root intrusion

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Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
784724	7-Aug-12	22	22	2511 65th AVE	Grease deposition (FOG)
784725	7-Aug-12	20	20	805 ROUNDTREE CT	Root intrusion
785811	31-Aug-12	252	252	7526 ADDISON WAY	Grease deposition (FOG)
786219	14-Sep-12	75	75	7405 GREENHAVEN DR	Other (specify below)
786290	18-Sep-12	41	22	2641 KIM AVE	Grease deposition (FOG)
786662	27-Sep-12	19	19	89 ARCADE BLVD	Pipe structural problem/failure
786664	27-Sep-12	31	21	7800 FREEPORT BLVD	Debri-General
786665	27-Sep-12	23	23	3824 14TH AVE	Grease deposition (FOG)
786672	27-Sep-12	5	3	5020 34TH ST	Root intrusion
786890	2-Oct-12	94	87	282 RIVERTREE WAY	Grease deposition (FOG)
787024	8-Oct-12	5	5	1179 THEO WAY	Other (specify below)
787060	9-Oct-12	10	2	5025 23RD ST	Root intrusion
787664	29-Oct-12	78	78	1300 58th AVE	Grease deposition (FOG)
787899	6-Nov-12	34	34	7032 EL SERENO CR	Root intrusion
788369	27-Nov-12	33	33	7261 LOMA VERDE WAY	Grease deposition (FOG)
788586	30-Nov-12	28	28	GREENHAVEN DR & MOONLIT CIRCLE	Grease deposition (FOG)
788589	30-Nov-12	1557	1557	924 57TH ST	Grease deposition (FOG)
788786	5-Dec-12	1259	1259	1307 58th AVE	Grease deposition (FOG)
788790	5-Dec-12	913	63	3706 WILLOW ST	Grease deposition (FOG)
788838	6-Dec-12	24	24	7416 19th ST	Root intrusion
788977	12-Dec-12	17	17	3621 27TH AVE	Debri-Rags
788978	12-Dec-12	28	28	7495 21ST STREET	Grease deposition (FOG)
788979	12-Dec-12	92	50	4530 SOUTH LAND PARK DRIVE	Other (specify below)
788980	12-Dec-12	3	3	1024 LAS PALMAS AVE	Grease deposition (FOG)
789235	21-Dec-12	67	67	1209 ridgeway drive	Grease deposition (FOG)
789483	27-Dec-12	19	19	6985 FLINTWOOD WAY	Grease deposition (FOG)
789511	28-Dec-12	75	75	500 N STREET	Other (specify below)
790534	18-Jan-13	12	8	6641 HOGAN DR	Root intrusion
790696	23-Jan-13	3	3	4350 TAYLOR ST	Grease deposition (FOG)
790823	28-Jan-13	3	1	2525 MEADOW WOOD CR.	Grease deposition (FOG)
791092	1-Feb-13	1800	1800	5730 24TH STREET	Root intrusion
791236	5-Feb-13	18	18	617 36TH ST	Debri-General
791237	5-Feb-13	17	5	135 BAXTER AVE	Grease deposition (FOG)
791830	20-Feb-13	31	31	2801 65TH AVE	Grease deposition (FOG)
791831	20-Feb-13	37	37	1785 ARMINGTON AVE	Other (specify below)
791833	20-Feb-13	34	34	2424 40th AVE	Other (specify below)
791876	21-Feb-13	10	3	495 SPINNAKER WAY	Grease deposition (FOG)
792177	27-Feb-13	12	12	7760 FREEPORT BLVD	Debri-General
792261	1-Mar-13	30	30	26 SMOKEY LEAF CT	Grease deposition (FOG)

**California Integrated Water Quality System SSO Data
September 2007 - December 2018**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
792522	11-Mar-13	10	10	6016 14TH ST	Root intrusion
792754	20-Mar-13	27	27	3941 ELM ST	Grease deposition (FOG)
792914	26-Mar-13	15	15	7518 FLORES WAY	Grease deposition (FOG)
793354	12-Apr-13	40	20	3732 RIPLEY STREET	Grease deposition (FOG)
793386	16-Apr-13	1	1	5121 ELMER WAY	Debri-Rags
793425	17-Apr-13	20	20	1901 MEADOWVIEW RD	Grease deposition (FOG)
793571	23-Apr-13	5	5	612 GRAND AVE	Grease deposition (FOG)
793674	26-Apr-13	61	61	7415 21st ST	Grease deposition (FOG)
794052	10-May-13	70	70	3840 TAYLOR ST	Grease deposition (FOG)
794122	13-May-13	3	0	2171 MEADOWVIEW ROAD	Grease deposition (FOG)
794124	13-May-13	26	26	3437 JOLA CIR	Grease deposition (FOG)
794399	22-May-13	699	699	1042 CLAIRE AVE	Grease deposition (FOG)
794525	28-May-13	516	516	1370 palomar cir	Root intrusion
794955	10-Jun-13	15	0	7337 BENBOW ST	Grease deposition (FOG)
795504	13-Jun-13	118	118	Approximate Location: Sump 53, Basin 88 (Thomas Bros Pg 337 E-5)	Other (specify below)
795765	19-Jun-13	5	5	4651 BRADFORD DRIVE	Grease deposition (FOG)
798969	23-Sep-13	136	106	1000 FRONT STREET	Grease Deposition (FOG)
799159	26-Sep-13	17	17	3736 SCHUTT WAY	Root Intrusion
799691	11-Oct-13	30	30	7079 REMO WAY	Grease Deposition (FOG)
800234	25-Oct-13	28	28	6661 FORDHAM WAY	Other (specify below)
800466	1-Nov-13	119	119	695 PLAZA AVE	Grease Deposition (FOG)
800499	4-Nov-13	140	140	6589 DEMARET DR	Root Intrusion
800669	12-Nov-13	6	6	5011 SOUTH LAND PARK DR	Root Intrusion
800852	19-Nov-13	14	14	5352 Karbet Way	Debris-General
800941	21-Nov-13	10	8	2101 Catskill Way	Grease Deposition (FOG)
801209	27-Nov-13	5	5	2101 Catskill Way	Grease Deposition (FOG)
801348	4-Dec-13	19	19	15 DON MERLINO CT	Grease Deposition (FOG)
801584	11-Dec-13	34	34	100 LINDLEY DR	Grease Deposition (FOG)
802346	2-Jan-14	20	20	2924 Marysville Blvd.	Pipe Structural Problem/Failure
802542	8-Jan-14	1966	1966	2922 MARYSVILLE BLVD	Pipe Structural Problem/Failure
802702	14-Jan-14	5	2	1430 27TH AVE	Grease Deposition (FOG)
802991	22-Jan-14	15	15	7020 WILSHIRE CIR	Root Intrusion
802995	22-Jan-14	19	18	2401 34TH AVE	Root Intrusion
803237	28-Jan-14	6	4	6000 BELLEAU WOOD LANE	Grease Deposition (FOG)
803485	3-Feb-14	35	5	135 BAXTER AVE	Debri-General
803584	5-Feb-14	18	10	2629 EVERGREEN ST	Debri-General
803963	18-Feb-14	21	21	1806 LOS ROBLES BLVD	Grease Deposition (FOG)
804105	22-Feb-14	3	2	1371 MUNGER WAY	Root Intrusion

**California Integrated Water Quality System SSO Data
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Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
805130	28-Mar-14	52	52	883 PARKLIN AVE	Grease Deposition (FOG)
805175	1-Apr-14	38	0	7266 AMHERST ST	Grease Deposition (FOG)
805381	9-Apr-14	13	13	4428 EUCLID AVE	Root Intrusion
806039	11-May-14	17	17	641 45th STREET	Root Intrusion
806825	3-Jun-14	3	3	3701 IVY ST	Debri-General
807028	15-Jun-14	115	115	5241 25th ST	Root Intrusion
807186	19-Jun-14	19	0	3329 BELDEN ST	Grease Deposition (FOG)
807679	14-Jul-14	62	62	6725 DEMARET DR	Root Intrusion
810133	23-Oct-14	334	317	3812 TAYLOR AVE	Grease Deposition (FOG)
810431	29-Oct-14	23	23	3846 KERN STREET	Grease Deposition (FOG)
810760	17-Nov-14	12	12	181 LOVELAND WAY	Grease Deposition (FOG)
810794	19-Nov-14	3	3	1109 2ND STREET	Other (specify below) RAGS AND GREASE
812273	11-Jan-15	28	28	4290 WARREN AVE	Root Intrusion
813108	13-Jan-15	212	212	4507 BOLLENBACHER AVE	Debri-General
812479	23-Jan-15	15	13	567 GARDEN ST	Debri-General
813030	10-Feb-15	4	4	2398 CAMBRIDGE ST	Grease Deposition (FOG)
813110	13-Feb-15	15	11	3253 O'FARRELL DR	Grease Deposition (FOG)
813176	17-Feb-15	10	10	2347 67th AVE	Grease Deposition (FOG)
813870	11-Mar-15	85	85	2011 OREGON DR	Debri-General
813905	15-Mar-15	5	2	66 TAYLOR WAY	Root Intrusion
814073	23-Mar-15	150	150	1 CAPITOL MALL	Other (specify below) Instrumentation Equip Failure
814843	28-Apr-15	48	48	1405 CLAREMONT WAY	Debri-Rags
815768	3-Jun-15	127	127	1090 RIO LANE	Debri-General
815769	7-Jun-15	128	118	320 SOUTH AVE	Grease Deposition (FOG)
816020	21-Jun-15	15	15	7409 MOONCREST WAY	Grease Deposition (FOG)
816397	30-Jun-15	6	6	3784 DIDCOT CIRCLE	Grease Deposition (FOG)
817442	17-Aug-15	9	4	3832 HURON ST	Grease Deposition (FOG)
818329	23-Sep-15	9	9	605 CLINGER CT	Grease Deposition (FOG)
818330	24-Sep-15	4	4	7501 FAIRBARIN DR	Debris from Construction
818685	8-Oct-15	8	8	100 LINDLEY DR	Grease Deposition (FOG)
819441	10-Nov-15	5	5	7404 21st STREET	Root Intrusion
819538	17-Nov-15	36	36	3730 MODELL WAY	Grease Deposition (FOG)
820825	5-Jan-16	668	668	4471 D ST	Debris from Lateral
821914	6-Feb-16	191	191	2766 WOOD VIOLET WAY	Grease Deposition (FOG)
822021	14-Feb-16	22	22	781 WOODLAKE DR	Root Intrusion
822113	18-Feb-16	4	4	906 CALHOUN CT	Grease Deposition (FOG)
822914	9-Mar-16	10	10	732 SANTA YNEZ WAY	Root Intrusion
823102	18-Mar-16	2	2	4428 EUCLID AVE	Root Intrusion
825589	2-Jun-16	916	916	2771 FRUITRIDGE RD	Grease Deposition (FOG)

**California Integrated Water Quality System SSO Data
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Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
825712	25-Jun-16	9	9	938 LOS ROBLES BLVD	Debris-Rags
826282	9-Jul-16	2	2	4650 77th ST	Grease Deposition (FOG)
827595	28-Aug-16	484	484	4924 CRESTWOOD WAY	Root Intrusion
828030	6-Sep-16	85	85	2334 CORK CIRCLE	Root Intrusion
829515	25-Oct-16	89	89	7301 29TH ST	Grease Deposition (FOG)
829578	31-Oct-16	67	63	2152 EDISON AVE	Grease Deposition (FOG)
829979	11-Nov-16	2	0	620 GRAND AVE	Grease Deposition (FOG)
829824	14-Nov-16	1928	1928	652 WOODLAKE DR	Debri-General
830128	21-Nov-16	66	66	2394 GLEN ELLEN CIR	Grease Deposition (FOG)
830250	24-Nov-16	37	37	2338 CORK CIR	Root Intrusion
830367	30-Nov-16	908	908	781 WOODLAKE DR	Root Intrusion
831820	11-Jan-17	4950	1950	7000 REICHMUTH WAY	Rainfall Exceeded Design I&I
832096	13-Jan-17	24	24	109 GOSS CT	Debri-Rags
833767	3-Mar-17	117	117	6607 DEMARET DR	Root Intrusion
834215	30-Mar-17	24	0	2730 24th AVE	Root Intrusion
834489	11-Apr-17	133	109	1610 GLENROSE AVE	Root Intrusion
839058	20-Aug-17	16	16	6607 DEMARET DR	Root Intrusion
840299	19-Sep-17	6	0	3223 DEL PASO BLVD	Other (specify below) GREASE AND ROOTS
840212	20-Sep-17	240	0	601 J STREET	Other (specify below) PIPE STRUCTURAL PROBLEM
840696	5-Oct-17	1605	1605	7487 SYLVIA WAY	Root Intrusion
841338	28-Oct-17	404	404	6801 FREEPORT BLVD	Root Intrusion
841433	3-Nov-17	91	91	2324 THOMPSON WAY	Other (specify below) GREASE AND ROOTS
841791	18-Nov-17	90	90	5200 DEL RIO RD	Root Intrusion
841993	1-Dec-17	20	20	2298 CRAIG AVE	Grease Deposition (FOG)
842680	5-Dec-17	375	375	2196 BETH WAY	Other (specify below) CONSTRUCTION DEBRIS AND GREASE
843632	6-Jan-18	305	305	2624 TRACTION AVE	Other (specify below) GREASE AND RAGS
843634	6-Jan-18	750	750	4571 76TH STREET	Grease Deposition (FOG)
844346	28-Jan-18	392	296	2340 BEAUMONT STREET	Grease Deposition (FOG)
844836	11-Feb-18	1465	1465	500 GRAND AVE	Other (specify below) GREASE AND ROOTS
845685	10-Mar-18	375	375	5451 PLEASANT DR	Other (specify below) GREASE AND ROOTS AND WIPES
846064	23-Mar-18	375	375	6110 HOLSTEIN WAY	Root Intrusion

**California Integrated Water Quality System SSO Data
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Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
846471	11-Apr-18	11	11	5681 JOHNS DRIVE	Root Intrusion
848004	8-Jun-18	330	205	4821 HILLSBORO ROAD	Other (specify below) GREASE AND ROOTS
848302	15-Jun-18	8	8	6291 14TH STREET	Grease Deposition (FOG)
849799	20-Jul-18	4	4	7224 MILFORD STREET	Debri-Rags
849805	22-Jul-18	20	20	240 SANDBURG DRIVE	Other (specify below) GREASE AND ROOTS
850142	3-Aug-18	915	0	3941 DRY CREEK ROAD	Root Intrusion
851192	22-Sep-18	1026	1026	777 BELASCO AVE	Other (specify below) GREASE AND ROOTS
852224	30-Oct-18	16	16	906 CALHOUN COURT	Other (specify below) Debris
852586	1-Nov-18	8	8	6441 LAKE PARK DRIVE	Root Intrusion
853186	20-Nov-18	6	6	4611 HILLVIEW WAY	Root Intrusion
854005	30-Nov-18	6300	300	1339 FLORIN ROAD	Debri-Construction
854014	2-Dec-18	1358	1358	2148 AMANDA WAY	Debri-General
854745	26-Dec-18	7	7	1370 GRANT LANE	Grease Deposition (FOG)
854988	30-Dec-18	2206	2206	4911 36TH STREET	Root Intrusion

V. SEWER SYSTEM MANAGEMENT PLAN

Appendix F Cleaning Optimization Tool (COTools) User Manual

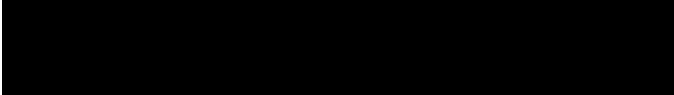


Cleaning Optimization Tool (COTools)

User Manual

Prepared For:
City of Sacramento – Department of Utilities

June 24, 2016





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1.0 What is the Cleaning Optimization Tool?

The cleaning optimization tool (COTools) consolidates and analyzes CCTV findings, cleaning findings, and the existing cleaning schedule and provides recommendations for optimizing the cleaning schedule. COTools is a Microsoft Access Database program that imports data extracted from the CMMS and CCTV database (Granite XP) located on the City's Enterprise Applications Integration (EAI) data warehouse and uses algorithms to analyze the data. The recommendations provided by the algorithms are reviewed by the user and are approved or rejected. The approved and rejected recommendations are stored in a Microsoft Access Database (COTools Database) which is applied to the cleaning schedule that is uploaded to the CMMS Scheduling Tool (see Section 3.0). Recommendations can include adding cleaning schedules, modifying existing frequencies, modifying existing next schedule dates, and a comment change.

1.1. Process Overview

Granite XP CCTV data is imported from EAI to the program. CMMS cleaning findings data located on EAI are imported into COTools. This data is run through the algorithms to produce cleaning schedule and frequency recommendations. Recommendations are approved or rejected and stored in the COTools Database. The CMMS scheduling tool uploads the recommendations from the COTools Database and visually displays the cleaning schedules and frequencies within the geographic interface of CMMS.

See Figure 1 for more information on the process overview.

1.2. Execution

Navigate to the "COTools" subfolder located in the "HDR" subfolder on "Field" folder on the City's "S" Drive:

```
\\doucifs\FIELD\HDR\COTools
```

Open the file COTools32.accdb. This will open the COTools program and will activate the user interface for use. Section 2.0 will explain how to use COTools.

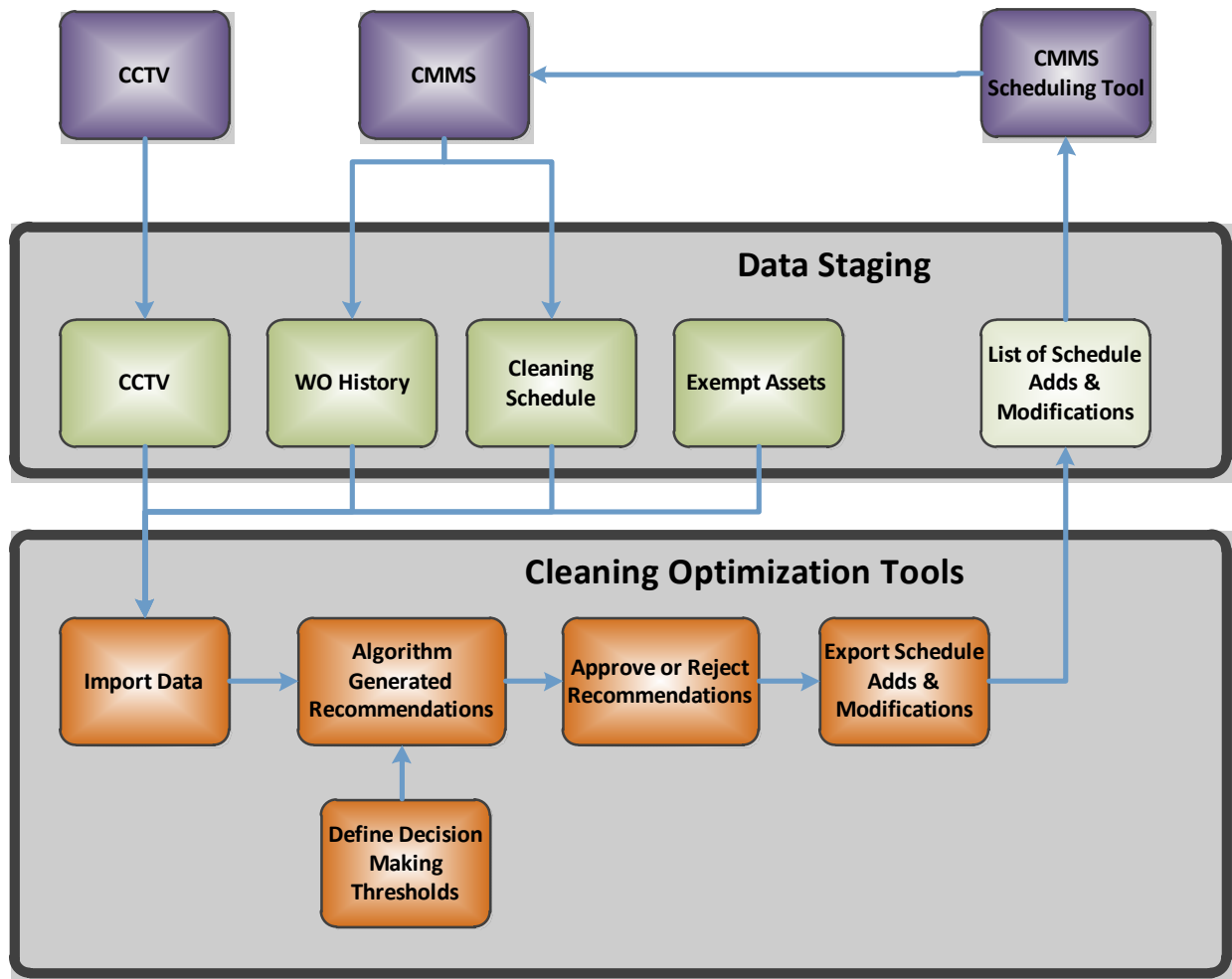


Figure 1. Process Overview

1.3. Algorithm Overview

1.3.1 Asset and Record Processing

The CCTV and Cleaning algorithms process each new CCTV or cleaning record. If a record has already been processed by the algorithm, the algorithm will not reprocess the record. The algorithms sort the asset history in ascending order and process all records in the asset history for each asset. The algorithm will exclude all assets identified in the Exempt Assets List. See Section 2.1.3.3 for more information on the Exempt Assets List.

See Figure 2 for more information on asset and record processing.

1.3.2 CCTV Algorithm

The CCTV algorithm analyzes CCTV inspection data and makes recommendations unless there is a cleaning record after the CCTV record. If more recent cleaning data is available the algorithm will not make a recommendation. The algorithm uses thresholds set by the user to determine whether an emergency response, proactive response or no change is recommended. See Section 2.1.3.2 for more information on CCTV Rules. If there is an existing cleaning

frequency schedule for the asset and the next scheduled cleaning date is later than the emergency or proactive response dates, the algorithm will recommend a new cleaning date. If there is no existing cleaning frequency schedule and the user has set an emergency or proactive response frequency, the algorithm will recommend a new cleaning frequency schedule and a new cleaning date.

See Figure 3 for more information on the CCTV algorithm.

1.3.3 Cleaning Algorithm

The Cleaning algorithm uses cleaning inspection and frequency information to provide recommendations. Every pipe between 4 and 36 inches in diameter has a cleaning frequency; the algorithm uses this frequency and cleaning findings to provide recommendations. The algorithm uses lead lag windows set by the user to determine whether or not a cleaning finding is valid for use in making a recommendation. See Section 2.1.3.8 for more information on Frequency Lead/Lag rules. User settings also determine the algorithm frequency rules used for determining how many consecutive cleaning findings are required to recommend a frequency change.

If an asset is encountered that has no cleaning frequency schedule, there are heavy or medium cleaning findings, and there is asset history, the algorithm will select a cleaning frequency based on the span between the cleaning record date and the previous cleaning record date. If the span is within a frequency or the lag window for that frequency, the frequency is selected. For example, a span of 11 months is within the 12 month frequency so 12 months is selected for the frequency. Also, a span of 13 months falls within lag window of the 12 month frequency, so 12 months is selected for the frequency. See Section 2.1.3.8 for more information on the lag window.

To make a recommendation from a selected cleaning frequency, the algorithm uses the algorithm frequency rules to count similar findings within the selected frequency. For example, assume the frequency algorithm rule is two consecutive heavy findings required for recommending a frequency increase. Three records are processed. The first record processed by the Cleaning algorithm has a light finding. The second record has a heavy finding and a selected frequency of 6 months. Because the second record is the only record with a heavy finding within the selected frequency of 6 months, no recommendation will be generated for this record. The third processed record has a record date 11 months from the second record and has a heavy finding. The algorithm selects a frequency of 12 months for the third record. A recommendation for increasing frequency and a new cleaning date will be generated for the third record because the heavy finding for the second record is within the selected 12 month frequency for the third record.

If no cleaning frequency schedule exists and there are none or light cleaning findings, the algorithm recommends a cleaning frequency of 60 months.

See Figure 4 for more information on the Cleaning algorithm.

1.4. Getting Started

To begin using the cleaning optimization tool the user must determine thresholds, rules, and codes. These user settings are critical to how the algorithm makes recommendations. See Section 2.1.3 for more information.

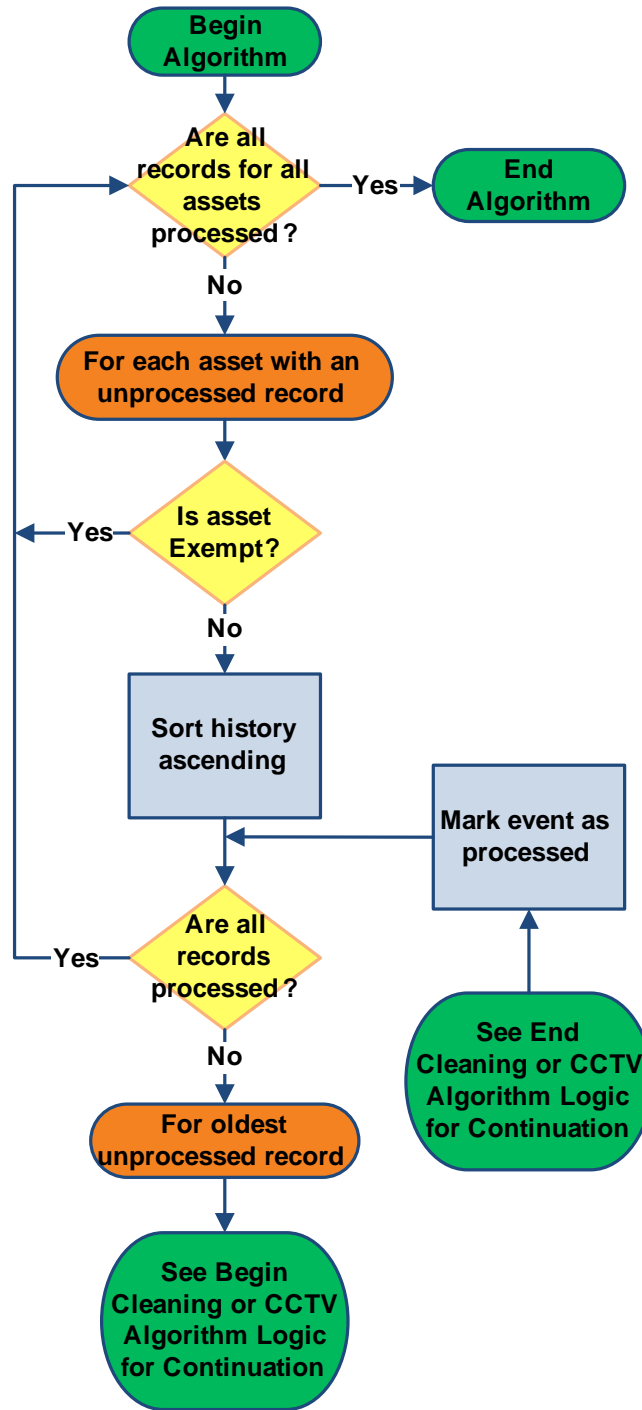


Figure 2. Asset and Recording Processing Logic for Cleaning and CCTV Algorithms

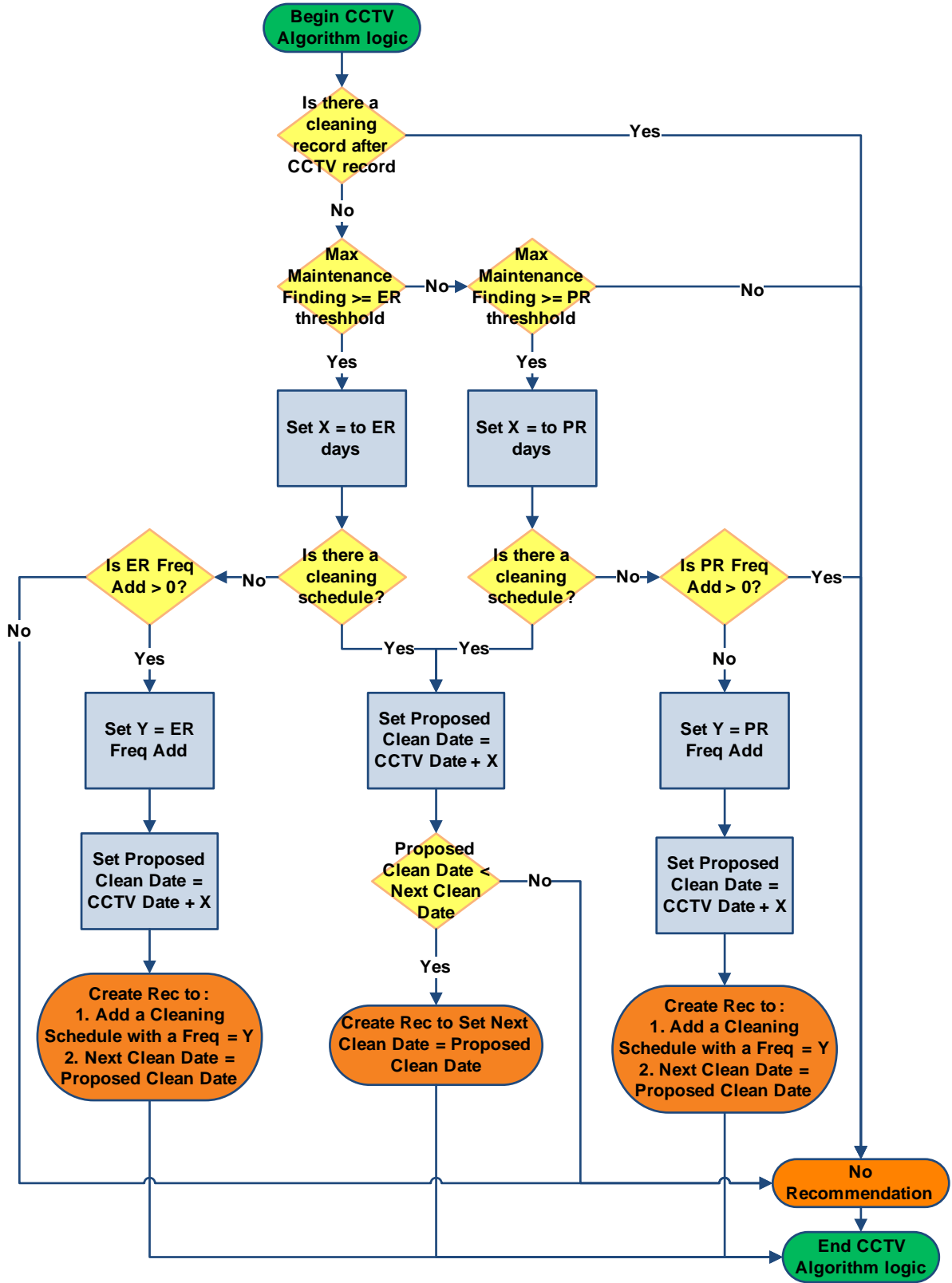


Figure 3. CCTV Algorithm Logic

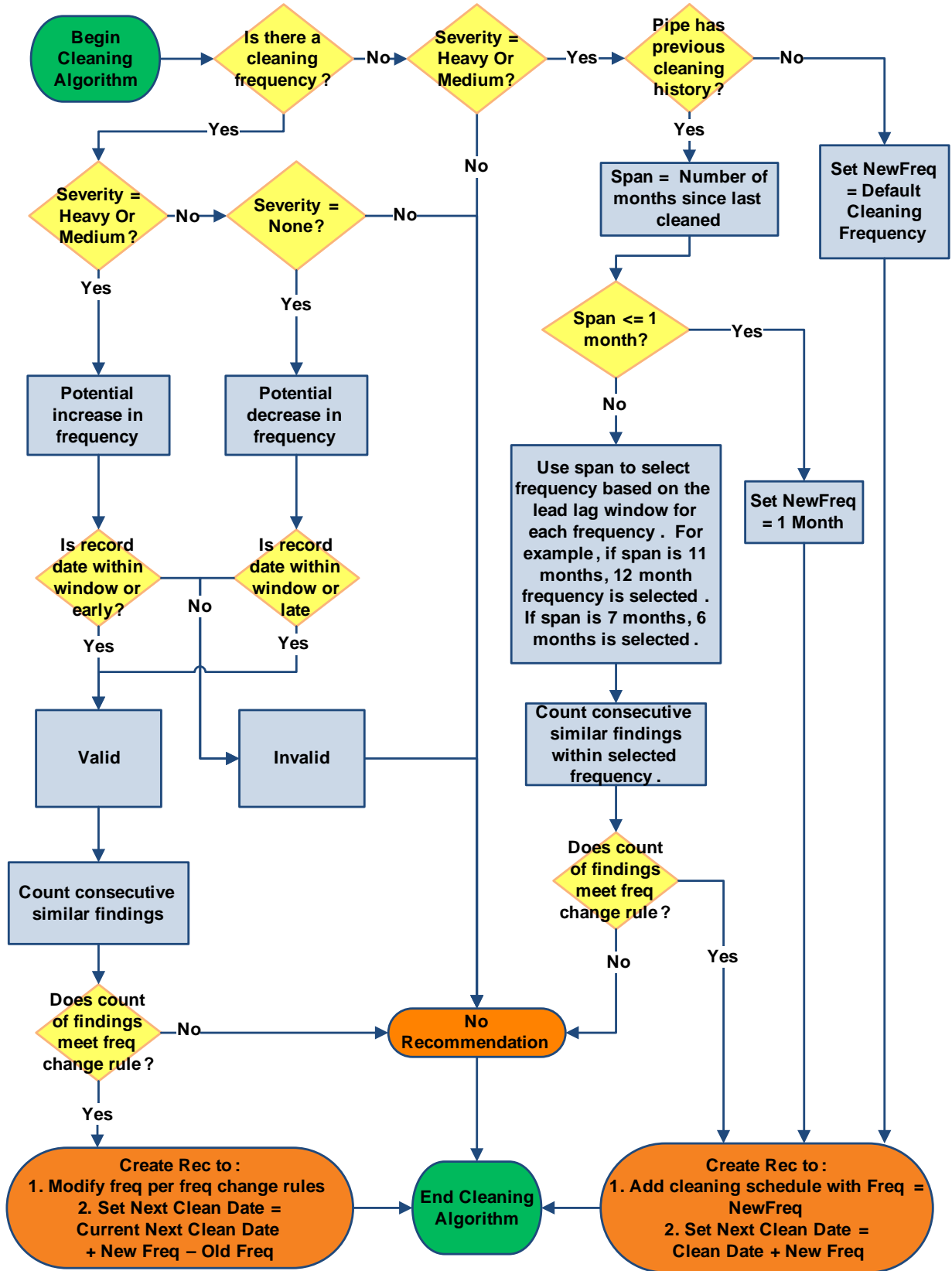


Figure 4. Cleaning Algorithm Logic



2.0 Cleaning Optimization Tool User Interface

The screenshot displays the user interface with several key components highlighted by red arrows and labels:

- Menu Ribbon:** Located at the top, it contains buttons for 'FSN Update', 'EAI Data', 'Import Settings', 'CCTV Rules', 'Frequency/Algorithm Rules', 'Default DWWACTV', 'Process Selected', 'Add User Recommendations', and 'Show Pending Only'.
- Recommendations Table:** A table with columns: EQNUM, Decision Type, Old Value, Proposed Value, Status, WO, PMNUM, DWWACTVCD, and Comments. It lists various cleaning frequency changes and next clean dates for different pipes.
- Pipe Schedule Table:** A table with columns: EQNUM, PMNUM, Activity Code, Frequency, Next Date, Schedule Type, STATUS, Diameter, and PM Comments. It shows details for a specific pipe (EQNUM 66624).
- Pipe History Table:** A table with columns: EQNUM, WON, Event, Performed Date, Action, and CREW. It tracks past cleaning events for the selected pipe.

The screen layout consists of the Algorithm, Import Data, Administration, and Recommendations areas of the Menu Ribbon; as well as the Recommendation Table, and Pipe History Table display.

2.1. Menu Ribbon

2.1.1 Algorithm

Navigate this menu area to run the Facility Sequence Number (FSN) Update. Click the corresponding button to execute the algorithm process.

2.1.1.1. FSN UPDATE

Select this button to import updated asset data into COTools from the GIS database. This button only needs to be utilized if significant changes are my to the asset data within the GIS database.

2.1.2 Import Data

Navigate this menu area to import data records for CCTV and CMMS.

2.1.2.1. EAI DATA

Imports CCTV inspection data and cleaning findings data from EAI.

2.1.3 Administration

Navigate this menu area to change settings, rules and codes.

Import Settings	CCTVRules	FrequencyAlgorithmRules	Default DWWACTV
Exempt Assets List	CCTV Defect Codes	Frequency Lead/Lag	Default Cleaning Frequency
Activity Codes	Structural Defect Codes	WO Status List	Exception Log
Administration			

2.1.3.1. IMPORT SETTINGS

INI_TABLE	
INPUTFIELD	VALUE
SOURCEINSPECTIONTABLE	tblGxpTvInspection
SOURCEFINDINGSTABLE	tblGxpObservation
SOURCEASSETTABLE	tblGxpAsset
SOURCECCTVMDB	S:\FIELD\HDR\COToolsGxp.accdb
SOURCESCHEDULEMDB	S:\FIELD\HDR\CMMSMaxProd.accdb
SOURCECLEANINGMDB	S:\FIELD\HDR\CMMSMaxProd.accdb
SOURCESCHEDULETABLE	tblMaxPM
SOURCEWOX3TABLE	tblMaxWox3
SOURCEWORKORDERTABLE	tblMaxWorkorder
SOURCEIGNOREEQNUM	IGNORE_LIST
*	

This interface allows the user to modify where data will be imported from. Select the VALUE column to change the name or file location for source databases. A description of each field is included below:

- SOURCEINSPECTIONTABLE – This is the CCTV inspection table in the CCTV database. See Appendix A for the data format required prior to import.
- SOURCEFINDINGSTABLE - This is the CCTV observation table in the CCTV database. See Appendix A for the data format required prior to import.
- SOURCEASSETTABLE - This is the CCTV asset table in the CCTV database. See Appendix A for the data format required prior to import.
- SOURCECCTVMDB - This is the location of the CCTV database to be imported. This database should contain at least three tables (SOURCEINSPECTIONTABLE, SOURCEFINDINGSTABLE, and SOURCEASSETTABLE).
- SOURCESCHEDULEMDB - This is the location of the cleaning schedule database to be imported. This database should contain at least one table (SOURCESCHEDULETABLE).
- SOURCECLEANINGMDB – This is the location of the cleaning history database to be imported. This database should contain at least three tables (SOURCEWOX3TABLE, SOURCEWORKORDERTABLE, and SOURCESCHEDULETABLE).
- SOURCESCHEDULETABLE – This is the name of the cleaning schedule table within the SOURCESSCHEDULEMDB database. See Appendix A for the data format required prior to import.



- SOURCEWOX3TABLE – This is the name of the work order findings history table within the SOURCESSCHEDULEMDB database. See Appendix A for the data format required prior to import.
- SOURCEWORKORDERTABLE – This is the name of the work order history table within the SOURCESSCHEDULEMDB database. See Appendix A for the data format required prior to import.
- SOURCEIGNOREEQNUM – Not used. See Section 2.1.3.3 for the Exempt Assets List.

2.1.3.2. CCTV RULES

CCTV_THRESHOLDRULES

ID	DEFECT_TYPE_ID	ER_THRESHOLD	ER_DAYS
1	CCTV HDR Defect Code	40	20
* (New)			

PR_THRESHOLD	PR_DAYS	ER_FREQADD	PR_FREQADD
15	30	12 MONTHS	24 MONTHS

Select this menu to open the CCTV Rules table. These CCTV Rules are used in the algorithms to provide criteria for recommendations based on CCTV findings. For severe CCTV findings an Emergency Response is recommended by the algorithm. For moderate CCTV findings a Proactive Response is recommended. The user may set the Emergency and Proactive Response threshold values for finding severity and the number of days from the CCTV record date to schedule an Emergency or Proactive response cleaning. The user may also set the recommended cleaning frequency for an asset with an Emergency or Proactive Response. This frequency will only be applied to an asset if there is no existing cleaning frequency schedule. A description of each field is described below:

- DEFECT_TYPE_ID – Defines the HDR defect code table used by the algorithm. This field is not edited by the user.
- ER_THRESHOLD – The Emergency Response Threshold value identifies the percent finding range that will identify an Emergency Response recommendation for an asset. For example, in the above table, the Emergency Response Threshold Value is 40%. If a percent finding during CCTV inspection for debris, grease, etc. is greater than or equal to 40%, the algorithm will recommend an Emergency Response for the asset.
- ER_DAYS – The Emergency Response Cleaning Schedule Days value is the number of days between the CCTV inspection date that provided an Emergency Response finding and the recommended next cleaning date. For example, a CCTV inspection performed on January 1, 2015 has a percent finding for debris of 50% and the Emergency Response Cleaning Schedule Days value is set to 20. The recommended next cleaning date will be January 21, 2015.



- **PR_THRESHOLD** – The Proactive Response Threshold value identifies the percent finding range that will identify a Proactive Response recommendation for an asset. For example, in the above table the Proactive Response value is 15%. If a percent finding during CCTV inspection for debris, grease, etc. is greater than or equal to 15%, but less than 40% (the Emergency Response Threshold value), the algorithm will recommend a Proactive Response for the asset.
- **PR_DAYS** – The Proactive Response Cleaning Schedule Days value is the number of days between the CCTV inspection date that provided a Proactive Response finding and the recommended next cleaning date. For example, a CCTV inspection performed on January 1, 2015 has a percent finding for debris of 25% and the Proactive Response Cleaning Schedule Days value is set to 30. The recommended next cleaning date will be January 31, 2015.
- **ER_FREQADD** – Emergency Response Cleaning Frequency value is the cleaning frequency assigned to an asset that does not currently have a cleaning frequency and has an Emergency Response recommendation.
- **PR_FREQADD** – Proactive Response Cleaning Frequency value is the cleaning frequency assigned to an asset that does not currently have a cleaning frequency and has a Proactive Response recommendation.

2.1.3.3. EXEMPT ASSETS LIST

The Exempt Assets List is used to identify assets by EQNUM (also known as Facility ID) that will not be analyzed by the algorithm. Users can edit the table directly by selecting the appropriate field.

EQNUM	COMMENTS
111	
222	
223	
333	
444	

2.1.3.4. ACTIVITY CODES

ACTVCD	Cityworks_DESCRIPTION	Cityworks_TASKNAME	ActivityType	Description	DateAdded
988	DCCTV	JC VAC MAIN (LFT)	Cleaning	DCCTV/JC VAC MAIN (LFT)	
990	DJET CLEAN/VAC	JC VAC MAIN (LFT)	Cleaning	DJET CLEAN/VAC/JC VAC MAIN (LFT)	
993	WWSSO	JC VAC COMBO (LFT)	Cleaning	WWSSO/JC VAC COMBO (LFT)	
994	WWFROG JC/VAC	JC VAC COMBO (LFT)	Cleaning	WWFROG JC/VAC/JC VAC COMBO (LFT)	
1287	S_MAIN_JET_VAC	S_MAIN_CLEANING_FEEDE	Cleaning	S_MAIN_JET_VAC/S_MAIN_CLEANING_FEEDBACK	3/21/2014
1288	WWSCHEDULED JC/VAC	S_MAIN_CLEANING_FEEDE	Cleaning	WWSCHEDULED JC/VAC/S_MAIN_CLEANING_FEEDE	3/21/2014
1289	WWTARGETMAINT NORTH RE	S_MAIN_CLEANING_FEEDE	Cleaning	WWTARGETMAINT NORTH REC/S_MAIN_CLEA	3/21/2014
1291	WWTARGETMAINT SOUTH RE	S_MAIN_CLEANING_FEEDE	Cleaning	WWTARGETMAINT SOUTH REC/S_MAIN_CLEA	3/21/2014
1292	S_MAIN_JET_VAC_SCH	S_MAIN_CLEANING_FEEDE	Cleaning	S_MAIN_JET_VAC_SCH/S_MAIN_CLEANING_FEEDB	4/9/2014
1295	WWTARGETMAINT SOUTH	S_MAIN_CLEANING_FEEDE	Cleaning	WWTARGETMAINT SOUTH/S_MAIN_CLEANING_FEE	3/21/2014
1296	WWTARGETMAINT NORTH	S_MAIN_CLEANING_FEEDE	Cleaning	WWTARGETMAINT NORTH/S_MAIN_CLEANING_FEE	3/21/2014
1298	S_MAIN_RODDING_REACTIVE	S_MAIN_CLEANING_FEEDE	Cleaning	S_MAIN_RODDING_REACTIVE/S_MAIN_CLEANING	4/17/2014
1299	S_MAIN_SSMP_REINSPECT	S_MAIN_CLEANING_FEEDE	Cleaning	S_MAIN_SSMP_REINSPECT/S_MAIN_CLEANING_FE	9/2/2014
1300	S_MAIN_RECLEAN	S_MAIN_CLEANING_FEEDE	Cleaning	S_MAIN_RECLEAN/S_MAIN_CLEANING_FEEDBACK	9/2/2014
1301	S_MAIN_REROD	S_MAIN_CLEANING_FEEDE	Cleaning	S_MAIN_REROD/S_MAIN_CLEANING_FEEDBACK	10/20/2014
1302	S_MAIN_PLUG	S_MAIN_CLEANING_FEEDE	Cleaning	S_MAIN_PLUG/S_MAIN_CLEANING_FEEDBACK	2/6/2015
1303	S_MAIN_SSO	S_MAIN_CLEANING_FEEDE	Cleaning	S_MAIN_SSO/S_MAIN_CLEANING_FEEDBACK	3/8/2016
1304	S_MAIN_REPAIR	S_MAIN_CLEANING_FEEDE	Cleaning	S_MAIN_REPAIR/S_MAIN_CLEANING_FEEDBACK	5/11/2016
1305	S_MAIN_SSMP_REPAIR	S_MAIN_CLEANING_FEEDE	Cleaning	S_MAIN_SSMP_REPAIR/S_MAIN_CLEANING_FEEDB	5/11/2016
*					6/9/2016

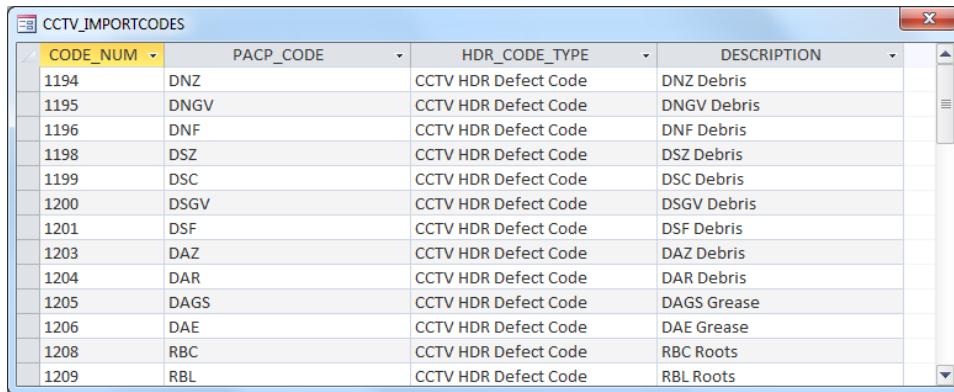
A description of each field is included below:

- ACTVCD – The Cityworks Work Order Activity Code
- Cityworks_DESCRIPTION – Cityworks Work Order Description
- Cityworks_TASKNAME – Cityworks task or inspection template name
- ActivityType – The type of Activity Code
- Description – A description of the Activity Code
- DateAdded – Date activity code was added

Cleaning codes identify the type of cleaning performed on an asset. The cleaning type from the imported cleaning data is included in recommendations for future cleaning. Cleaning codes and descriptions may be added or modified by entering information in a new cell or modifying information in an existing cell.

The tool is designed to use codes from the master database (Cityworks) and not databases on crew or contractor trucks. If the codes in the master database change or the master database version changes, (i.e. if the version of Cityworks changes) the codes in this table should be reevaluated to ensure they are compatible with the master database.

2.1.3.5. CCTV DEFECT CODES



CODE_NUM	PACP_CODE	HDR_CODE_TYPE	DESCRIPTION
1194	DNZ	CCTV HDR Defect Code	DNZ Debris
1195	DNGV	CCTV HDR Defect Code	DNGV Debris
1196	DNF	CCTV HDR Defect Code	DNF Debris
1198	DSZ	CCTV HDR Defect Code	DSZ Debris
1199	DSC	CCTV HDR Defect Code	DSC Debris
1200	DSGV	CCTV HDR Defect Code	DSGV Debris
1201	DSF	CCTV HDR Defect Code	DSF Debris
1203	DAZ	CCTV HDR Defect Code	DAZ Debris
1204	DAR	CCTV HDR Defect Code	DAR Debris
1205	DAGS	CCTV HDR Defect Code	DAGS Grease
1206	DAE	CCTV HDR Defect Code	DAE Grease
1208	RBC	CCTV HDR Defect Code	RBC Roots
1209	RBL	CCTV HDR Defect Code	RBL Roots

A description of each field is included below:

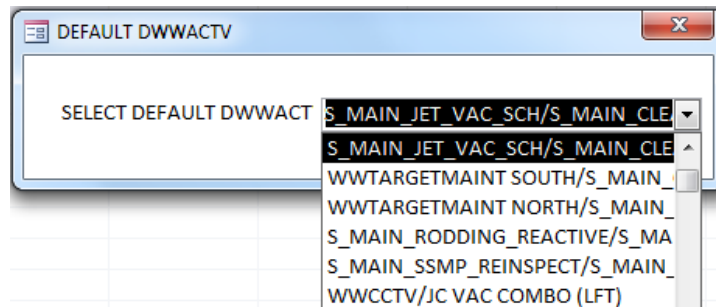
- CODE_NUM – The Granite XP code associated with the PACP Code
- PACP_CODE – The PACP defect code for CCTV inspections
- HDR_CODE_TYPE – The type of HDR CCTV defect code
- DESCRIPTION – A description of the defect code

CCTV Defect Codes identify the Code Number, PACP Code, HDR Defect Code Table, and Defect Code Description that will be used by the CCTV algorithm when optimizing the cleaning schedule. Defect codes that would not drive a cleaning event (such as protruding lateral) should not be included. Only codes that can be addressed by cleaning should be included in this table (like Root Ball Barrel). Defect code information is imported with the CCTV inspection data. Codes and descriptions may

be added or modified by selecting a new cell or modifying information in an existing cell.

The tool is designed to use codes from the master database (Granite XP) and not databases on crew or contractor trucks. If the master database version changes, (i.e. if the version of Granite XP software changes) the codes in this table should be reevaluated to ensure they are compatible with the master database.

2.1.3.6. **DEFAULT DWWACTV**



The default activity code is used for recommendations on historical records that do not have an associated activity code. Generally, this occurs when a pipe that is not on a cleaning schedule is CCTV'd and recommended for addition to the cleaning schedule. Currently "S_MAIN_JET_VAC/S_MAIN_CLEANNING_FEEDBACK" is used for the default DWWACTV value.

2.1.3.7. **FREQUENCY ALGORITHM RULES**

ID	RID	OCCURRENCE	SEVERITY	NEW_FREQUENCY
73	1 MONTHS	2	NONE	3 MONTHS
76	12 MONTHS	2	NONE	24 MONTHS
81	12 MONTHS	2	MEDIUM	6 MONTHS
87	12 MONTHS	1	HEAVY	6 MONTHS
77	24 MONTHS	2	NONE	60 MONTHS
82	24 MONTHS	2	MEDIUM	12 MONTHS
88	24 MONTHS	1	HEAVY	12 MONTHS
74	3 MONTHS	2	NONE	6 MONTHS
79	3 MONTHS	2	MEDIUM	1 MONTHS
85	3 MONTHS	1	HEAVY	1 MONTHS
78	36 MONTHS	0	NONE	60 MONTHS
83	36 MONTHS	0	MEDIUM	24 MONTHS
89	36 MONTHS	0	HEAVY	24 MONTHS
91	36 MONTHS	0	LIGHT	60 MONTHS
75	6 MONTHS	2	NONE	12 MONTHS
80	6 MONTHS	2	MEDIUM	2 MONTHS

A description of each field is included below:

- ID – Auto-generated ID for each frequency
- RID – Rule ID, Current asset cleaning frequency
- OCCURRENCE – The number of consecutive cleaning findings required for the algorithm to recommend an increase or decrease in the cleaning frequency.



- SEVERITY – The severity of cleaning finding
- NEW_FREQUENCY – The recommended frequency

Frequency algorithm rules determine the number and severity of cleaning findings the algorithm uses to recommend an increase and decrease in cleaning frequency. These rules also determine the new recommended cleaning frequency. Using the above table as an example, the algorithm processing an asset with an existing cleaning frequency of 24 months and 2 consecutive None findings will generate a recommendation for a frequency decrease to 60 months. In another example, the algorithm processing an asset with an existing cleaning frequency 6 months and 1 Heavy finding will generate a recommendation for a frequency increase to 3 months.

2.1.3.8. FREQUENCY LEAD/LAG

PM_FREQ_NUM	PM_FREQ_UNIT	LEAD	LAG	SEQ
1	MONTHS	-7	7	1
3	MONTHS	-21	21	3
6	MONTHS	-42	42	5
12	MONTHS	-84	84	6
24	MONTHS	-168	168	7
36	MONTHS	-1094	1094	8
60	MONTHS	-420	420	10
*				

A description of each field is included below:

- PM_FREQ_NUM – Scheduled Frequency Number for an asset
- PM_FREQ_UNIT – Frequency Units associated with the Frequency Number
- LEAD – Valid lead time in days
- LAG – Valid lag time in days
- SEQ – Sequence of frequencies

The Lead Lag rules define the window of time that certain cleaning findings are valid. The Cleaning Optimization Tool logic prevents a recommended decrease in frequency if cleanings are occurring more than scheduled. Similarly, the tool prevents a recommended increase in frequency if cleanings are occurring less than scheduled.

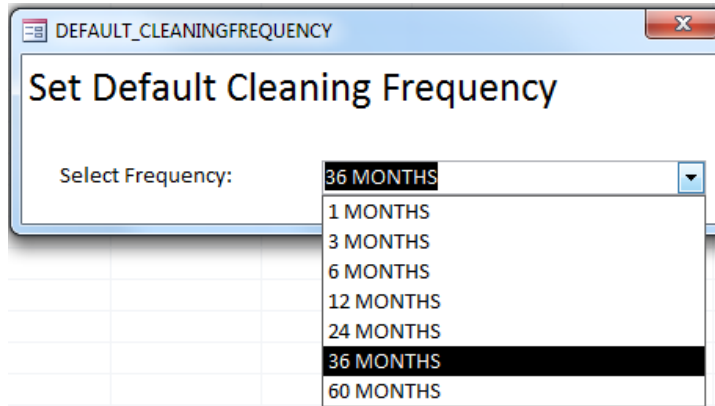
For example, an asset has a scheduled cleaning frequency of 3 months. Per the above table, the Lead value of -21 indicates that a cleaning finding prior to 21 days before the scheduled 3 months is invalid if the algorithm recommends decreasing the cleaning frequency. However, the

cleaning finding is valid prior to 21 days before the scheduled 3 months if the algorithm recommends increasing the cleaning frequency.

The Lag value of 21 indicates that a cleaning after 21 days later than the scheduled 3 months is invalid if the algorithm recommends an increase in cleaning frequency. However, the cleaning finding is valid after 21 days later than the scheduled 3 months if the algorithm indicates a decrease in cleaning frequency.

Frequency Algorithm Rules may be edited by selecting the cell and editing the text.

2.1.3.9. DEFAULT CLEANING FREQUENCY



The default cleaning frequency is used to identify the cleaning frequency for assets that do not have a cleaning frequency or history. Users may select the default cleaning frequency from the drop down menu. Currently 36 Months is used for the default cleaning frequency.

2.1.3.10. WO STATUS LIST

ID	STATUS	CATEGORY
1	NEW	Work Outstanding
2	CANCEL	Canceled Work
3	REJECTED	Canceled Work
4	ASSIGNED	Work Outstanding
5	CIP	Work Outstanding
6	COMPLETE	Work Complete
7	CLOSED	Work Complete
8	IN PROGRESS	Work Outstanding
9	DESK	Work Outstanding
10	PENDING	Work Outstanding
11	AUDIT	Work Outstanding
12	INCOMPLETE	Work Outstanding
13	USA	Work Outstanding
* (New)		

A description of each field is included below:

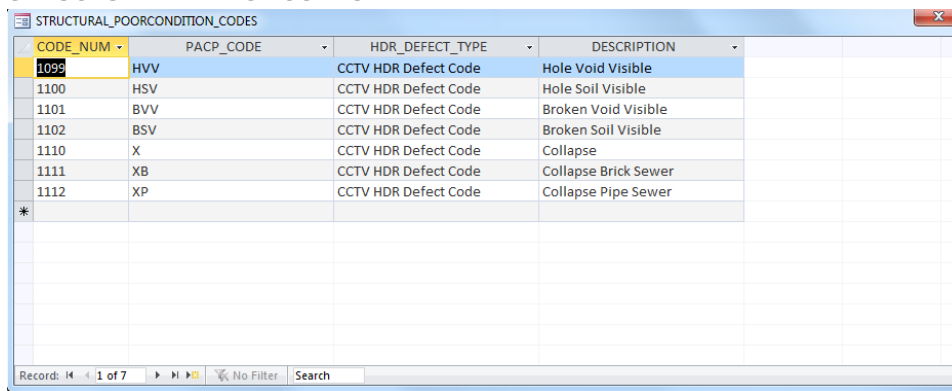
- ID – Auto-generated ID for each Work Order Status
- STATUS – The Cityworks Work Order Status

- CATEGORY – The category of every Work Order Status

The WO Status List corresponds to the work order status from Cityworks. The Cityworks statuses are grouped into 3 categories for use in the algorithm: :

- Work complete: These Work Orders show up in the history and are used to generate recommendations.
- Work Outstanding: These Work Orders show up in the history, do not drive cleaning recommendations, but are used in the CCTV algorithm. For example, if a CCTV record identifies a large blockage but there is a cleaning work order with a status related to “Work Outstanding”, the algorithm will not generate a recommendation to create another cleaning event.
- Cancelled Work: These Work Orders show up in the history but are not used in any algorithms.

2.1.3.11. STRUCTURAL DEFECT CODES



CODE_NUM	PACP_CODE	HDR_DEFECT_TYPE	DESCRIPTION
1099	HVV	CCTV HDR Defect Code	Hole Void Visible
1100	HSV	CCTV HDR Defect Code	Hole Soil Visible
1101	BVV	CCTV HDR Defect Code	Broken Void Visible
1102	BSV	CCTV HDR Defect Code	Broken Soil Visible
1110	X	CCTV HDR Defect Code	Collapse
1111	XB	CCTV HDR Defect Code	Collapse Brick Sewer
1112	XP	CCTV HDR Defect Code	Collapse Pipe Sewer
*			

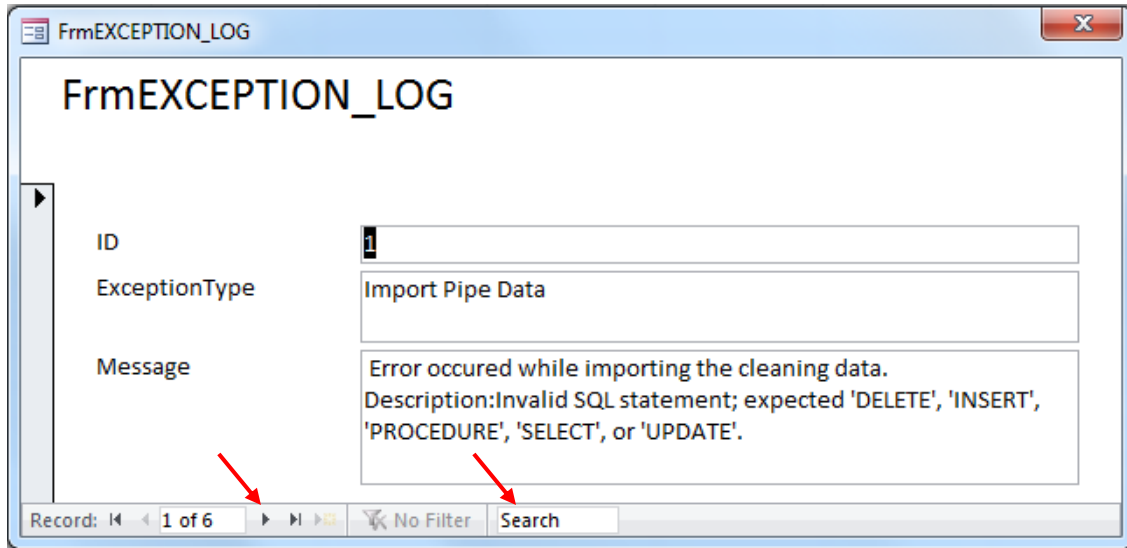
A description of each field is included below:

- CODE_NUM – The Granite XP code associated with the PACP Code
- PACP_CODE – The PACP defect code for CCTV inspections
- HDR_CODE_TYPE – The type of HDR CCTV defect code
- DESCRIPTION – A description of the defect code

Structural Defect Codes identify the Code Number, PACP Code, HDR Defect Code Table, and Defect Code Description that will be used by the CCTV algorithm to identify pipes with structural defects. Only codes that can interfere with cleaning activities and that can be addressed by a point repair or CIP project should be included in this table (like Hole Soil Visible). Defect code information is imported with the CCTV inspection data. Codes and descriptions may be added or modified by selecting a new cell or modifying information in an existing cell.

The tool is designed to use codes from the master database (Granite XP, etc) and not databases on crew or contractor trucks. If the master database version changes, (i.e. if the version of Granite XP software changes) the codes in this table should be reevaluated to ensure they are compatible with the master database.

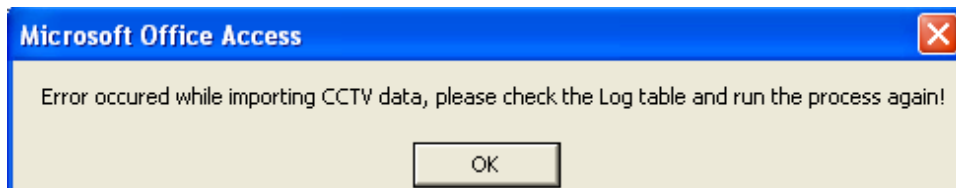
2.1.3.12. EXCEPTION LOG



A description of each field is included below:

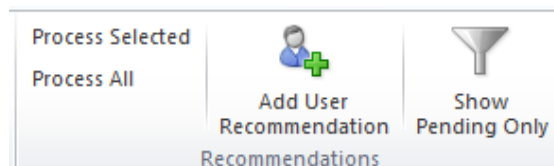
- ID – Indicates the exception log number
- Exception Type – Indicates the exception type
- Message – Displays the error message and includes asset information in some cases.

The exception log will log errors that occur during data import, running the algorithms or during data export. Click on the arrows in the bottom left of the window to navigate between errors. A search can also be performed to locate an error log. An error message like the below image may appear while using the Cleaning Optimization Tool which refers the user to the Exception log.



2.1.4 Recommendations

Navigate this menu area to Process Pending recommendations and to manually Add User Recommendations.



2.1.4.1. PROCESS SELECTED

Allows user to process an unprocessed Accepted/Rejected recommendation for a recommendation that is selected within the Recommendations Table. This allows for the user to process recommendations on a singular basis.

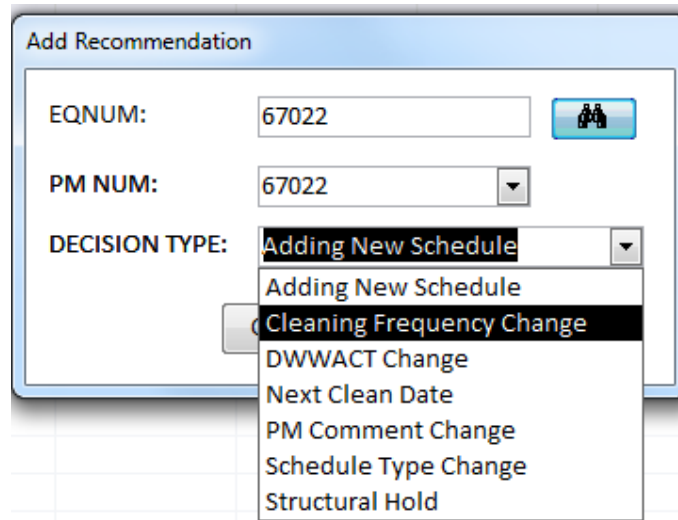
2.1.4.2. PROCESS ALL

Allows user to process all unprocessed Accepted/Rejected recommendations within the Recommendations Table. This allows for the user to process all recommendations at once.

2.1.4.3. SHOW PENDING ONLY

This button toggles the Recommendations Table to only display Pending recommendations needing review. It is advised to use this button to review the recommendations prior to processing.

2.1.4.4. ADD USER RECOMMENDATION



Allows user to manually add a recommendation for an asset. User must enter EQNUM (FacilityID) for the asset that is receiving the user recommendation. A description of each user recommendation is described below:

- Adding New Schedule – Allows user to add a new schedule to an asset that does not have an existing cleaning schedule.
- Cleaning Frequency Change – Allows user to change the Cleaning Frequency.
- DWWACT Change – Allows user to change the Activity Code associated with maintenance record.
- Next Clean Date – Allows user to change the Next Clean Date. A new Next Clean Date is automatically assigned to the asset that undergoes a user Cleaning Frequency Change recommendation.
- PM Comment Change – Allows user to add a comment.
- Schedule Type Change – Allows user to change Schedule Type.
- Structural Hold – Allows user to place a structural hold on asset.



2.2. Recommendation Table

EQNUM	Decision Type	Old Value	Proposed Value	Status	WO	PMNUM	DWWACTVCD
66624	Next Clean Date	4/24/2013	12/12/2014	Approved	216033_447	66624	WWSCHEDULED JC/VAC/JC VAC
66822	Cleaning Frequency Change	36 MONTHS	24 MONTHS	Approved	215055_444	66822	WWTARGETMAINT SOUTH/JC V
66581	Next Clean Date	9/26/2013	12/30/2014	Approved	216853_449	66581	WWSCHEDULED JC/VAC/JC VAC
66584	Next Clean Date	10/18/2013	6/19/2014	Approved	216854_449	66584	WWSCHEDULED JC/VAC/JC VAC
66598	Cleaning Frequency Change	36 MONTHS	60 MONTHS	Approved	213433_440	66598	WWTARGETMAINT SOUTH/JC V
66598	Next Clean Date	4/1/2014	11/14/2016	Approved	213433_440	66598	WWTARGETMAINT SOUTH/JC V
66599	Next Clean Date	6/20/2013	5/14/2014	Approved	213431_440	66599	WWTARGETMAINT SOUTH/JC V
66600	Next Clean Date	6/20/2013	5/14/2014	Approved	213491_440	66600	WWTARGETMAINT SOUTH/JC V
66601	Next Clean Date	8/23/2014	12/27/2014	Approved	216487_451	66601	WWTARGETMAINT SOUTH RECL
66604	Next Clean Date	8/23/2018	12/27/2018	Approved	216487_451	66604	WWTARGETMAINT SOUTH RECL
66555	Next Clean Date	8/15/2013	12/24/2014	Approved	216851_450	66555	WWSCHEDULED JC/VAC/JC VAC
66623	Next Clean Date	2/14/2014	12/23/2014	Approved	216856_450	66623	WWSCHEDULED JC/VAC/JC VAC
66503	Next Clean Date	6/13/2015	12/13/2015	Approved	216032_448	66503	WWSCHEDULED JC/VAC/JC VAC

Record: 1 of 16349 Unfiltered Search

Comments	Finalized Date	Diameter	REC_TYPE	AREA_NUM	PM Commer	Structural Not Clean	REC_BY	REC_CAUSE
	1/23/2014	6	Algorithm				Cleaning	
	1/23/2014	12	Algorithm				Cleaning	HEAVY Heavy C
	1/23/2014	6	Algorithm				Cleaning	
	1/23/2014	6	Algorithm				Cleaning	
	1/23/2014	8	Algorithm				Cleaning	NONE Clear
	1/23/2014	8	Algorithm				Cleaning	NONE Clear
	1/23/2014	6	Algorithm				Cleaning	
	1/23/2014	6	Algorithm				Cleaning	
	1/23/2014	8	Algorithm				Cleaning	
	1/23/2014	8	Algorithm				Cleaning	
	1/23/2014	8	Algorithm				Cleaning	
	1/23/2014	6	Algorithm				Cleaning	
	1/23/2014	10	Algorithm				Cleaning	
	1/23/2014	6	Algorithm				Cleaning	

Unfiltered Search

A description of each field is included below:

- EQNUM – Equipment Number, also known as Facility ID. This is the unique asset identification number.
- Decision Type – Recommendation Type. Possible recommendation types are Next Clean Date, Adding New Schedule, and Cleaning Frequency Change.
- Old Value – The existing value that is recommended for replacement by the Proposed Value
- Proposed Value – The recommended value that is proposed to replace the Old Value
- Status – Indicates whether the recommendation is Pending, Approved or Rejected. The user may edit this field by clicking on the cell and selecting from the drop down menu
- WO – Work Order Number associated with the record used to make the recommendation
- PMNUM – This is the unique maintenance schedule number
- DWWACTVCD – Activity Code is the type of work performed and may be edited by the user by clicking on the cell and selecting from the drop down menu
- Comments – User may enter comments by clicking in the cell and typing
- Finalized Date – Indicates the date the recommendation was approved
- Diameter – This is the diameter of the pipe
- REC_TYPE – Defines whether the recommendation was created by the algorithm or user
- AREA_NUM – DOU Map Page asset is located in



- PM Comment – User may enter comments by clicking in the cell and typing
- Structural Not Clean – Lists comments associated with Structural Holds
- REC_BY – Lists origin of recommendation: Cleaning or CCTV
- REC_CAUSE – Lists cleaning findings or CCTV codes associated with record

The recommendation table is used to review, approve, reject, update and add comments to recommendations. The recommendations table can also be used to review asset history and its current cleaning schedule information. To view asset history and schedule information, click on a record and the Pipe Schedule Table will populate the cleaning schedule information and the Pipe History Table will populate with cleaning and CCTV data for the asset.

2.3. Pipe Schedule Table

Pipe Schedule					
EQNUM	PMNUM	Activity Code	Frequency	Next Date	
66624	66624	351 - WWSCHEDULED JC/VAC/JC VAC MAIN (LFT)	12	3/3/2017	

Schedule Type	STATUS	Diameter	PM Comments	LAST_UPD_BY	LAST_UPD_DT
Dynamic	Active	6		emcallister	3/4/2016

The Pipe Schedule Table provides the current cleaning schedule information for an asset. The table is useful to find scheduled cleaning information for an asset. A description of each field is included below:

- EQNUM – Equipment Number, also known as Facility ID
- PMNUM – This is the unique maintenance schedule number
- Activity Code – Identifies Activity Code associated with scheduled cleaning
- Frequency – Current asset Cleaning Frequency
- Next Date – Next scheduled clean date
- Schedule Type – Identifies schedule type
- Status – Identifies status of cleaning schedule
- Diameter – Diameter of pipe
- PM Comments – Comments associated with last recommendation
- LAST_UPD_BY – Identifies user who approved last recommendation
- LAST_UPD_DT – Identifies date of last approved recommendation



2.4. Pipe History Table

Pipe History					
EQNUM	WON	Event	Performed Date	Action	
66624	216033_447905	WWSCHEDULED JC/	12/12/2013	Cleaning	
66624	165009	CCTV	5/1/2012	CCTV	
66624	164964_311995	WWTARGETMAINT	4/24/2012	Cleaning	
66624	216033_447905	Next Clean Date		Approved	

CREW	Findings	Comments	WOStatus
	MEDIUM Medi		Work Complet
4986	RFJ 0@1,RFJ 0@		
	HEAVY Heavy D		Work Complet
		Next Clean Date f	

The Pipe History Table provides cleaning, CCTV, and recommendation history for an asset. The table is useful when reviewing recommendations. A description of each field is included below:

- EQNUM – Equipment Number, also known as Facility ID
- WON – Work Order Number associated with the record used to make the recommendation
- Event – Type of cleaning, CCTV or recommendation
- Performed Date – Date of cleaning, CCTV or recommendation
- Action – Indicates cleaning, CCTV or recommendation
- Crew – Crew number that performed the cleaning or CCTV
- Findings – Cleaning and CCTV findings
- Comments – Cleaning and CCTV comments are from imported data. Recommendation comments indicate the recommendation that was made.
- WOStatus –Work Order status, see section 2.1.3.10.

3.0 CMMS Scheduling Tool

The CMMS Scheduling Tool visually displays the next clean date for each sewer main between 4 and 36 inches in diameter as PM Scheduling layers within Cityworks. The pipes are highlighted in different colors that correspond to the Frequency Lead/Lag (Section 2.1.3.8) time frames associated with the next clean date. The highlighted colors allow the City’s scheduler planner to readily identify which pipes need to be placed on a work order for the field crews to clean.

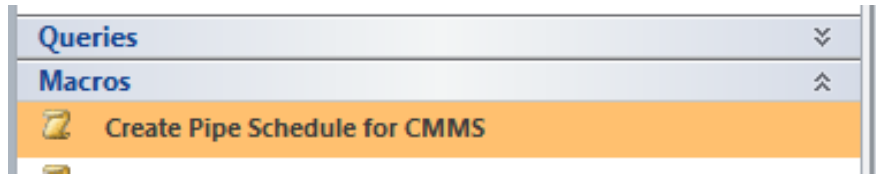
Note: the CMMS Scheduling Tool is intended to be used after the COTools recommendations have been reviewed and processed.

Execution

Navigate to the “COTools” subfolder located in the “HDR” subfolder on “Field” folder on the City’s “S” Drive:

\\doucifs\FIELD\HDR\COTools

Open the file WorkOrderColor.accdb. Once open, run the “Create Pipe Schedule for CMMS” macro. The macro updates the pipe schedule list with the latest decisions from COTools. Close the file when the macro is completed. Click “OK” to any prompts from the macro.



Open the file HDR_PIPE_SCHEDULE.accdb. Once open, click the “Update Cityworks Schedule” button. The HDR_PIPE_SCHEDULE file imports the pipe schedule into the Sewer PM Scheduling layers within the GIS interface of Cityworks.



To update the Cityworks copy of the line cleaning schedule:

1. Update the data in the "PIPE SCHEDULE" table.
2. Make sure the "Cityworks_Schedule" table is hooked up to the proper Cityworks database (External Data > Linked Table Manager)
3. Click "Update Cityworks Schedule" below to wipe the current schedule clean and update it with your new data.

Update Cityworks Schedule

After these two steps, the latest pipe schedule information is displayed within the GIS interface of Cityworks and the scheduler planner will have the latest information for use to create work orders as deemed necessary. Below is a screenshot of the visual interface of the CMMS Scheduling Tool:



The following colors correspond to the pipe scheduling status:

- Red = Late: Current date is past the cleaning window (Current Date > Next Clean Date + Lag)
- Yellow = After: Current date is within the cleaning window but past the Next Clean Date (Current Date > Next Clean Date < Next Clean Date + Lag)
- Green = Before: Current date is within the cleaning window and before the Next Clean Date (Next Clean Date – Lead < Current Date < Next Clean Date)
- Black = Early: Current date is before the cleaning window (Current Date < Next Clean Date – Lead)
- White = Cleaning Scheduled: Pipe is currently on a cleaning work order.
- Purple = Null: Pipes that are unable to be cleaned due to size (greater than 15") or are placed on the Cannot Clean List due to pipe attributes or structural condition. See section 3.1.

3.1. Cannot Clean List

The Cannot Clean List is a list of sewer pipes that are 36-inches or less that cannot be cleaned by maintenance crews due to attributes or structural conditions of the pipes. For example, pipes that direct tap into another main are placed on this list as the maintenance crews are unable to access the pipe. This list is constantly updated as the crews come across pipes that are inaccessible.

A pipe can also be placed on this list if it is determined that maintenance crews need to stay away from the pipe. For example, if a pipe will be inaccessible due to repair activities for an extended period of time, that pipe can be added to the list so that the maintenance crews do not interfere with construction activities or other maintenance activities such as chemical root foaming.

The Cannot Clean List is kept on an Excel file on the City's S-Drive. Navigate to the "Hydroflushing" subfolder located in the "HDR" subfolder on "Field" folder on the City's "S" Drive:

```
\\doucifs\FIELD\HDR\Hydroflushing
```

Open the file Mains Cannot Clean.xlsx for editing.

4.0 Definitions and Acronyms

CCTV – Closed Circuit Television

CMMS – Computerized Maintenance Management System

DWWACTVCD – Activity Code associated with Cleaning

ER – Emergency Response

EQNUM – Equipment Number, also known as Facility ID

ID – Identification

PR – Proactive Response

RID – Rule ID, Current asset cleaning frequency

SSO – Sanitary Sewer Overflow

WON – Work Order Number

VI. AUDIT RESULTS AND RECOMMENDATIONS

The results and recommendations developed from the audit will be included in this SSMP as Section VI Audit Results and Recommendations.

V. SEWER SYSTEM MANAGEMENT PLAN

Appendix G Change Log

Change Log

Noting items updated between recertification years

Date	Section	Description of Update(s) Made
August, 2022	IV. SSMP Contact List	Updated with names and contact info to reflect staffing changes
August, 2022	Section 2.2, Figure 2.1	Organizational Chart - updated with current structure of Utilities Dept
August, 2022	4.3	Updated the following: - Preventative maintenance program details including criteria used to place asset in higher frequency cleaning program - Added Table 4.2 - Maintenance Frequency by Count and Percentage of Mainlines - Added description of how manholes are visually inspected as part of PM activities
August, 2022	Section 8.4, Table 8.2	Added Ratio of flow depth to inside pipe diameter (d/D) to design criteria table
August, 2022	Section 8.5	Updated to reflect completion of the water retrofit program
August, 2022	9.6, Figures 9.1 & 9.2	Added units to the vertical axis, updated data thru Calendar Year 2021
August, 2022	9.6, Table 9.1	Updated data thru Calendar Year 2021
August, 2022	9.6	Updated summary of results to reflect trends found in updated data
August, 2022	Chapter 13	Updated Appendices listed to include newly added F & G
August, 2022	Appendices	Added Appendix F - COTools User Manual
August, 2022	Appendices	Added Appendix G - Change Log

Final SSMP Audit Report



Sacramento SSMP Audit

Subject: Final SSMP Audit Findings

Prepared For: City of Sacramento

Prepared by: Michael Flores, RMC
Gisa Ju, RMC
Glenn Hermanson, RMC

Date: May 20, 2011

The purpose of this document is to report the results of the Sewer System Management Plan (SSMP) Audit conducted by the City of Sacramento (City) covering Calendar Year (CY) 2009 and CY 2010. This report is submitted pursuant to the requirements included in the State Water Resources Control Board Order No. 2006-0003 – Statewide General Waste Discharge Requirements for Sanitary Sewer Systems. The audit requirements are:

“As part of the Sewer System Management Plan (SSMP), the Enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept in 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.”

1 Background

On April 21, 2009, the Sacramento City Council adopted Resolution No. 2009-236 certifying compliance of the SSMP with the State WDR for the City separated sewer collection system. The City certified the completion of the SSMP through the State Water Resources Control Board (SWRCB) California Integrated Water Quality System (CIWQS) in time to meet the May 2, 2009 deadline established by the SWRCB.

The City of Sacramento Department of Utilities is responsible for management, operation, and maintenance of the separated sewer system consisting of 563¹ miles of gravity collection pipes, seven¹ miles of force mains, 14,400² manholes, and 40² pumps stations. The City does not own and is not responsible for maintenance of the lower laterals. The separated sewer system is located primarily in the northeast, east, and southwest sections of the City.

The Department of Utilities is also responsible for management, operation, and maintenance of 257¹ miles of combined sewer system located in the older central City area. Management, operation, and maintenance of the combined sewer system is not included as part of this audit since the SWRCB WDR does not currently require the inclusion of the combined sewer system in the SSMP.

¹ CIWQS Collection System Questionnaire

² 2008-2009 Sewer System Management Plan

In addition, approximately 35 percent of the public collection system within the City limits, in the northwest and southeast sections of the City, are managed, operated, and maintained by Sacramento Area Sewer District (SASD). This portion of the system is also not included in this audit since SASD is responsible for management, operation, and maintenance of this portion of the system.

2 SSMP Audit

This audit, covering from May 2010 through March 2011, is the first SSMP Audit performed to meet WDR requirements for completion of an audit a minimum of once every two years. This audit assesses the current state of SSMP compliance with Provision D.13 of the WDR, identifies any deficiencies found in the SSMP, and recommends corrective actions. In addition the audit provides an evaluation of SSMP effectiveness. The City intends to use the audit results to improve SSMP compliance and performance in reducing sewer overflows.

RMC Water and Environment conducted the audit along with City of Sacramento staff. City staff involved with implementation of activities required by provisions included in Provision D.13 of the WDR were interviewed to develop the findings identified in this audit. The RMC Audit Team members and City of Sacramento staff supporting the audit interviews and audit process include:

Audit Team

Agency	Team Member
RMC	Michael Flores
RMC	Gisa Ju
RMC	Glenn Hermanson
City of Sacramento	Delia McGrath

SSMP audit interviews were primarily performed over a two-day period on March 15, 2011 through March 16, 2011. In addition, a follow-up interview was performed on May 2 and May 3, 2011. The order of the audit interviews, WDR provision audited, and City staff interviewed is documented in the following table:

SSMP Audit Interviewees

Date	WDR Provision Section	Topics	Interviewees (Role)	Meeting Time
3/15/2011	D.13 (vii) D.13 (xi)	FOG Control – Inspection Program Communication Program	Jessica Hess (Public Information Officer)	45 minutes
3/15/2011	D.13 (vii)	FOG Control – Grease Control Devices	Jeffrey Brooks (Building Inspector)	1 hour
3/15/2011	D.13 (vi) D.13 (iv)	Overflow Emergency Response Plan – Field Activities and Reporting Measures and Activities – O&M	Rob Jack (Field Services Superintendent) John Fick (Field Supervisor) Jim Boyd (Field Supervisor) Gilbert Archuleta (Field Supervisor)	3.5 hours

SSMP Audit Interviewees (Continued)

3/15/2011	D. 13 (vi)	Overflow Emergency Response Plan - Dispatch	Gina Knepp (311 Program Manager) Maria Lovato (Field Services Dispatch Staff)	1 hour
3/16/2011	D.13 (iv)	Measures and Activities – O&M (Cont'd)	Rob Jack (Field Services Superintendent) John Fick (Field Supervisor) Jim Boyd (Field Supervisor) Gilbert Archuleta (Field Supervisor)	3 hours
3/16/2011	D.13 (iii)	Legal Authority – Illicit Discharges	Humberto Amador (Water Quality Associate Engineer)	30 minutes
3/16/2011	D.13 (iv) D.13 (viii) D.13 (v)	Measures and Activities – Renewal Program Capacity Management Design and Construction Standards	Rick Batha (Supervising Engineer - CIP) Rick Matsuo (Supervising Engineer – Asset Management) John Fick (Field Supervisor)	2.5 hours
3/16/2011	D.13 (iv)(b) D.13 (vi)(b)	Measures and Activities – O&M – Pump Stations Overflow Emergency Response Plan – Pump Stations	Bruce Baker (Supervising Plant Operator)	1.5 hours

3 Definitions

STRENGTHS AND KEY ACCOMPLISHMENTS:

Areas where the requirements of the SSMP and the goals of the organization have been met or exceeded.

NON-COMPLIANCE:

A process or outcome resulting in the SSMP not currently being in compliance with the WDR/SSMP requirements.

MAJOR NON-CONFORMANCE:

Moderate to high risk that a process or outcome of a process will result in WDR non-compliance or in not meeting accepted practices, prescribed rules or regulations, or specific standards.

MINOR NON-CONFORMANCE:

Low risk that a process or outcome of a process will result in WDR non-compliance or in not meeting accepted practices, prescribed rules or regulations, or specific standards.

OTHER FINDINGS AND OPPORTUNITIES:

Findings presenting opportunities to improve current plan, programs, processes or procedures.

4 Summary of Audit Results

The following is a summary of the audit results:

- The audit identified 6 strengths and implementation accomplishment identified in Section 5.
- The audit found 3 non-compliance deficiencies associated with Waste Discharge Requirements. These are explained in Section 6.1.
- The audit found 10 major non-conformance deficiencies which are not direct violations of the WDR requirements yet are considered key breakdowns in either programs or processes that may potentially result in future regulatory or compliance issues. These are explained in Section 6.2.
- The audit found 9 minor non-conformance deficiencies, many of which will be resolved with a comprehensive update of the SSMP document. These are explained in Section 6.3.
- The audit identified 7 other findings and opportunities which, if implemented, will improve the effectiveness of the SSMP. These are explained in Section 6.4.

Audit results are further summarized in the following table.

Finding Type	Number of Findings
Strengths and Implementation Accomplishments	23
Non-Compliance	4
Major Non-Conformance	12
Minor Non-Conformance	10
Other Findings and Opportunities	9

5 Strengths and Implementation Accomplishments

The following strengths and implementation accomplishments were identified during the audit.

Strengths and Implementation Accomplishments

WDR Provision	Strengths and Implementation Accomplishments
D.13 (iv)(a)	The City has Geographical Information System (GIS) based mapping for all sewer and drainage pipelines and structures. The GIS mapping includes important attribute information regarding manholes, gravity sewer pipes, drainage pipes, force mains. The GIS also includes pump stations, valves and vents, waterways, levees, drop inlets, and gutter drains. Having both sewer and drainage systems on one set of GIS maps is an important tool in containing SSOs which enter the drainage system.
D.13 (iv)(a) D.13 (iv)(b)	The City has developed mapping tools for tracking sewer cleaning efforts, sewer overflows, and areas of the City with accumulation of roots and grease.
D.13 (iv)(a) D.13 (iv)(b)	The City has installed SCADA in all pump stations and monitors pump stations 24-7. Pump station alarms are communicated through SCADA and response is dispatched immediately.
D.13 (iv)(b)	The City has either on-site secondary power or a selection of City-owned generators available to provide power to the City's pump stations. A flat bed truck with an auxillary diesel fuel tank is utilized to re-fuel generators.
D.13 (iv)(b)	The City re-organized to create crews dedicated to achieving the overall system-wide cleaning and inspection goals of the SSMP. This has enabled the City to maintain a focus on accomplishing objectives of the SSMP even in the midst of staffing reductions over the past two years.
D.13 (iv)(b)	Plant Services maintains a database of prioritized maintenance needs which is reviewed once per week by the Maintenance Superintendent. Higher priority needs are communicated to up the chain-of-command once per week to generate additional organizational focus.
D.13 (v)	One extra pump is constructed into each pump station and is kept active and operational at all times. This extra pump provides redundancy in the case of a pump failure.
D.13 (vi)(b)	The City has a process to quickly update the cell phone contact lists of all collection system field employees, supervisors, and management staff. This process keeps the contact phone numbers for emergency response up-to-date.
D.13 (vi)(b)	The City has installed GPS on all first responder vehicle to support efficient routing of first responder resources to sewer overflow calls. Dispatches utilize a system enabling them to map the location of customer complaints and to determine the location of an event such as an overflow and whether the Department of Utilities has responsibility for overflow response or another entity.

WDR Provision	Strengths and Implementation Accomplishments
D.13 (vi)(f)	Field Services has implemented a program to perform event-driven preventive maintenance activities during rain events called Rain Patrol. This program includes a Winter Prep Manual communicating the activities to be performed. The program is focused on addressing potential maintenance issues in known to be problem locations during rain events.
D.13 (vi)(f)	Plant Services has implemented a Rain Patrol activity that performs a route readiness inspection prior to rain events. Operators complete a questionnaire identifying issues might improve pump station reliability for the coming winter season.
D.13 (vi)(f)	The City maintains a Sump Book documenting every sewer and drainage pump station including maps of the station location, number of pumps, horsepower and pumping capacity of pumps, force main locations and discharge locations, and the amount of time the pumps can be out of service before the station overflows. This is an important tool for supporting emergency response to a pump station-related failure potentially resulting in an SSO event.
D.13 (iv)(e)	The City has machinists and a fabrication shop capable of manufacturing a majority of mechanical pump station components in the case of mechanical component wear or failure.
D.13 (vi)(a)	The City has developed a reliable sewer overflow reporting process and procedures along with training and quality control protocols resulting in consistent internal and external documentation. Reporting consistency has been recognized in the 2010 Statewide report.
D.13 (vi)(b)	The City has implemented a swing shift to improve SSO response in the evenings.
D.13 (vi)(d)	The City has implemented an internal training program for SSO emergency response training to appropriately train staff on an on-going basis. The training includes staff from both sewer and drainage maintenance, both of which support overflow response activities. Training materials include an SSO response training manual.
D.13 (vi)(f)	The City's geographical, system configuration, and protocols for coordination between Field Services and Plant Services results in a very high capture rate for sewage spilled from the system. Since 2007, the City has not released any sewage to surface waters.
D.13 (vi)(f)	The City has installed quick connects at pump stations to enable Plant Services crews to quickly bypass the flow from a pump station.

WDR Provision	Strengths and Implementation Accomplishments
D.10	No observed capacity-related SSOs.
D.13 (viii)(a)	City has assessed capacity of backbone (trunk sewer) network for entire separated system (49 basins) using a spreadsheet analysis which compares estimated peak wet weather flows for a design event to an estimate of full pipe capacity based on a uniform set of design criteria. Master Plans based on flow monitoring and hydraulic modeling have been prepared for some basins. City is also conducting a sewer rehabilitation program (including pre- and post-rehab flow monitoring) in one basin identified as having high I/I to identify most effective approaches to reduce infiltration.
D.13 (vii)(f)	The City has developed a fats, oils, and grease (FOG) door hanger for use by collection system crews in communicating best practices to customers when grease issues are identified in the sewer system.
D.13 (vii)(f)	The City has a media packet utilized by FOG control inspectors in communicating the overall FOG program to food service establishments. The media packet includes information about the overall program, best management practices for grease source control including a DVD and best practices poster.
D.13 (ix)	The City has developed an technical team focused on reviewing SSO data and mapping to develop enhance sewer cleaning strategies and to identify needed cleaning resources.
D.13 (xi)	The City participates in periodic meetings with regional partners including Sacramento Regional County Sanitation District, Sacramento Area Sewer District, and City of Folsom. These meetings provide an effective and timely forum for communicating and resolving issues between regional agencies as well as opportunities for working together on initiatives such as the Sacramento Regional FOG Program which facilitates the development of outreach and educational materials for businesses and residences in the Sacramento area.

6 Deficiencies and Corrective Actions

Several deficiencies were identified during the audit and are shown in the table on the following page with the planned corrective actions. The City intends to complete these corrective actions during CY 2012 and CY2013. Deficiencies were divided into four categories and coded with a letter. The deficiency categories are coded and defined as follows:

Deficiency Definitions

Deficiency Type	Deficiency Type	Deficiency Definition
A	Non-Compliance	A process or outcome resulting in the SSMP not currently being in compliance with the WDR/SSMP requirements.
B-major	Major Non-Conformance	Moderate to high risk that a statement in the SSMP is not fully conformed. Moderate to high risk to the success of the SSMP.
B-minor	Minor Non-Conformance	Low risk that a statement in the SSMP is not fully conformed. Low risk to the success of the SSMP.
C	Other Findings	Areas where there is an opportunity for greater efficiency and to streamline processes.

6.1 Non-Compliance Deficiencies and Corrective Actions

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (iv)(c)	<p>The SSMP does not include a plan and schedule for regular inspection of sewer pipes. Appendix E of the SSMP includes information regarding the plan for inspection of the system. It states that the system will be inspected in two phases beginning in 2009. The first phase is to inspect approximately 70 miles over the first two years of the program which amounts to approximately 36 miles in Year 1 and 34 miles in Year 2. Based on Appendix E the initial phase should have been completed by December 2010. The City is currently behind schedule in Phase 1 of the inspection program. The remaining 482 miles of the system is planned to be inspected in the following 5 years. This amounts to approximately 96 miles of inspection per year. This is near three-fold the amount of inspection currently being performed. It is not clear whether the City has identified adequate resources to achieve a three-fold increase in inspection production.</p>	<p>Update the SSMP to include a plan and schedule for achieving the initial CCTV inspection of the sewer mains. The plan and schedule should indicate the miles of inspection planned per year.</p>	A

Sacramento SSMP Audit
SSMP Audit Findings

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (iv)(c)	The rehabilitation and replacement plan included in the SSMP does not address proper management and protection of the infrastructure assets. It is understood the City is in the process of collecting CCTV data to project the long-term needs of the infrastructure, yet, the SSMP does not include a plan and schedule for performing condition assessment, prioritizing needs, identifying projects, and developing a long-term capital improvement program plan along with a schedule for developing funds for the long-term capital improvement plan.	Update the SSMP to include a plan and schedule for completing condition assessment, identifying capital improvement projects, and developing funds for the long-term capital improvement plan.	A
D.13 (iv)(c)	The SSMP does not include a plan and schedule for regular inspection of manholes.	Update the SSMP to include a process and plan for inspecting and evaluating manhole condition.	A
D.13 (iv)(e)	Although the City has performed criticality analyses for pump stations at the station level, an analysis has not been performed to identify specific critical replacement parts required.	Identify critical spare parts required at pump stations. Include a plan to either acquire spare parts in the replacement parts inventories or a timely means for fabricating or acquiring critical spare parts in the event of a failure.	A

6.2 Major Non-Conformance Deficiencies and Corrective Actions

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.10	Spreadsheet hydraulic analysis has identified potential capacity deficiencies in some basins based on design criteria used for the evaluation. It is not known whether or not those deficiencies could result in overflows during a design peak wet weather event.	Conduct further verification and analysis of these identified deficiencies to determine potential risk of overflows. This work could include verification of pipe slopes and depths to refine pipe capacity and/or acceptable surcharge, flow monitoring to verify flows and flow criteria, surcharge monitoring to verify flow levels during large storm events, and/or dynamic hydraulic modeling. Also, consider developing criteria defining allowable surcharge (or minimum freeboard) that provides for an acceptable risk of overflows.	B-major
D.13 (ii)(c) D.13 (vi)(a) D.13 (vi)(c)	The chain of communication for reporting SSOs including person responsible for reporting SSOs to the State and Regional Water Board and other agencies is not adequately documented in Chapter 2 or Chapter 6 of the SSMP or the Standard Operating Procedures for Emergency Response, especially with respect to who is responsible for notifications CalEMA and County Health and reporting to SWRCB and RWQCB in the case of an SSO released from a pump station site or due to a pump station failure.	Clarify the existence of geographical division of responsibilities for North and South emergency response during daytime operations for sewer collections. Incorporate chain of communication in the event of a pump station SSO. Clarify chain of communication during after-hours operation.	B-major
D.13 (iv)(b)	The SSMP states that part of the sewer cleaning effectiveness evaluation includes a review of the data collected in the maintenance crew feedback forms. The City does not appear to be using the maintenance feedback forms or collecting maintenance feedback information by specific asset.	Update the SSMP to reflect actual business process for evaluation of the Targeted Maintenance Program.	B-major

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (iv)(b)	<p>The City uses Azteca Cityworks to document scheduled and conducted activities. Although possible, the current process and system configuration available for documenting work order activities does not enable the City to accurately document the maintenance date or feedback for specific assets in an easily analyzable manner. It is difficult to analyze and use information stored in work orders pertaining to specific assets for management reporting, decision-making, or mapping.</p>	<p>Implement a data capture process, CMMS system configuration, and data QA/QC process resulting in more accurate maintenance history data capture.</p> <p>Incorporate data analysis, especially in the form of mapping of data, into the data QA/QC process.</p>	B-major
D.13 (iv)(b)	<p>Over 60 percent of sewer overflows reported in the SWRCB CIWQS database since 2007 were caused by grease accumulation. This is an indicator the current strategy to control grease accumulation is not working.</p>	<p>Analyze known grease overflows, areas with high levels of grease generation, and other available maintenance data to update Fats, Oils, and Grease blockage control strategies. Include enhanced source control strategies.</p>	B-major
D.13 (iv)(b)	<p>Over 33 percent of sewer overflows reported in the SWRCB CIWQS database since 2007 were caused by root blockages. This is an indicator the current strategy to control root accumulation is not working.</p>	<p>Analyze known root blockage overflows, areas with high levels of root blockages, and other available maintenance data to update control strategies.</p>	B-major
D.13 (iv)(c)	<p>The SSMP documents \$3.3 million of rehabilitation and replacement capital improvements over the next five years with an approved five-year capital improvement program funding for \$2.08 million for the separated system. The City is underfunding currently identified rehabilitation and replacement needs.</p>	<p>Identify funding and implement projects to address currently known rehabilitation and replacement needs or explain why currently known rehabilitation and replacement needs are not being addressed in the 5-year CIP program.</p>	B-major

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (vi)(b)	SSO response documents do not address overflows from pump stations and force mains. Overflows from these locations can create significant volumes of sewage in a short amount of time and benefit from having contingency plans in place in the event of a failure.	Develop pump station failure contingency plans indicating each pump station, location, whether it is equipped with alarms, on-site back-up pumps, and back-up power generators. For any stations that lack back-up pumps and generators, the plan should specify a protocol for prompt delivery of portable pumps or generators in the event of a station failure. In addition, the wet well capacity at each pump station should be provided along with an estimate of how much storage time the wet wells would provide under different flow conditions. It should identify where an SSO will occur if a station fails and where bypass intake and discharge should be set up. Finally, the plan should identify an operations or bypass approach in the case force main failure.	B-major
D.13 (vii)(e)	The City currently does not have adequate staffing assigned to perform FOG investigations, initial Food Service Establishment inspections, and follow-up inspections required to effectively enforce and impact FOG generation from FSEs.	Perform an analysis to estimate staffing required to accomplish FOG investigations, initial FSE inspections, and follow-up FSE inspections and enforcement. At a minimum, identify staffing required to perform inspections on FSEs located within areas having higher SSO rates due to grease accumulation (grease zones). Include a plan to either hire staff or hire contractors to perform FSE inspections and enforcement.	B-major

Sacramento SSMP Audit
 SSMP Audit Findings

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (vii)(f)	<p>Although the City has a Targeted Maintenance Program for sewer pipe susceptible to blockages, the original reason for a pipe being placed on the Targeted Maintenance schedule is not documented in a way that is easily analyzed. In addition, since maintenance feedback is not being collected and documented in the CMMS for specific pipes, it is difficult to analyze ongoing maintenance issues on specific pipes. Therefore, it is difficult to determine which pipes are on a Targeted Maintenance Program due to roots, grease, debris, etc.</p>	<p>Implement a process to document the type and severity of maintenance issues associated with specific pipe assets within work orders along with date the issue was identified.</p>	<p>B-major</p>

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (vii)(g)	<p>The City has not implemented an effective source control program for food service establishments (FSEs). Several City departments are involved in different aspects of the FOG control program involving FSEs including:</p> <ul style="list-style-type: none"> • City Development Department Building Division (grease removal device installation) • County Environmental Management Department, Environmental Health Division (Responsible for building permit approval) • DOU Field Services Division field crews, EMD Water Protection Division stormwater inspectors, and EMD Health Inspectors (Responsible for enforcement) <p>Once an FSE is in operation with a grease removal device that has been accepted by the City, several departments are involved in FSE inspections, yet none of these currently have a primary responsibility of performing periodic inspections of the maintenance and performance of the grease removal device.</p> <p>The City has initiated a program to target 50 FSEs for inspection based on known grease problems location in the system. This is a step in the right direction, yet is potentially too small of a set of FSEs to address all of the FSEs having grease removal challenges that are connected to the City system. There are approximately 2,000 FSEs in the City and 50 FSEs represent only 2.5 percent of the total.</p>	<p>Develop and implement a program to perform food service establishment (FSE) inspections for all FSEs flowing into areas with known grease accumulation issues in the collection system.</p> <p>Perform analysis of sewer cleaning findings and CCTV inspection data to define grease accumulation zones and develop a plan to perform inspections of FSEs flowing into these zones, including inspections of grease removal equipment and maintenance records.</p> <p>Clearly define roles and responsibilities of the different City departments and divisions responsible for accomplishing activities in the program plan.</p> <p>Develop a staffing plan to perform the planned inspections. Include the staffing required to perform follow-up inspections and enforcement, if necessary.</p>	B-major

Sacramento SSMP Audit
 SSMP Audit Findings

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (viii)(c),(d)	City's CIP does not address all (most?) identified capacity deficiencies.	Further evaluate deficiencies (see Corrective Action for WDR Provision D10) and identify projects to be included in CIP with schedules and budgets	B-major

6.3 Minor Non-Conformance Deficiencies and Corrective Actions

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (ii)	The maintenance supervisors responsible for implementing key maintenance programs included in the SSMP are not included on the SSMP Contact List.	Include contact names, phone numbers, and responsibilities of operations and maintenance supervisors responsible for implementing key SSMP initiatives or programs.	B-minor
D.13 (ii)	The division of responsibility between Field Services and Plant Services is not clear within the SSMP document. Field Services is responsible for management, operations, and maintenance of the separate sewer systems including sewer mains, manholes, and force mains beyond the fenceline of pump station facilities. Plant Services is responsible for management, operations, and maintenance of pump stations within the separate sewer system including underground piping within the fenceline of these pump station facilities.	Clarify responsibility of the sewer mains, manholes, and force mains versus the pump stations within the Chapter 2 – Organization section.	B-minor
D.13 (iv)(b)	The SSMP does not clearly state the magnitude of the sewer preventive maintenance program activities (i.e., approximate annual miles of preventive maintenance, routine maintenance, root control, CCTV inspection, etc.)	Update the SSMP to include the approximate magnitude of preventive maintenance activities being performed annually to maintain the sewer system.	B-minor
D.13 (iv)(b)	Maintenance feedback forms for documenting the level of debris found in pipes during maintenance activities are not currently stored in the CMMS. The CMMS is not currently configured to capture this information for individual assets when more than one asset is included on a work order.	Implement a process and information system to capture and store coded maintenance feedback for sewer cleaning. This should result in an electronic database of coded maintenance feedback history by specific asset.	B-minor
D.13 (iv)(b)	Chemical root control activities are not documented in the CMMS.	Document chemical root control activities in the CMMS including date, pipeline asset, and crew or contractor that performed the chemical treatment.	B-minor

Sacramento SSMP Audit
SSMP Audit Findings

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (iv)(c)	<p>The SSMP does not discuss the current magnitude of repair activities performed to address known sewer main deficiencies. Currently, sewer repairs are the primary means for addressing system deficiencies and should be discussed in more detail to show the City is addressing known system deficiencies.</p>	<p>Update the SSMP to include additional detail documenting the number of repairs performed in recent history and on an annual basis.</p>	B-minor
D.12	<p>Technical memorandum and hydraulic analysis report were prepared by qualified engineers but not stamped</p>	<p>Capacity assessment documents should be stamped by a registered engineer.</p>	B-minor
D.13 (viii)(a)	<p>Although most assumptions used for the hydraulic analysis appear to be reasonably conservative (e.g., flow factors, minimum pipe slope), there may be some areas where the assumptions are not conservative (areas with higher than typical I/I rates, sewers with less than minimum slope).</p>	<p>Conduct additional analyses (e.g., flow monitoring, surveying or as-built drawing research, sensitivity analyses) to confirm or refine analysis assumptions in areas where flatter slopes or higher I/I are suspected.</p>	B-minor
D.13 (viii)(b)	<p>Design criteria not officially adopted</p>	<p>Update Design and Procedures Manual to include design criteria used for the hydraulic analysis. In future, update design criteria as needed based on results of additional flow monitoring and modeling to refine flow factors.</p>	B-minor

Sacramento SSMP Audit
SSMP Audit Findings

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (xi)	<p>The regular communication with the public of the implementation and performance of the SSMP can be improved. Currently, a search on the City website for "SSMP" or "Sewer System Management Plan" does not result in a link to any information on the SSMP. Within the Utilities Department webpage under Sewer there is mention of a draft "Sanitary Sewer Management Plan" being available for review at 1395 35th Ave. On the main Utilities webpage, a "Sewer Management Plan" link provides access to a .pdf of the current final Sewer System Management Plan.</p>	<p>At a minimum, the City should update the City website to return a link related to the Sewer System Management Plan if a search is performed for "SSMP" or "Sewer System Management Plan". The City should have a webpage on the City's website containing a paragraph describing the SSMP and explaining where additional information is available. The City should correct the information on the Sewer webpage indicating that a draft SSMP is available for viewing at 1395 35th Ave. This should be updated to indicate the final version is available or should provide a link to the .pdf. The website should also indicate a process for the public to provide comment either through an e-mail address or contact person.</p>	B-minor

6.4 Other Findings and Opportunities

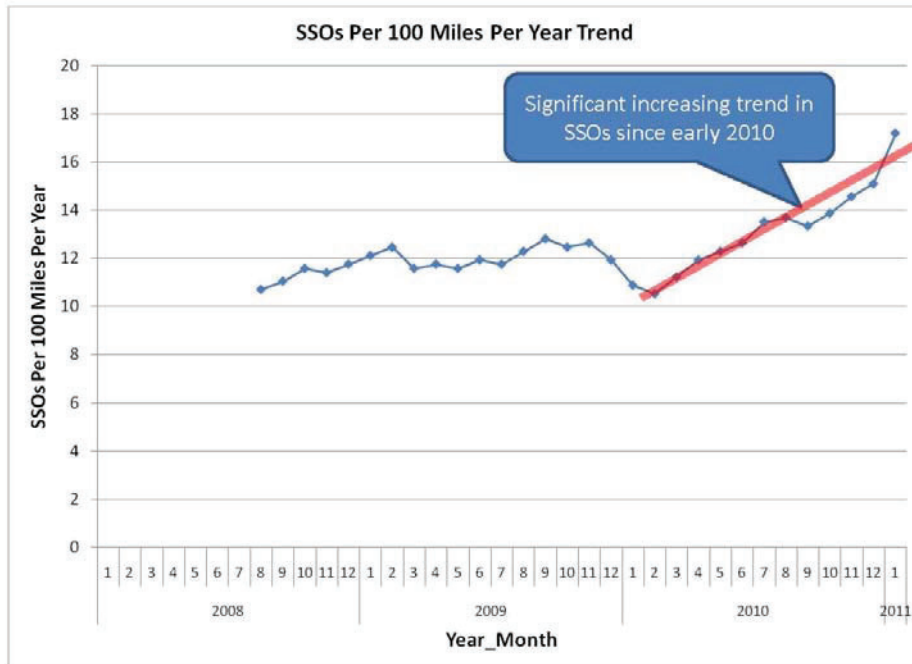
WDR Provision	Finding	Opportunity	Deficiency Type
D.13 (i)	Chapter 1-Goal includes additional definitions, linkages to other goals, and identification of parties responsible for meeting the goal. Most of this information belongs in other portions of the document.	<p>The definition of SSO is already included on the Abbreviations and Acronyms page.</p> <p>The linkage of the SSMP to larger DOU Strategy should be separated from the SSMP Goal by a new sub-section heading such as "Linkage to Department-Wide Strategy".</p> <p>The identification of the Departments responsible for meeting collection management goals belongs in the Chapter 2 - Organization.</p>	C
D.13 (ii)	Plant Services is responsible for responding to pump station SSOs and performing notifications and reporting associated with pump station overflows. The City does not currently have a Legally Responsible Official in CIWQS from Plant Services.	A representative from Plant Services should be included as an authorized representative for plans, programs, procedures, and reporting related to pump station facilities and submitted as a Legally Responsible Official in CIWQS.	C
D.13 (iv)(b)	The system for identifying sewer pipelines requiring more frequent cleaning and targeting maintenance at known problem areas is not effectively supported by maintenance feedback collected and stored in the CMMS from preventive and routine cleaning activities. The actual process currently utilized to identify and update target and frequent cleaning continues to rely on communication processes outside of the CMMS.	<p>Implement a process and information system to capture and store coded maintenance feedback for sewer cleaning. This should result in an electronic database of coded maintenance feedback history by specific asset.</p> <p>Build on this process with the implementation of a standardized approach to analyzing coded maintenance data to determine changes to maintenance frequency and maintenance method.</p>	C

Sacramento SSMP Audit
SSMP Audit Findings

WDR Provision	Finding	Opportunity	Deficiency Type
D.13 (iv)(b)	Chemical root control activities performed by contractors are not coordinated with on-going sewer preventive maintenance activities.	Implement a process to coordinate chemical root control activities with other sewer maintenance activities. At a minimum, the date and location of activities should be communicated with Field Services to give Field Services the opportunity to remove pipeline assets recently foamed from the hydroflushing schedule so as not to negate the effects of the chemical treatment.	C
D.13 (vii)(g)	The City Development Department Building Division and the Department of Utilities Field Services Division has not developed an effective process for communicating information with each other regarding grease removal equipment existence, acceptance, or attributes.	Develop a process to routinely transmit data regarding building permits involving new or modified grease removal equipment to Department of Utilities for use in updating the food service establishment inspection program.	C
D.13 (viii)(a)	For most basins, flow estimates are not confirmed by flow monitoring	Conduct flow monitoring in selected basins, particularly those where the preliminary hydraulic analysis indicates potential capacity deficiencies	C
D.13 (viii)(a)	Maps and tables in Basin Summary Reports are not clear enough to identify which pipes were included in the analyzed backbone system and specific segments associated with each node	Improve mapping in reports. Also consider including a schematic diagram of basin configuration showing which basins pump or discharge into other basins and where they are connected to the SRCSD interceptor system.	C
D.13 (viii)(a)	Little I/I source detection has been done to identify potential inflow sources that could result in high peak flows and potential SSOs	Consider I/I source detection program (e.g., smoke testing) in targeted basins with highest peak flows or areas suspected of having greater probability of direct inflow sources	C
D.13 (ix)	Current version of the SSMP includes an Update Schedule indicating that the City will be performing Quarterly Updates of the document. It is not clear whether any updates have been performed to the document since the initial version was generated.	Remove the Update Schedule page from the SSMP. Perform updates as appropriate and at least once every 5 years.	C

7 SSMP Effectiveness

Analysis of City SSOs in the State Water Resources Control Board CIWQS database indicates an increasing trend in SSOs since early 2010.



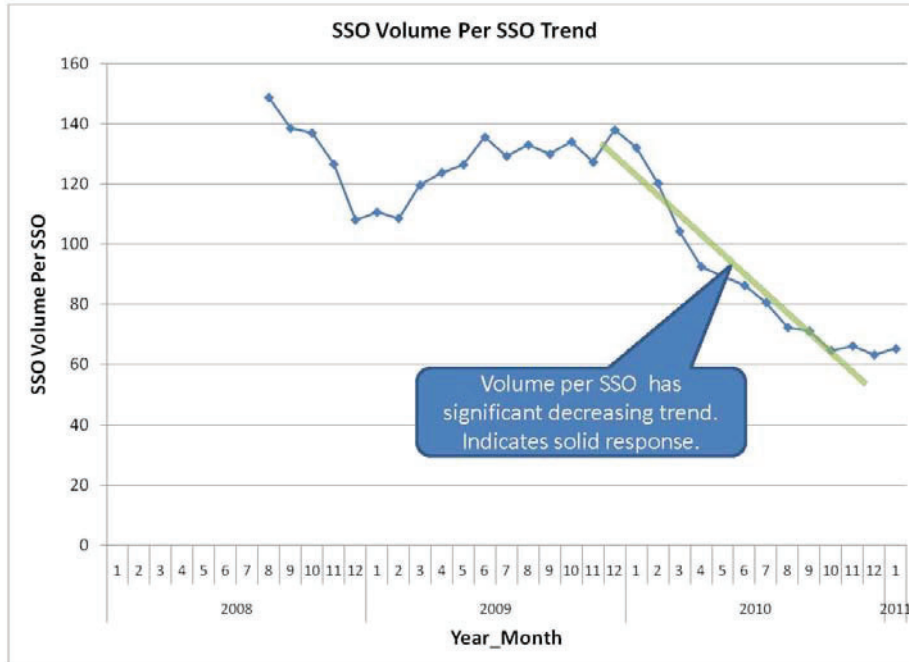
Although City SSOs are increasing in frequency, the total volume spilled per 100 miles of sewers is decreasing steadily.



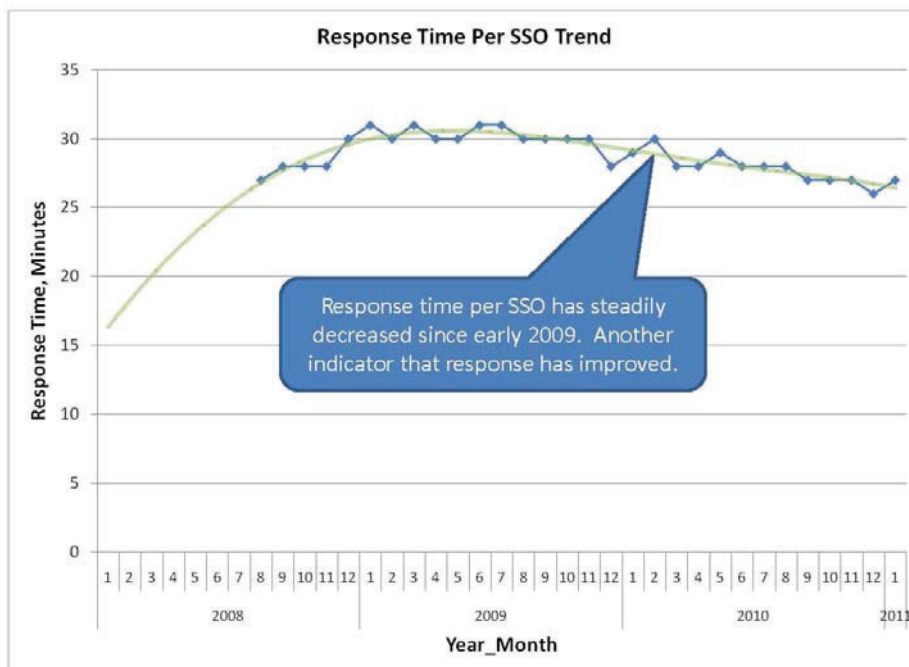
Sacramento SSMP Audit

SSMP Audit Findings

City SSO volume is decreasing due to a decreasing trend in the volume per SSO. This indicates the City is effectively responding to SSO events.

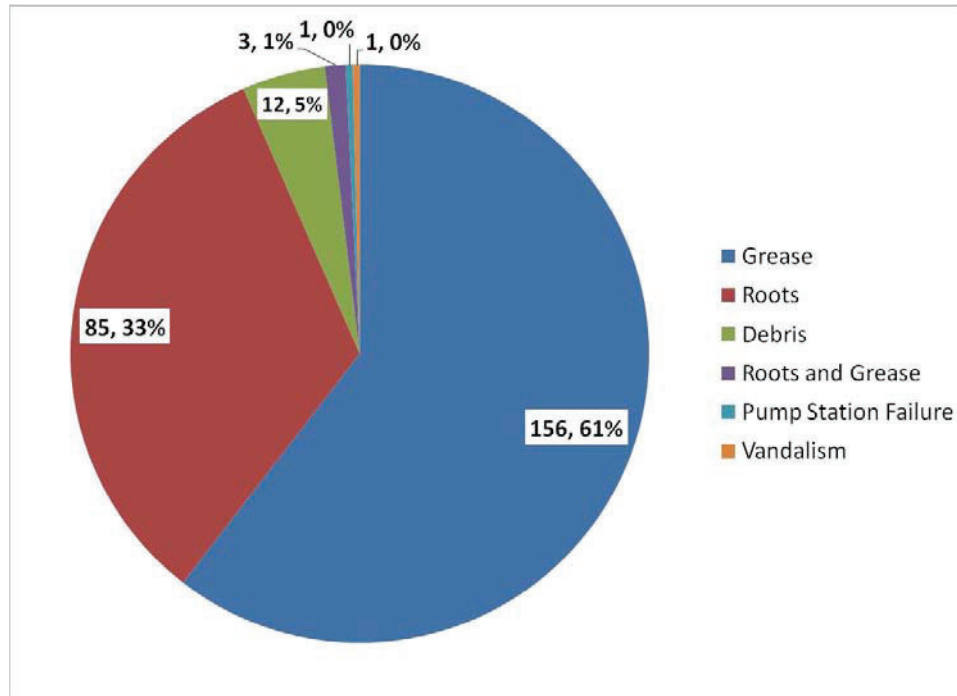


This is further illustrated by the steady decrease in the City's average response time to SSOs which is between 25 to 30 minutes on average.



An analysis of all City separated system sewer overflows in the SWRCB CIWQS database reported between September 5, 2007 and February 18, 2011 indicate majority of SSOs (61 percent) are caused due to grease accumulation. The next highest cause of SSOs is root blockages.

Breakdown of SSO Causes for SSOs Occurring Since September 5, 2007



The overall State average as of the May 2010 Statewide SSO Reduction Program Annual Compliance Update noted similar trend reversals in overflow volumes. However, only 25 percent of the statewide spill volume is recovered, while the City routinely recovers 100 percent of spill volume. In addition, 82 percent of all statewide sewage spills reached a surface water while the City did not experience any spill volume reaching surface waters during the same period.

With respect to collection system performance, Statewide grease and roots blockages were found to occur in similar ratio to the City's with approximately 78 percent of the SSOs in the State caused by grease and root blockages. However, City overflow rates overall were higher than the statewide averages. Approximately 56 percent of the City pipes are 6 inches in diameter. This size pipe has been found to result in higher overflow rates.

7.1 Overall Conclusion of SSMP Effectiveness Analysis

The City has made progress in improving emergency response and reducing the amount of sewer overflow spill volume per SSO. Due to staffing constraints and reductions as well as information system implementation challenges within the Field Services section, the City has not been able to fully implement key strategies which lead to improved SSO performance. SSMP performance can be improved through full implementation of key strategies already identified by the City as well as implementation of the compliance corrective actions listed in Section 6.

2013 City of Sacramento Sewer System Management Plan Audit

May 2011 thru June 2013

INTRODUCTION

In 2006 the State Water Resources Control Board issued Order No. 2006-0003, the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (WDR). The purpose of the WDR is to help reduce and prevent sanitary sewer overflows (SSOs). As part of the WDR, all public agencies that own or operate more than one mile of sanitary sewer systems were required to enroll. As part of enrollment, agencies are required to prepare a Sewer System Management Plan (SSMP) to document and assist in the management, operation, and maintenance of their sewer system. As part of the SSMP, agencies are required to conduct an internal program audit of the SSMP appropriate to the size of the system at least every two years. This report describes the City of Sacramento's (City) SSMP program audits and its associated tasks. This SSMP audit is being performed to:

- Evaluate the effectiveness of the current SSMP program
- Identify potential weaknesses of the current SSMP program
- Determine corrective actions to address deficiencies and/or improvement compliance with the SSMP requirements

WDR REQUIREMENTS FOR SSMP ELEMENT 10: 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.

CITY OF SACRAMENTO COMPLIANCE APPROACH – AS STATED IN THE SSMP

The City of Sacramento (City) will produce internal audits every two years to determine the effectiveness of the SSMP elements and programs. The program audit will include a review of relevant data and trends maintained as part of the SSMP Monitoring and Measurements Program to determine opportunities to improve compliance with the WDR requirements. A list of recommended corrective actions will be updated as part of the audit program. Recommended corrective actions will be used to develop program modifications. An overview of SSMP related work completed between audits will be included in the program audit.

The City will review the SSOs from the previous year and provide details in the audit on the causes of the SSOs and what actions were taken to prevent similar SSOs from occurring in the future. If any deficiencies are determined, the list of recommended corrective actions will be updated accordingly.

The program audit will include a final report reviewing the City's performance and identifying findings.

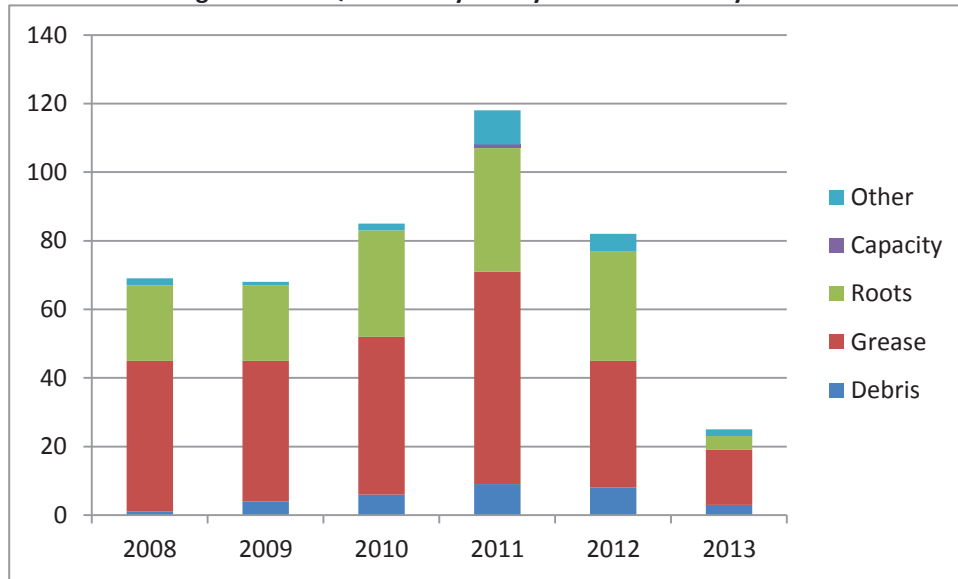
CITY OF SACRAMENTO SYSTEM DESCRIPTION AND PERFORMANCE

Wastewater collection in the City of Sacramento is provided by both the City and the County of Sacramento. The Sacramento Area Sewer District (SASD) maintains approximately 35 percent of the public collection system within the City limits, primarily in the northwest and southeast sections of the City. The City Department of Utilities (DOU) maintains the remaining portion of the public collection system, which includes a combined sewer system in the older central City area with a total service area of approximately 7,545 acres and approximately 305 miles of 4 to 120 inch diameter pipes. The separated sewer system is located primarily in the northeast, east and southwest sections of the City with a total service area of about 25,435 acres.

Table 1. CIWQS Summary of City SSO's 2008 – May 2013

Calendar Year	SSO Count	SSO Cause				
		Debris	Grease	Roots	Capacity	Other
2008	69	1	44	22	0	2
2009	68	4	41	22	0	1
2010	85	6	46	31	0	2
2011	118	9	62	36	1	10
2012	82	8	37	32	0	5
2013	25	3	16	4	0	2

Figure 2. CIWQS Summary of City SSO's 2008 – May 2013



AUDIT TASKS

To ensure that the audit is performed objectively, this task has been assigned to individuals that are fairly well removed from the day-to-day activities of the City’s collection system operations and have enough authority to carry out the necessary data gathering to perform the audit. In addition to filling out the attached SSMP Audit Form, the following tasks are associated with the SSMP audits:

1. Review operation and maintenance philosophy/strategy with field staff including preventative maintenance.
2. Conduct interviews of operational staff and staff that respond to SSOs to verify familiarity with the SSMP and SSO response procedures.
3. Review maintenance records to ensure that a match exists between operation and maintenance philosophy/strategy and everyday practice.
4. Review condition assessment/rehabilitation philosophy/strategy and discuss with the Asset Management Section. Ensure that there is a condition assessment/rehabilitation schedule.
5. Review the 2011 Audit to verify that previous audit findings have been addressed.
6. Review the past 5 years of SSO data and verify if additional corrective action is needed.
7. Record all findings during the audit process on the attached SSMP Audit Form. This form will be the final audit report for the City’s performance and recommended corrective actions. The report will be kept on file.

8. Conduct interviews with City staff to assist in the audit tasks listed above.

This internal audit is focused on the eleven categories as required by the State WDR. The evaluation of each element in each category is herewith standardized with a WDR compliance ranking, the measure of evidence obtained from City staff during the audit process. Compliance ranking is based on WDR audit guidelines and sufficiency. Recommendations have been provided when there is enough information to support it. The City’s compliance ranking pertains to its compliance with the State WDR and may not be in compliance with what is stated in the SSMP. In such cases, recommendations for an update to the SSMP language will be issued as a corrective action.

WDR Compliance Ranking:

- In Compliance – SSMP and/or City programs address the requirements of the WDR.
- Partial Compliance – SSMP and/or City programs make significant strides in achieving the WDR goals and requirements but need updates and revisions to be fully compliant.
- Not in Compliance - SSMP and City programs do not address requirements of the WDR.

CONCLUSION

The City adopted the SSMP in 2008-09 and conducted an audit in 2011. The past five (5) years has seen dramatic changes of the number of SSOs in the City’s separated sewer collection system. The downturn in the economy caused the City to reduce its budget which resulted in the elimination of some maintenance staff positions and a reduced capacity to purchase and replace equipment. This restricted financial capacity may have contributed to an increase in SSOs in 2010 and 2011. Over the past two (2) years the City has made significant strides to reduce SSOs and has restructured their organization to provide more efficient and effective management as well as implemented new programs to improve maintenance and operations of the collection system. These changes have resulted in a downward trend of SSOs since 2012.

This biennial SSMP audit consists of a WDR compliance ranking for all eleven (11) elements of the SSMP requirements. The rankings are based on available information referenced to the WDR requirements. This audit identifies the recommended corrective actions to bring the SSMP into full compliance with the WDRs. A list of the recommended corrective actions can be seen in the following section. The findings of this audit will be used to gauge the City’s performance in the next biennial SSMP audit.

RECOMMENED CORRECTIVE ACTIONS

As a summary of the attached SSMP Audit Form, the following recommended corrective actions are identified in Table 3 below.

Table 3. 2013 SSMP Recommended Corrective Actions

SSMP Section	Recommended Corrective Action	Previous Audit Recommendation
II	Update the SSMP to reflect the City’s reorganization as well as include updated contact information and responsibilities of operations and maintenance supervisors responsible for implementing key SSMP initiatives or programs.	Yes
II	Review and revise sewer overflow response procedure and notification flow charts in the SSMP that identifies the chain of communication from receipt of the complaint to applicable notifications. Ensure flow charts developed for the emergency overflow SOP also incorporates the changes within the organizational	No

	structure.	
III	Consider expansion of the City's legal authority to provide additional tools for FOG enforcement related issues.	No
III	Update references within the SSMP to include 2013 changes to the SRCSD ordinance.	No
IV.a	Provide further QA/QC of pipe attribute information, such as pipe material, that is being identified with CCTV inspection activities	No
IV.b	Update the SSMP to reflect actual business process for evaluation of the Targeted Maintenance Program.	Yes
IV.b	Implement a data capture process, CMMS system configuration, and data QA/QC process resulting in more accurate maintenance history data capture.	Yes
IV.b	Develop and implement a cleaning schedule for every pipe in the system so that findings are documented and tracked.	No
IV.b	Implement a process and information system to capture and store coded maintenance feedback for sewer cleaning when the new CMMS is implemented in 2014. This should result in an electronic database of coded maintenance feedback history by specific asset. Continue to build on this process with the implementation of a risk based approach for updating frequency and schedule dates.	Yes
IV.b	Fully implement the root control program. The root control program should focus on pipes with an elevated risk for a root related SSOs and should schedule root control treatment for elevated risk pipes.	No
IV.b	Coordinate pump station work orders such that they can be scheduled on a station by station basis. Pump stations are shut down for quarterly wet well cleaning, coordinate electrical and mechanical work orders and inspections to coincide with the pump station shut down.	No
IV.c	Update the SSMP to reference the CIP Programming Guide (Guide) and annually adopted CIP to provide information on the projected CIP project lists and anticipated funding levels. The Guide will include the CIP projects and their priority based on, but not limited to, condition assessment, work order history, criticality, and design life.	Yes
IV.c	Update the SSMP to reflect the current inspection plan and schedule.	Yes
IV.c	Consider the development of a manhole inspection program using NASSCO's MACP defect coding system.	No
IV.c	Develop and implement an automated pipe re-inspection	No

	process through CMMS.	
IV.c	Provide further QA/QC of Granite XP pip inspection data.	No
IV.d	Update the SSMP to include a description of the newly developed training program as well as a description of the SSO emergency overflow response training program.	No
IV.e	Identify critical spare parts required at pump stations. Include a plan to either acquire spare parts in the replacement parts inventories or a timely means for fabricating or acquiring critical spare parts in the event of a failure.	Yes
IV.e	Implement the condition assessment program for pump station mechanical parts and equipment. The condition assessment comments should be tracked in CMMS. Update the SSMP to reflect the condition assessment program implementation.	No
V	Update the Design and Procedures Manual.	No
V	Update the SSMP to reference the updated Standard Specifications and Design Procedures Manual when they are completed and post the updated documents online.	No
VI	Update SSMP to adequately incorporate descriptions of the most current SSO response and notification procedures.	No
VI	Develop pump station failure contingency standard procedures indicating each pump station's: location, wet well capacity, estimate of how much storage time the wet wells would provide under different flow conditions, alarm capacities, on-site back-up pumps, back-up power generators, and an operations or bypass approach in the case of a force main failure. For any stations that lack back-up pumps and generators, the plan should specify a protocol for prompt delivery of portable pumps or generators in the event of a station failure. The procedures should also identify where an SSO will occur if a station fails and where bypass intake and discharge should be set up.	Yes
VII	Update the SSMP to reflect the current FOG Source Control Program being implemented by the FROG group.	No
VII	Implement a process and information system to capture and store coded maintenance feedback for sewer cleaning when the new CMMS is implemented in 2014. See Section IV.b. Preventative Operations & Maintenance for more information.	No
VII	Consider expansion of the City's legal authority to provide additional tools for FOG enforcement related issues. Add language in the legal authority to require	No

	FSEs to install interceptors as well as language that clearly identify FOG BMPs and FSE inspection procedures.	
VII	Develop “FOG Program Rules and Regulations” and refer to these guidelines within the SSMP when discussing FOG related items.	No
VII	Develop a process to routinely transmit data regarding building permits involving new or modified grease removal equipment to Department of Utilities for use in updating the FSEs inspection inventory.	Yes
VII	Refer to the proper use of interceptor and grease removal terminology such that the language within the City Code and the SSMP are compatible.	No
VII	Develop formalized interceptor inspection procedures.	No
VII	Develop standardized interceptor sizing requirements in design codes and interceptor requirements for specific locations.	No
VII	Develop servicing/maintenance requirements of interceptors by FSEs.	No
VII	Develop an enforcement response guide.	No
VIII	Expand flow monitoring and implement an I/I Reduction Program in 2014.	No
VIII	Utilize the collected flow data to compare against the previously completed spreadsheet analysis capacity assessments and identify any projects that are needed to address capacity needs.	No
VIII	Update the Design and Procedures Manual to include design criteria used for hydraulic analysis.	No
IX	Remove the Update Schedule page from the SSMP.	No
IX	Update the SSMP to indicate the most current preventative maintenance and inspection programs.	No
X	Conduct the 2 year audit frequency and annually evaluate the effectiveness and compliance of the operations and maintenance programs.	No
XI	The City should update the City of Sacramento public website to return a link related to the Sewer System Management Plan if a search is performed for “SSMP” or “Sewer System Management Plan”. The City should remove the information on the Sewer webpage indicating that a draft SSMP is available for viewing at 1395 35th Ave and update the information to indicate the final version is available and provide a link to the pdf. The DOU website should also indicate a process for the public to provide comment that is directed to the appropriate City contact person.	Yes

ATTACHMENT 1

SSMP AUDIT FORM

Agency & System	City of Sacramento		
Name of Auditor	Alex Palmatier and Gabe Apgar, HDR Engineering; Sherill Huun and Roxanne Dilley, City of Sacramento, Department of Utilities		
Date of Audit	July 2013	Audit Period	1/1/2011 – 6/30/2013
System Overview			
Miles of gravity sewer mains	563 miles		
Miles of force main	7 miles		
Total Miles of all sewer lines	563 miles		
Number of pump stations	40 pump stations		
Population served	169,980		

I. GOALS

- Are the goals stated in the SSMP still appropriate and accurate?

Audit Elements

- City’s SSMP Section V Chapter 1

Audit Findings

- The goals stated in the SSMP are still appropriate and accurate. The purpose of the City’s SSMP is to properly manage, operate, and maintain all parts of the sanitary sewer system to reduce and prevent SSOs, as well as mitigate any SSOs that do occur. The City’s stated goal is also to comply with the requirements set forth in Section D-13 of the WDR (Order No. 2006-0003).

Recommended Corrective Actions and Current Status

- None.

WDR Compliance Ranking: In Compliance

II. ORGANIZATIONAL STRUCTURE

- Is the SSMP’s organization chart & phone list up-to-date?

Audit Elements

- City’s SSMP Organizational Charts
- SSO Response Plan
- SSO Reporting Chain of Communication Organizational Charts

Audit Findings

- The maintenance supervisors responsible for implementing key maintenance programs included in the SSMP are not included on the SSMP Contact List.
- The chain of communication for reporting SSOs including person responsible for reporting SSOs to the State and Regional Water Board and other agencies is not adequately documented in Chapter 2 or Chapter 6 of the SSMP. The Standard Operating Procedures (SOP) for Emergency Response is in the process of being updated, and includes more detailed chain of communications, spill response procedure flow charts and notification flow charts.

- The City has undergone reorganization during the 2012/2013 fiscal year, which has redefined the operations roles and responsibilities.

Recommended Corrective Actions and Current Status

- Update the SSMP to reflect the City’s reorganization as well as include updated contact information and responsibilities of operations and maintenance supervisors responsible for implementing key SSMP initiatives or programs. (Outstanding 2011 Audit Finding.)
- Review and revise sewer overflow response procedure and notification flow charts in the SSMP that identify the chain of communication from receipt of the complaint to applicable notifications. Ensure flow charts developed for the emergency overflow SOP also incorporate the changes within the organizational structure.

WDR Compliance Ranking: Partial Compliance – SSMP updates needed.

III. LEGAL AUTHORITY

- Does the SSMP contain up-to-date information about the City’s legal authority?
- Does the City have sufficient legal authority to control sewer use and maintenance?

Audit Elements

- City’s Municipal Code
- Sacramento Regional County Sewer District (SCRSD) Sewer Use Ordinance

Audit Findings

- The City’s SSMP contains references to the City’s legal authority through the use of the local municipal codes relating to the sanitary sewer system required by the WDR. The City is also granted legal authority by the SRCSD Sewer Use Ordinance for the operation of the City collection system. SRCSD ordinances have been consolidated and updated in February 2010. This ordinance is now known as the “Consolidated Ordinance,” and the most recent update to this ordinance occurred in February of 2013.
- The City changed its legal authority to address FOG related issues.

Recommended Corrective Actions and Current Status

- Consider expansion of the City’s legal authority to provide additional tools for FOG enforcement related issues.
- Update references within the SSMP to include 2013 changes to the SRCSD ordinance.

WDR Compliance Ranking: In Compliance

IV. OPERATIONS & MAINTENANCE PROGRAM

a. Collection System Maps & Information

- Does the SSMP contain up-to-date information about the City’s maps?
- Are the City’s collection system maps complete, up-to-date, and sufficiently detailed?

Audit Elements

- City’s Facilities Operations Information System (FIOS)
- City’s Geographic Information System (GIS)
- Staff interviews of collection system O&M staff

Audit Findings

- The City has Geographic Information System (GIS) based mapping for all sewer and drainage pipelines and structures. The GIS mapping includes important attribute information regarding manholes, gravity sewer pipes, drainage pipes, and force mains. The GIS also includes pump stations, valves and vents, waterways,

levees, drop inlets, and gutter drains. Having both sewer and drainage systems on one set of GIS maps is an important tool in containing SSOs that may enter the drainage system. Pipe installation dates have been added to the pipe attribute data in the GIS layers. Also, known pipe material is validated through CCTV inspections, and when the pipe material is missing it is added to the GIS database.

- The City's FOIS web-based application serves as a repository for record drawings; improvement plans prepared by staff, outside consultants, and other agencies; specifications; operations and maintenance manuals; and facility photographs as they relate to the collection system.
- The City has developed mapping tools for tracking sewer cleaning efforts, sewer overflows, and areas of the City with accumulation of roots and grease.
- The City has installed SCADA in all pump stations and monitors pump stations 24-7. Pump station alarms are communicated through SCADA and response is dispatched immediately.
- Current system is regularly updated and meets the needs of the City.

Recommended Corrective Actions and Current Status

- The GIS mapping system meets the City's needs.
- Provide further QA/QC of pipe attribute information, such as pipe material, that is being identified with CCTV inspection activities.

WDR Compliance Ranking: In Compliance

b. Preventative Operations & Maintenance

- Does the SSMP contain up-to-date information about the City's preventative maintenance activities?
- Are the City's preventative maintenance activities sufficient and effective in reducing and preventing SSOs?

Audit Elements

- Work orders, service requests, SSO tracking, and planning in Computerized Maintenance Management System (CMMS)
- Staff interviews of collection system O&M staff

Audit Findings

- The City re-organized to create crews dedicated to achieving the overall system-wide cleaning and inspection goals of the SSMP. This has enabled the City to maintain a focus on accomplishing objectives of the SSMP. The City has also hired additional personnel to expand the number of crews and has established positions for a scheduler and an IT manager for improved maintenance organization and optimization.
- Currently the City has embarked on a system-wide cleaning program with the goal of cleaning the entire system in 5 years. All feedback and information obtained during cleaning will be used to develop a system-wide, risk based cleaning schedule.
- The SSMP states that part of the sewer cleaning effectiveness evaluation includes a review of the data collected in the maintenance crew feedback forms. These forms do not appear to be in use. Cleaning condition data is collected in the CMMS however the data is generalized across every pipe segment within the work order.
- At this time, the collection system CMMS is not used for scheduling most work and is only used as a tracking tool for completed work. The City is moving towards a risk-based cleaning schedule based on data currently being collected.
- Beginning in 2012, the City is continuously evaluating the causes of SSOs and rescheduling cleaning of all pipes based on the risk of an SSO and other relevant data.

- SSOs are tracked in a separate spreadsheet to report to the State and not tracked in CMMS as stated in the SSMP.
- The City has implemented a cleaning QA/QC program to ensure the pipes are being properly cleaned.
- The City has recently developed a Fats, Roots, Oils, and Grease (FROG) group to take a more focused and proactive approach to dealing with FOG and roots.
- The City is developing a root control program to reduce the number and impact of root related SSOs. The root control program will focus on pipes with an elevated risk for a root related SSOs. The root control program will schedule chemical root treatment for the elevated risk pipes.
- Pump stations are visited weekly, wet wells are cleaned quarterly, mechanical and electrical equipment is inspected annually. All maintenance and inspection activities are tracked in CMMS. If an immediate need is observed, a work order is generated through CMMS.
- Plant Services maintains a database of prioritized pump station maintenance needs, which is reviewed once per week by the Maintenance Supervisor. Feedback is entered into CMMS in the work order comments section.
- Pump station maintenance inspections are not coordinated to occur during the quarterly cleaning and shut-down event.

Recommended Corrective Actions and Current Status

- Update the SSMP to reflect actual business process for implementation and evaluation of the Targeted Maintenance Program. (Outstanding 2011 Audit Action.)
- Implement a data capture process, CMMS system configuration, and data QA/QC process resulting in more accurate maintenance history data capture. (Outstanding 2011 Audit Action.)
- Develop and implement a cleaning schedule for every pipe in the system so that findings are documented and tracked.
- Implement a process and information system to capture and store coded maintenance feedback for sewer cleaning when the new CMMS is implemented in 2014. This should result in an electronic database of coded maintenance feedback history by specific asset. Continue to build on this process with the implementation of a risked based approach for updating frequency and schedule dates. (Outstanding 2011 Audit Action.)
- Fully implement the root control program. The root control program should focus on pipes with an elevated risk for a root related SSOs and should schedule root control treatment for elevated risk pipes.
- Coordinate pump station work orders such that they can be scheduled on a station-by-station basis. Pump stations are shut down for quarterly wet well cleaning. The electrical and mechanical work orders and inspections should be scheduled to coincide with the pump station wet well cleaning and shut down.

WDR Compliance Ranking: Partial Compliance – SSMP updates needed.

c. Rehabilitation & Replacement Plan

- Does the SSMP contain up-to-date information about the City’s inspections and condition assessment?
- Are the City’s scheduled inspections and condition assessment system effective in locating, identifying, and addressing deficiencies?

Audit Elements

- Interview Asset Management Staff

Audit Findings

- The City is projected to spend \$13.2 million of rehabilitation and replacement capital improvements over the next five years on the separated system.

- The City has embarked on an inspection program for pipes with small diameter (less than 16-inches) and greater than 10 years old. The CCTV inspection program has been expanded to include all 525 (285 miles completed to date) miles of the small diameter separated system pipes. The goal is to inspect the entire system by June 2017.
- The City has developed a pipe decision workflow process for repair, rehabilitation, and replacement.
- Each pipe segment inspected will be scheduled for re-inspection based on a pipe assessment decision matrix.
- The City tracks all pipe repair, rehabilitation, and replacement work in CMMS and GIS.
- Manhole repair is issued on an as-needed basis. Field staff issue a work order through CMMS if manhole damage is observed during cleaning and/or CCTV inspection activities.
- The CIP Programming Guide (Guide) identifies the processes, methodologies, and funding sources used in developing the Wastewater Capital Improvement Program (CIP). Such methodologies are used to rank and prioritize the repair, rehabilitation, and replacement of infrastructure assets.

Recommended Corrective Actions and Current Status

- Update the SSMP to reference the Guide and annually adopted CIP to provide information on the projected CIP project lists and anticipated funding levels. The Guide will include the CIP projects and their priority based on, but not limited to, condition assessment, work order history, criticality, and design life. (Outstanding 2011 Audit Action.)
- Update the SSMP to reflect the current inspection plan and schedule. (Outstanding 2011 Audit Action.)
- Consider the development of a manhole inspection program using NASSCO’s MACP defect coding system.
- Develop and implement an automated pipe re-inspection process through CMMS.
- Provide further QA/QC of Granite XP pipe inspection data

WDR Compliance Ranking: Partial Compliance – SSMP updates needed.

d. Staff Training

- Does the SSMP contain up-to-date information about the City’s training expectations and programs?
- Do supervisors believe that their staff is sufficiently trained?
- Are staff satisfied with the training opportunities and support offered?

Audit Elements

- Employee training records
- Interview collection system staff

Audit Findings

- Training to implement sanitary sewer system operation and maintenance procedures identified in the SSMP was evaluated, and an additional training program was developed. Implementation of this was conducted in June 2013, and refresher training will be conducted annually thereafter.
- The City has developed and implemented an internal training program for SSO emergency response training. See Section VI for more information.

Recommended Corrective Actions and Current Status

- Update the SSMP to include a description of the newly developed training program as well as a description of the SSO emergency overflow response training program.

WDR Compliance Ranking: Partial Compliance – SSMP updates needed to reflect current training practices.

e. Major Equipment & Critical Spare Parts Inventories

- Does the SSMP contain up-to-date information about equipment and replacement inventories?
- Are contingency equipment and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance?

Audit Elements

- Equipment and parts inventory
- Interview collection system staff

Audit Findings

- The City has machinists and a fabrication shop capable of manufacturing a majority of mechanical pump station components in the case of mechanical component wear or failure.
- All replacement parts and inventory is tracked in CMMS. Purchase orders for replacement parts are made as they leave inventory via a CMMS work order.
- The City maintains multiple spare submersible pumps in the event that they are needed during a pump station failure.
- The City does not have a critical spare parts list; however, spare parts with long lead times are contained in the inventory.
- The City is developing a condition assessment plan for mechanical pump station components that is to be integrated with CMMS and will provide criticality for CIP prioritization.

Recommended Corrective Actions and Current Status

- Identify critical spare parts required at pump stations. Include a plan to either acquire spare parts in the replacement parts inventories or a timely means for fabricating or acquiring critical spare parts in the event of a failure. (Outstanding 2011 Audit Action.)
- Implement the condition assessment program for pump station mechanical parts and equipment. The condition assessment comments should be tracked in CMMS. Update the SSMP to reflect the condition assessment program implementation.

WDR Compliance Ranking: Partial Compliance – SSMP updates needed, critical parts list needed.

V. DESIGN AND PERFORMANCE

- Does the SSMP contain up-to-date information about the City’s design and construction standards?
- Are design and construction standards, as well as standards for inspection and testing of new and rehabilitated facilities sufficiently comprehensive and up-to-date?

Audit Elements

- The City Standard Specifications
- City of Sacramento Design and Procedure Manual
- Department of Utilities Engineering Division - Standard Special Provisions

Audit Findings

- A City-wide committee evaluates the Standard Specifications and meets on a semi-annual basis. The committee represents each City department and votes on procedural changes and issues an addendum upon approval. This is an on-going process, and the approved Specification addenda’s are posted online. The City-wide goal is to update the Specifications every 5 years.
- The Design and Procedures Manual is in the process of being updated. There is no formalized system for recommended updates outside of internal discussions amongst managerial staff within the Department of Utilities Engineering Division.
- Standard Special Provisions are updated on an as-needed basis. The Standard Special Provisions are

maintained on a restricted server to prevent unintended modifications to the documents. Review and recommendations of the Provisions are done on an on-going and as-needed basis.

Recommended Corrective Actions and Current Status

- Update the Design and Procedures Manual.
- Update the SSMP to reference the updated Standard Specifications and Design Procedures Manual when they are completed and post the updated documents online.

WDR Compliance Ranking: In Compliance

VI. OVERFLOW EMERGENCY RESPONSE PLAN

- Does the SSMP contain up-to-date version of the City's Overflow Emergency Response Plan?
- Considering the information in table 1 (SSO history), is the Overflow Emergency Response Plan effective in handling SSO's?

Audit Elements

- Compare CIWQS data with City records
- SSO Response Plan for the City collection system
- SSO Response Plan Quick Reference
- SSO Response Plan website on City Intranet?

Audit Findings

- The City has developed a reliable sewer overflow reporting process and procedures along with training and quality control protocols resulting in consistent internal and external documentation.
- The chain of communication for reporting SSOs including person responsible for reporting SSOs to the State and Regional Water Board and other agencies is not adequately documented in Chapter 2 or Chapter 6 of the SSMP. The Standard Operating Procedures (SOP) for Sewer Overflow/Outflow Emergency Response is in the process of being updated, and includes more detailed chain of communication, response procedure and notification flow charts.
- The City has a process to quickly update the cell phone contact lists of all collection system field employees, supervisors, and management staff. This process keeps the contact phone numbers for emergency response up-to-date.
- The City has installed GPS on all first responder vehicles to support efficient routing of first responder resources to sewer overflow calls. Dispatch utilizes a system enabling them to map the location of customer complaints, to determine the location of an event such as an overflow, and whether the department has responsibility for overflow response or another entity.
- The City has implemented a swing shift to improve SSO response in the evenings.
- The update to the overflow emergency response SOP is considering language for SSO response and notifications for overflows from pump stations. Overflows from pump station locations can create significant volumes of sewage in a short amount of time and benefit from having contingency plans in place in the event of a failure.
- The City has implemented a program to perform event-driven preventive maintenance activities during rain events called Rain Patrol. This program includes a Winter Prep Manual communicating the activities to be performed. The program is focused on addressing potential maintenance issues in known problem locations during rain events.

- The City maintains a Sump Book documenting every sewer and drainage pump station including maps of the station location, number of pumps, horsepower and pumping capacity of pumps, force main locations and discharge locations, and the amount of time the pumps can be out of service before the station overflows. This is an important tool for supporting emergency response to a pump station-related failure potentially resulting in an SSO event.
- The City's geographical system configuration and protocols for coordination between Field Services and Plant Services results in a very high capture rate for sewage spilled from the system. Since 2007, the City has not released any sewage to surface waters.
- The City has installed quick connects at pump stations to enable Plant Services crews to quickly bypass the flow from a pump station.

Recommended Corrective Actions and Current Status

- Update SSMP to adequately incorporate descriptions of the most current SSO response and notification procedures.
- Develop pump station failure contingency standard procedures indicating each pump station's: location, wet well capacity, estimate of how much storage time the wet wells would provide under different flow conditions, alarm capacities, on-site back-up pumps, back-up power generators, and an operations or bypass approach in the case of a force main failure. For any stations that lack back-up pumps and generators, the plan should specify a protocol for prompt delivery of portable pumps or generators in the event of a station failure. The procedures should also identify where an SSO will occur if a station fails and where bypass intake and discharge should be set up. (Outstanding 2011 Audit Action.)

WDR Compliance Ranking: Partial Compliance – SSMP updates needed, development of general pump station spill response standard operating procedure needed.

VII. FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM

- Does the SSMP contain up-to-date version of the City's FOG control program?
- Is the City's FOG control program sufficient to reducing FOG related SSO's?

Audit Elements

- FOG related work orders in Cityworks
- Interview FOG control program staff

Audit Findings

- The City has developed a fats, oils, and grease (FOG) door hanger to communicate best practices to customers and collection system crews are distributing the door hangers when grease issues are identified in the sewer system. First responder crews and/or maintenance crews distribute the door hangers to homes and apartment complex managers found to be the cause of a FOG-related SSO and in areas where maintenance crews find heavy grease in the system.
- The City developed a FOG microsite (www.sacramentofatfreedrains.com) with information and videos for residential customers to learn how to use best practices for FOG disposal and Food Service Establishments (FSEs) to learn about the ordinance, inspection program and best practices.
- A FOG bill stuffer was developed and inserted in the November 2012 utility bills encouraging residents to follow best practices for FOG disposal and directing them to the website.
- The City utilized electronic billboards and the Sacramento Bee to promote proper FOG disposal during the winter holidays. Additionally, the City and Sacramento Area Sewer District (SASD) partnered for three on-air interviews on local television stations to promote use of best FOG disposal practices for residential customers.
- The City developed a media packet that is utilized by FOG control inspectors in communicating the overall FOG program to food service establishments (FSEs). The media packet includes information about the

overall program, best management practices for grease source control, a list of local haulers, and a best practices poster.

- The City developed a multi-lingual video in the 2012/2013 fiscal year on the FOG program and best management practices for grease source control for the FOG control inspectors to use during FSE inspections. The video is available in English, Spanish, Hmong, and Chinese.
- Beginning in 2012, the City is continuously evaluating the causes of SSOs (e.g., grease) and rescheduling all pipes based on the risk of an SSO and other relevant data.
- Several City departments are involved in different aspects of the FOG control program involving FSEs including:
 - City Development Department Building Division (Responsible for building permit approval and grease removal device installation)
 - County Environmental Management Department, Environmental Health Division (Reviews health department permits prior to permit issuance)
 - City FOG control staff (Responsible for routine inspections and enforcement)
 - EMD Water Protection Division stormwater inspectors and EMD Health Inspectors (Refer issues to City FOG control staff and conduct enforcement)
- The City developed a Fats, Roots, Oils, and Grease (FROG) group to take a more focused and proactive approach to dealing with FOG and roots in 2012/2013 fiscal year.
 - The City purchased additional equipment to support the FOG control program (two trucks, inspection dip rods, tablets, and a sea snake with a laptop interface.)
- DOU allocated 2.5 full time staff to implement the FOG control inspection program in the 2012/2013 fiscal year. Annual inspection will be conducted starting in the 2013/2014 fiscal year and will be prioritized based on CCTV and maintenance data showing heavy grease.
 - This inspection staff has the primary responsibility of performing routine inspections and conducting enforcement to ensure food service establishments (FSEs) are in compliance with the City’s ordinance and to verify the maintenance and performance of the FSE’s grease removal device.
 - The inspectors started inspections at FSEs in January 2013 and have inspected approximately 248 FSEs as of June 5, 2013. The first inspection at an FSE focused on providing information about proper fats, oils and grease disposal and the City’s requirements and an inspection of their grease removal device.
 - The City Community Development Department Building Division and the DOU Field Services Division has not developed an effective process for communicating information with each other regarding grease removal equipment existence, acceptance, or attributes.

Recommended Corrective Actions and Current Status

- Update the SSMP to reflect the current FOG Source Control Program being implemented by the FROG group.
- Implement a process and information system to capture and store coded maintenance feedback for sewer cleaning when the new CMMS is implemented in 2014. See Section IV.b. Preventative Operations & Maintenance for more information. (Outstanding 2011 Audit Action.)
- Consider expansion of the City’s legal authority to provide additional tools for FOG enforcement related issues. Add language in the legal authority to require FSEs to install interceptors as well as language that clearly identify FOG BMPs and FSE inspection procedures.
- Develop “FOG Program Rules and Regulations” and refer to these guidelines within the SSMP when discussing FOG related items.

- Develop a process to routinely transmit data regarding building permits involving new or modified grease removal equipment to Department of Utilities for use in updating the FSEs inspection inventory. (Outstanding 2011 Audit Action.)
- Refer to the proper use of interceptor and grease removal terminology such that the language within the City Code and the SSMP are compatible.
- Develop formalized interceptor inspection procedures.
- Develop standardized interceptor sizing requirements in design codes and interceptor requirements for specific locations.
- Develop servicing/maintenance requirements of interceptors by FSEs.
- Develop an enforcement response guide.

WDR Compliance Ranking: In Compliance – Update the SSMP to reflect current FOG program.

VIII. SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

- Does the SSMP contain up-to-date information about the City’s capacity assessment?
- Has the City completed a capacity assessment and identified and addressed any hydraulic deficiencies in the system?

Audit Elements

- Master Interagency Agreement
- Collection System Master Plan
- Construction projects list
- SSO data

Audit Findings

- The City has been installing more flow monitoring equipment in areas where capacity issues are of concern. A contractor manages the installation and data management.
- The City has begun installing “smart” lids in manholes in 2012. This equipment is used to identify SSOs. A contractor manages the installation and data management of the equipment.
- The City is planning to expand its Inflow/Infiltration (I/I) Reduction Program. Funding for the I/I Reduction Program is included in the CIP.
- Master plans based on flow monitoring and hydraulic modeling have been prepared for some basins. City is also conducting a sewer rehabilitation program (including pre- and post-rehab flow monitoring) in one basin identified as having high I/I to identify most effective approaches to reduce infiltration.
- The City has assessed capacity of trunk sewer network for entire separated system (49 basins) using a spreadsheet analysis which compares estimated peak wet weather flows for a design event to an estimate of full pipe capacity based on a uniform set of design criteria. Mini-Master Plans were developed for all basins that include the spreadsheet analysis, and available flow data in some basins indicate that the assumptions within these mini-master plans are conservative. Additional analyses (e.g., flow monitoring, surveying or as-built drawing research) are conducted on an ongoing basis, and are compared with the spreadsheet analysis.
- As additional analysis, including flow data, has been evaluated, the design criteria for calculating the various flow rates will be modified.
- The City has experienced one (1) capacity related SSO in the past five (5) years and does not have hydraulic and capacity deficiencies.

Recommended Corrective Actions and Current Status

- Expand flow monitoring and implement an I/I Reduction Program.
- Utilize the collected flow data to compare against the previously completed spreadsheet analysis capacity assessments and identify any projects that are needed to address capacity needs.
- Update the Design and Procedures Manual to include design criteria used for hydraulic analysis.

WDR Compliance Ranking: Partial Compliance – update Design and Procedures Manual.

IX. MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

- Does the SSMP contain up-to-date information about the City’s data collection and organization?
- Is the City’s data collection and organization sufficient to evaluate the effectiveness of your SSMP?

Audit Elements

- PM/CM/EM Work History
- Job Plans and Schedules
- List of Assets and Spare Parts
- SSO History and Details
- Staff Training Records
- Condition Assessment Data
- Hydraulic Modeling Results/Capacity Assurance
- Flow Monitoring Data

Audit Findings

- The City has tracked progress and collects enough data to conduct an audit that evaluates its current collection system activity effectiveness and performance goals with respect to the State WDRs.
- The City conducts an audit at the minimum required frequency, biennial, but missed this frequency by two months on the 2013 audit due to City staffing issues.
- The SSMP has not been updated to reflect any changes in the City’s organization or maintenance and inspection programs since the SSMP was adopted in 2008-09.

Recommended Corrective Actions and Current Status

- Remove the Update Schedule page from the SSMP.
- Update the SSMP to indicate the most current preventative maintenance and inspection programs.

WDR Compliance Ranking: Partial Compliance – SSMP updates needed.

X. SSMP PROGRAM AUDITS

- Does the City conduct periodic internal audits appropriate to the size of the system and the number of SSOs?

Audit Findings

- The City formally audits the SSMP every 2 years and annually evaluates the effectiveness and compliance of the operations and maintenance programs with the State WDRs.

Recommended Corrective Actions and Current Status

- Conduct the 2-year-audit frequency and annually evaluate the effectiveness and compliance of the operations

and maintenance programs.

WDR Compliance Ranking: In Compliance

XI. COMMUNICATION PROGRAM

- Does the SSMP contain up-to-date information about the City’s public outreach activities?
- Does the SSMP contain up-to-date information about the City’s communications with satellite and tributary agencies?
- Has the City effectively communicated with the public and other agencies about the SSMP, and addressed feedback?

Audit Elements

- City website
- Evaluate frequency and effectiveness of WDR Coordination Meetings

Audit Findings

- The City participates in periodic meetings with regional partners including Sacramento Regional County Sanitation District, Sacramento Area Sewer District, and City of Folsom. These meetings provide an effective and timely forum for communicating and resolving issues between regional agencies as well as opportunities for working together on regional initiatives or sharing information on effective programs.
- The regular communication with the public of the implementation and performance of the SSMP can be improved. Currently, a search on the City of Sacramento’s public website for “SSMP” or “Sewer System Management Plan” does not result in a link to any information on the SSMP. Within the Department of Utilities (DOU) public webpage under Sewer, there is mention of a draft “Sanitary Sewer Management Plan” being available for review at 1395 35th Ave. On the main Utilities public webpage, a “Sewer Management Plan” link provides access to a pdf of the current final Sewer System Management Plan. The SSMP can also be accessed on the Utilities Department webpage within the Publications found under the Media Room link.

Recommended Corrective Actions and Current Status

- The City should update the City of Sacramento public website to return a link related to the Sewer System Management Plan if a search is performed for “SSMP” or “Sewer System Management Plan”. The City should remove the information on the Sewer webpage indicating that a draft SSMP is available for viewing at 1395 35th Ave and update the information to indicate the final version is available and provide a link to the pdf. The DOU website should also indicate a process for the public to provide comment that is directed to the appropriate City contact person.

WDR Compliance Ranking: Partial Compliance – City’s website updates needed.



Sewer System Management Plan

Internal Audit for FY 13/14 - FY 14/15

December 2015

Prepared By:



WATERWORKS
E N G I N E E R S

CITY OF SACRAMENTO DEPARTMENT OF UTILITIES

Sewer System Management Plan (SSMP)

Internal Audit for FY 13/14 – FY 14/15

December 2105

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SECTION 1 Audit Objectives

This report summarizes the findings of the required Sewer System Management Plan (SSMP) internal audit process (SSMP Audit) for the areas served by the City of Sacramento's separated sewer system. This SSMP Audit covers the Fiscal Year (FY) 13/14 and FY 14/15 evaluation period. The purpose of the SSMP is to provide a written framework for sanitary sewer collection system management, operation, and maintenance programs executed by the City of Sacramento (City) Department of Utilities (DOU) with the ultimate goal of minimizing sanitary sewer overflows (SSOs) and sustaining compliance with California State Water Resources Control Board (SWRCB) Order No. 2006-0003-DWQ, the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (SSS WDR). The SSMP Audit is based on a review of performance measures established by the City to evaluate the City's success in achieving compliance with various requirements of the SSS WDRs and implementing programs as stated in the SSMP. The SSMP Audit process allows the SSMP document to evolve over time through the identification of potential enhancements and the implementation of changes to address any deficiencies in the management, operation and maintenance of the sanitary sewer collection system.

The City DOU is committed to completing biennial SSMP Audits of the SSMP consistent with the procedure outlined in Section 5 Chapter 10 of the SSMP. The City had its first biennial SSMP Audit completed by RMC Water and Environment (May 2011), while HDR Inc. completed its second biennial SSMP Audit (June 2013). The City has contracted with Water Work Engineers to perform this, the City's third internal SSMP Audit. The key objective of this SSMP Audit is to review implementation of City's SSMP compliance and effectiveness. The following tasks were performed as part of this internal SSMP Audit:

1. Review records from previous internal audits, to confirm deficiencies have been addressed (see **Section 2.1**).
2. Analyze the City's historical SSO data and the performance measures listed in the City's SSMP (see **SECTION 3**).
3. Establish a standardized procedure for this and potentially future SSMP Audits (see **SECTION 4**).
4. Review the City's performance in achieving compliance with all of the various requirements of the SSS WDRs (see **SECTION 5**).
5. Analyze the City's preventative maintenance program and Rehabilitation and Replacement (R&R) plan as it relates to the operation and maintenance of the separated sewer system (see **Section 5.4**).
6. Review Emergency Response Plan (ERP) for SSOs and identify improvements if needed (see **Section 5.6**).
7. Record all findings during the audit process and retain the SSMP Audit on file (see **SECTION 6**).

SECTION 2 Agency Background / System Information

The City of Sacramento is situated at the confluence of the Sacramento River and the American River in the northern Central Valley area. As the cultural and economic core of the Sacramento metropolitan area, Sacramento has previously been named one of the most diverse cities in the nation. The City covers approximately 100 square miles, 98% of which is land with the other 2% being water. The terrain of Sacramento is relatively flat throughout.

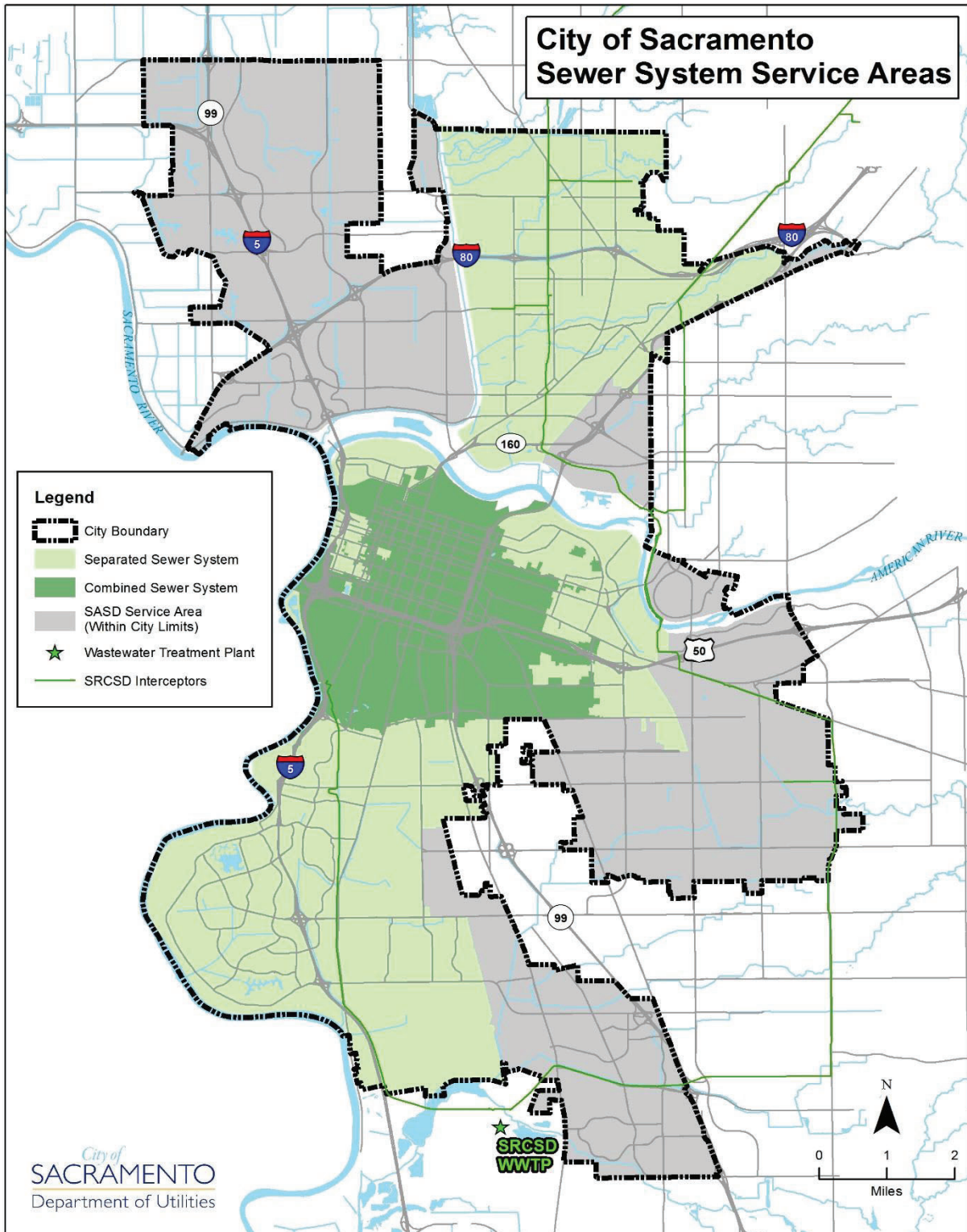
The collection of wastewater in the City is provided by both the City and the Sacramento Area Sewer District (SASD), as shown in **Figure 1**. The SASD maintains about 35 percent of the public collection system within City limits and the City DOU maintains the remaining 65 percent. The portion of the collection system managed by the City DOU is comprised of a Combined Sewer System (CSS), which resides in the older central portion of the City and encompasses a total service area of about 7,545 acres. The CSS is unique in California, and its collection and treatment system is covered under an individual National Pollutant Discharge Elimination System (NPDES) permit issued by the Central Valley Regional Water Quality Control Board (Region 5) (WDR No. R5-2015-0045, NPDES No. CA0079111). The separated sewer system, which resides primarily in the northeast, east, and southwest sections of the City, encompasses a service area of about 25,435 acres. **Table 1** provides additional information about the separated sewer system over the current SSMP Audit time period. This SSMP Audit covers compliance activities related to the separated sewer system only.

Table 1. Overview of System Indicators

Audit	FY 13/14 – 14/15
Miles of Mainline	545
Pump stations	40
Population served	180,124
Dedicated Sewer Maintenance Staff	74
Category 1 SSOs (FY1 / FY2)	1 / 0
Category 2 SSOs (FY1 / FY2)	1 / 0
Category 3 SSOs (FY1 / FY2)	27 / 18

Wastewater is conveyed from the City’s separated sewer system to the Sacramento Regional County Sanitation District’s (SRCSD) treatment plant known as the Sacramento Regional Wastewater Treatment Plant (SRWTP). The City’s wastewater is routed to the SRWTP via an interceptor system (also owned by SRCSD) consisting of large diameter pipes and pump stations. There are also portions of the SSS that about the CSS on the north and east, which connect to, and flow through the CSS to the SRCSD interceptor system.

Figure 1: City of Sacramento Service Areas



2.1 Review of Last SSMP Audit

The previous internal audit of the City's SSMP was conducted and concluded on June 30, 2013, and reviewed the activities and performance related to the SSMP from January 1, 2011 to June 30, 2013. This internal SSMP Audit was organized to correspond with the SSMP document section for ease of reference. **Table 2** summarizes the identified deficiencies, the recommended corrective actions outlined in the previous SSMP audit, and show the current status of the corrective actions per City tracking efforts.

Table 2. Summary of Findings from the Last SSMP Internal Audit

Element	Action Item	Status
2 – Organization	Update the SSMP to reflect the City’s reorganization as well as include updated contact information and responsibilities of operations and maintenance supervisors responsible for implementing key SSMP initiatives or programs.	Completed April 22 2014
	Review and revise sewer overflow response procedure and notification flow charts in the SSMP that identifies the chain of communication from receipt of the complaint to applicable notifications. Ensure flow charts developed for the emergency overflow SOP also incorporates the changes within the organizational structure.	Completed December 2014
3 – Legal Authority	Consider expansion of the City’s legal authority to provide additional tools for FOG enforcement related issues.	In Progress
	Update references within the SSMP to include 2013 changes to the SRCSD ordinance.	Completed April 22 2014
4 – O&M Program	Provide further QA/QC of pipe attribute information, such as pipe material, that is being identified with CCTV inspection activities.	Ongoing
	Update the SSMP to reflect actual business process for evaluation of the Targeted Maintenance Program.	Completed April 22 2014
	Implement a data capture process, CMMS system configuration, and data QA/QC process resulting in more accurate maintenance history data capture.	Completed
	Develop and implement a cleaning schedule for every pipe in the system so that findings are documented and tracked.	Completed
	Implement a process and information system to capture and store coded maintenance feedback for sewer cleaning when the new CMMS is implemented in 2014. This should result in an electronic database of coded maintenance feedback history by specific asset. Continue to build on this process with the implementation of a risked based approach for updating frequency and schedule dates.	Completed / Ongoing Updates
	Fully implement the root control program. The root control program should focus on pipes with an elevated risk for a root related SSOs and should schedule root control treatment for elevated risk pipes.	Ongoing
	Coordinate pump station work orders such that they can be scheduled on a station by station basis. Pump stations are shut down for quarterly wet well cleaning, coordinate electrical and mechanical work orders and inspections to coincide with the pump station shut down.	No Progress
	Update the SSMP to reference the CIP Programming Guide (Guide) and annually adopted CIP to provide information on the projected CIP project lists and anticipated funding levels. The Guide will include the CIP projects and their priority based on, but not limited to, condition assessment, work order history, criticality, and design life.	Completed April 22 2014
	Update the SSMP to reflect the current inspection plan and schedule.	Completed April 22 2014
Consider the development of a manhole inspection program using NASSCO’s MACP defect coding system.	Considered	

Table 2 (continued). Summary of Findings from the Last SSMP Internal Audit

Element	Action Item	Status
4 – O&M Program	Develop and implement an automated pipe re-inspection process through CMMS.	Completed
	Provide further QA/QC of Granite XP pipe inspection data.	Ongoing
	Update the SSMP to include a description of the newly developed training program as well as a description of the SSO emergency overflow response training program.	Completed April 22 2014
	Identify critical spare parts required at pump stations. Include a plan to either acquire spare parts in the replacement parts inventories or a timely means for fabricating or acquiring critical spare parts in the event of a failure.	No Progress
	Implement the condition assessment program for pump station mechanical parts and equipment. The condition assessment comments should be tracked in CMMS. Update the SSMP to reflect the condition assessment program implementation.	Ongoing
5 – Design and Performance Provisions	Update the Design and Procedures Manual.	Ongoing
	Update the SSMP to reference the updated Standard Specifications and Design Procedures Manual when they are completed and post the updated documents online.	In Progress
6 – OERP	Update SSMP to adequately incorporate descriptions of the most current SSO response and notification procedures.	Completed April 22 2014
	Develop pump station failure contingency standard procedures indicating each pump station's: location, wet well capacity, estimate of how much storage time the wet wells would provide under different flow conditions, alarm capacities, on-site back-up pumps, back-up power generators, and an operations or bypass approach in the case of a force main failure. For any stations that lack back-up pumps and generators, the plan should specify a protocol for prompt delivery of portable pumps or generators in the event of a station failure. The procedures should also identify where an SSO will occur if a station fails and where bypass intake and discharge should be set up.	In Progress
7 – FOG Control Program	Update the SSMP to reflect the current FOG Source Control Program being implemented by the FROG group.	Completed April 22 2014
	Implement a process and information system to capture and store coded maintenance feedback for sewer cleaning when the new CMMS is implemented in 2014. See Section IV.b. Preventative Operations & Maintenance for more information.	Completed
	Consider expansion of the City's legal authority to provide additional tools for FOG enforcement related issues. Add language in the legal authority to require FSEs to install interceptors as well as language that clearly identify FOG BMPs and FSE inspection procedures.	In Progress
	Develop "FOG Program Rules and Regulations" and refer to these guidelines within the SSMP when discussing FOG related items.	In Progress

Table 2 (continued). Summary of Findings from the Last SSMP Internal Audit

Element	Action Item	Status
7 – FOG Control Program	Develop a process to routinely transmit data regarding building permits involving new or modified grease removal equipment to Department of Utilities for use in updating the FSEs inspection inventory.	No Progress
	Refer to the proper use of interceptor and grease removal terminology such that the language within the City Code and the SSMP are compatible.	In Progress
	Develop formalized interceptor inspection procedures.	In Progress
	Develop standardized interceptor sizing requirements in design codes and interceptor requirements for specific locations.	In Progress
	Develop servicing/maintenance requirements of interceptors by FSEs.	In Progress
	Develop an enforcement response guide.	In Progress
8 – SECAP	Expand flow monitoring and implement an I/I Reduction Program in 2014.	Ongoing
	Utilize the collected flow data to compare against the previously completed spreadsheet analysis capacity assessments and identify any projects that are needed to address capacity needs.	Ongoing
	Update the Design and Procedures Manual to include design criteria used for hydraulic analysis.	In Progress
9 – MMM	Remove the Update Schedule page from the SSMP.	Completed April 22 2014
	Update the SSMP to indicate the most current preventative maintenance and inspection programs.	Completed April 22 2014
10 – SSMP Program Audits	Conduct the 2 year audit frequency and annually evaluate the effectiveness and compliance of the operations and maintenance programs.	Ongoing
11 – Communication Program	The City should update the City of Sacramento public website to return a link related to the Sewer System Management Plan if a search is performed for “SSMP” or “Sewer System Management Plan”. The City should remove the information on the Sewer webpage indicating that a draft SSMP is available for viewing at 1395 35th Ave and update the information to indicate the final version is available and provide a link to the pdf. The DOU website should also indicate a process for the public to provide comment that is directed to the appropriate City contact person.	Completed

2.2 Review of FY13/14 and FY14/15

Over the past two fiscal years it has been a priority of the City to reduce the number of SSOs as well as identify and address the prime SSO causes. A few of the key improvements made related to this priority are:

- Conducted an analysis to identify pipes at an elevated risk of root-related SSOs resulting in 250 miles of pipe being chemically treated in FY 13/14.
- Implemented and improved a FOG program through new practices and guiding documents leading to a decrease in FOG-related SSOs since the last audit.
- Completed flow monitoring in preparation for hydraulic modeling efforts as part of upcoming master planning efforts for various sewer basins identified for assessment.

SECTION 3 SSO Trends

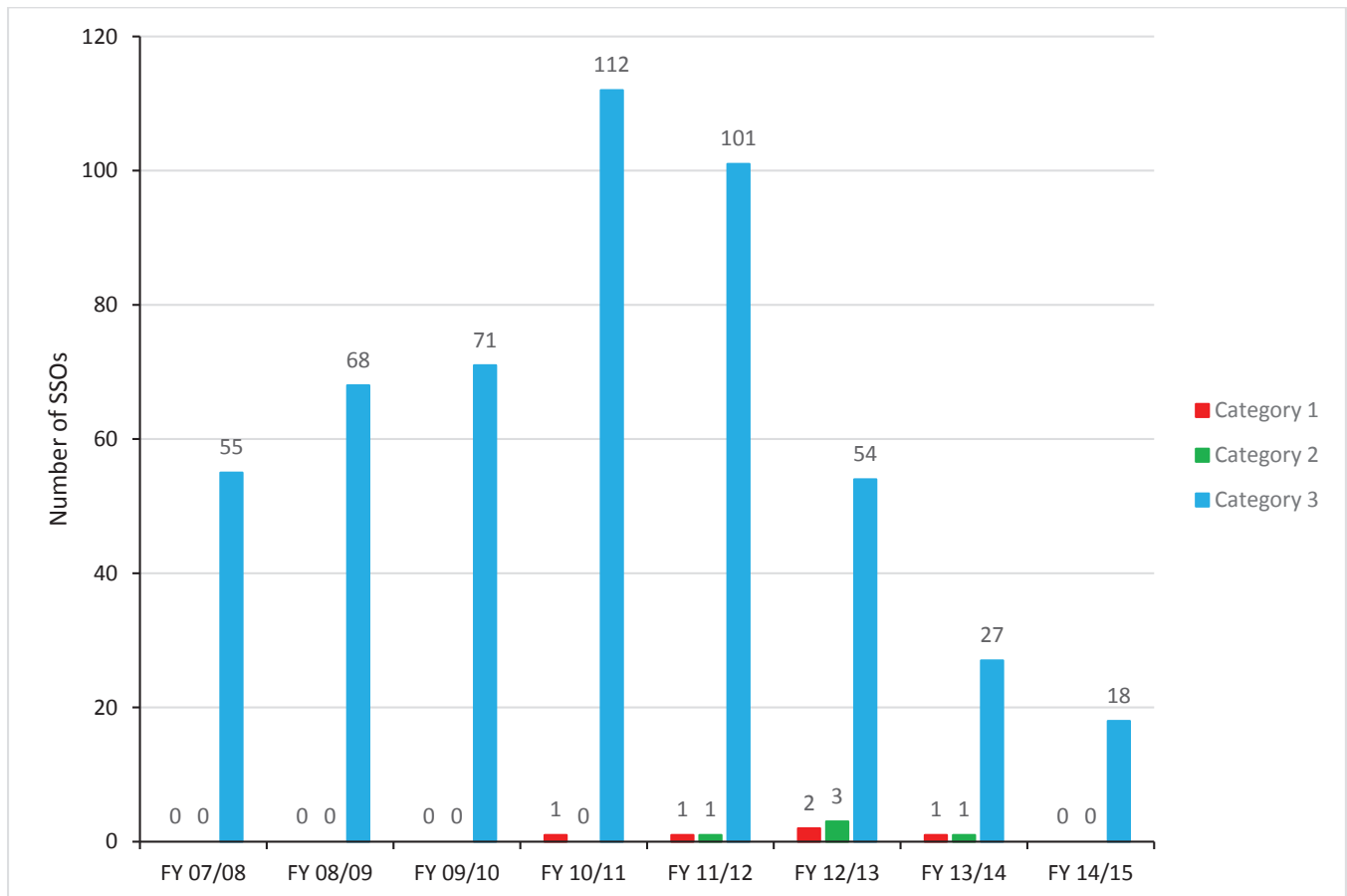
3.1 Historical SSO Data

A total of 47 spills occurred during fiscal years 2013/14 (27 SSOs) and 2014/15 (18 SSOs). Information regarding these SSOs is located in **Section 7.1** and includes information such as date, location, spill type, spill volume, spill volume recovered, spill recovery percentage of total spill volume, and spill cause.

The City strives to maintain quality data regarding historical SSOs so that trends in the occurrences and potential causes of SSOs can be investigated. The following discussion investigates the City’s historical SSO data to identify potential SSO trends so that future efforts can be targeted to reduce SSOs.

Figure 2: Number and Type of SSOs per Fiscal Year shows that since FY 11/12, the number of SSOs per year has decreased significantly every year. For FY 13/14 and FY 14/15, the City’s number of SSOs per 100 miles of collection system piping is lower than the average of all municipal agencies in Region 5 (to which the City belongs) per the SWRCB’s Annual Performance Reports. These reports and their related data can be found online at the following link: http://www.waterboards.ca.gov/about_us/performance_report_1415/. The particular data for this discussion can be found in **Table 3**.

Figure 2: Number and Type of SSOs per Fiscal Year



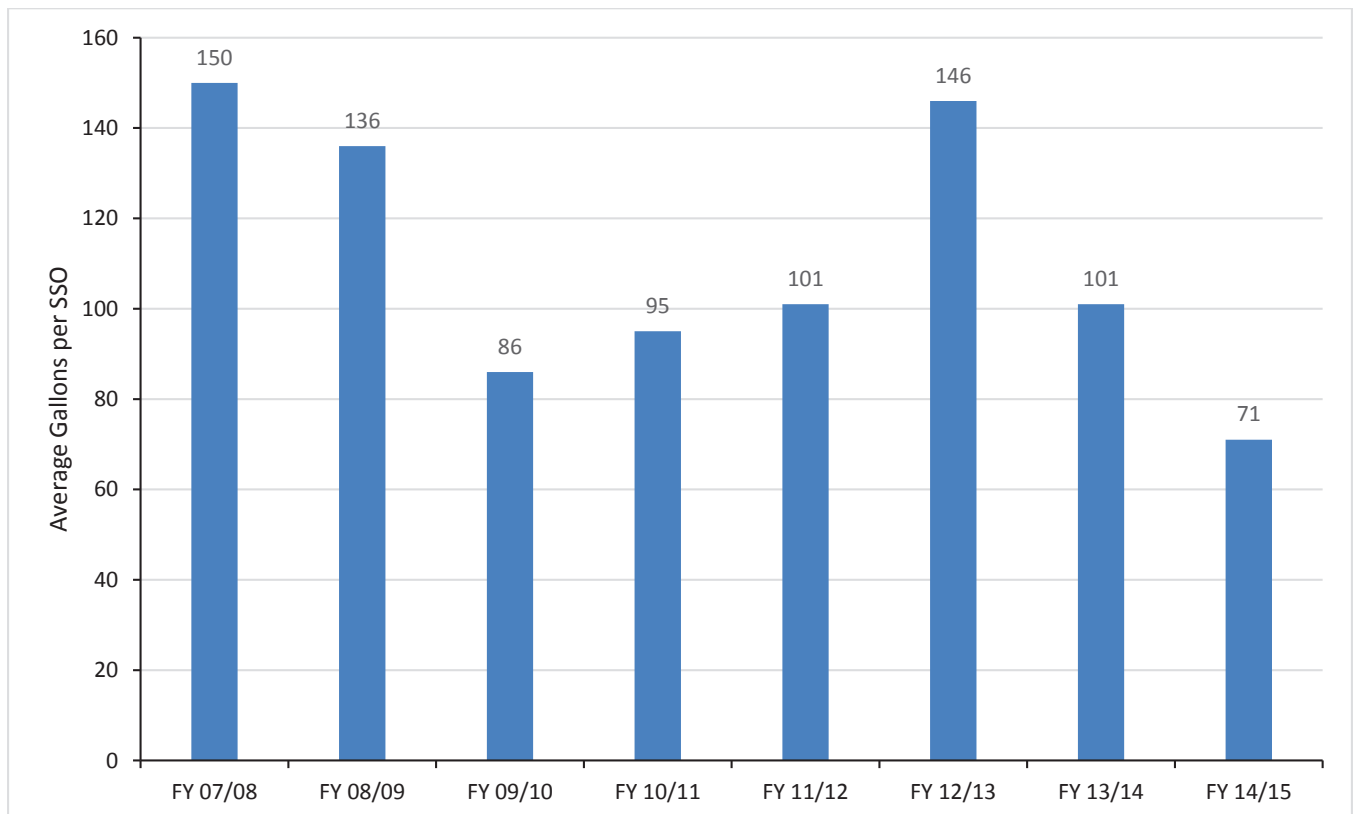
The SWRCB defined new three SSO categories as of September 13th, 2013. A Category 1 SSO is currently defined as a spill of any volume that reaches surface water. A Category 2 SSO is currently defined as a spill greater than or equal to 1,000 gallons that does not reach surface water. A Category 3 SSO is currently defined as a spill less than 1,000 gallons that does not reach surface water.

Table 3. Comparison of SSO Data

Fiscal Year	Average # of SSOs per 100 miles (number)		Average Spill Volume per 100 miles (gallons)		
	City	Region 5	City	Region 5	State
10/11	20.73	5.23	1,883	7,637	66,705
11/12	18.90	10.25	1,822	3,678	15,788
12/13	10.83	10.84	1,506	15,020	10,074
13/14	5.32	9.84	513	5,280	5,097
14/15	3.30	9.91	224	6,324	11,484

Figure 3: Average Spill Volume per SSO shows that since FY 12/13, the average spill volume per SSO has decreased every year. From FY 10/11 to FY 14/15, the City’s average spill volume per 100 miles of collection system piping is significantly lower than the average of other municipal agencies in the State and Region 5 per the SWRCB’s Annual Performance Reports. The summary of this data can be found in **Table 3**.

Figure 3: Average Spill Volume per SSO



The City’s California Integrated Water Quality System (CIWQS) SSO records were queried to identify the leading causes of SSOs. **Table 4** shows the leading causes of SSOs in the City by 1) the number of SSOs, 2) the spill volume of SSOs, and 3) the average spill volume per SSO.

Table 4. Leading Causes of SSOs in FY 13/14 and FY 14/15

By Number		By Volume		By Average Volume per SSO	
Cause	Number	Cause	Gallons	Cause	Gallons
FOG	20	Pipe Failure	1986	Pipe Failure	993
Roots	12	FOG	701	Debris & FOG	169
Debris	9	Roots	440	Pump Station Failure	150
Pipe Failure	2	Debris	557	Debris	62
Debris & FOG	2	Debris & FOG	337	Roots	37
Roots & FOG	1	Pump Station Failure	150	FOG	35
Pump Station Failure	1	Roots & FOG	28	Roots & FOG	28

Table 4 shows that Fats, Oils, and Grease (FOG) and root growth have been the leading causes of SSO occurrences, and pipe failures have been the major cause for SSOs with large spill volumes. The actions planned as a result of this SSMP Audit will target the leading causes to most effectively reduce the number and spill volume of SSOs.

3.2 Performance Measures

The City utilizes multiple performance measures to assess the performance and effectiveness of its SSMP in achieving proper management and operation of the separated sewer system, thereby helping to reduce and/or prevent SSOs. While the City may use other performance measures during its evaluation, the following measures are typically used:

- SSO Rate (SSOs per 100 miles of collection system piping per year)
- Number of SSOs for each cause (roots, FOG, debris, pipe failure, capacity, pump station failures, etc.)
- Median SSO volume (gallons)
- Percentage of SSOs greater than 100 gallons (%)
- Percentage of SSOs reported as Category 1 (%)
- Percentage of SSO volume recovered (%)
- Percentage of SSO volume reaching a surface water (%)

The City’s CIWQS SSO records were queried to analyze each performance measure from FY 07/08 to FY 14/15, and the data can be found in **Table 5**.

Table 5. Performance Measures

Performance Measure		FY 07/08 Value	FY 08/09 Value	FY 09/10 Value	FY 10/11 Value	FY 11/12 Value	FY 12/13 Value	FY 13/14 Value	FY 14/15 Value
SSO Rate, SSOs/100 miles		10.09	12.48	13.03	20.73	18.90	10.83	5.32	2.57
SSO Cause	FOG	37	41	39	62	49	33	13	8
	Roots	14	24	24	35	43	12	9	3
	Debris	2	3	5	7	9	6	4	5
	Debris & FOG	0	0	0	0	2	1	0	1
	Debris & Roots	0	0	0	1	0	1	0	0
	Roots & FOG	1	0	2	2	0	2	1	0
	Pipe Failure	0	0	0	1	0	1	2	0
	Pump Station Failure	0	0	1	2	0	0	0	1
	Vandalism	1	0	0	0	0	0	0	0
	Capacity	0	0	0	1	0	0	0	0
	Contractor	0	0	0	0	0	1	0	0
Unknown/Other	0	0	0	2	0	2	0	0	
Median SSO Volume, gallons		85	78	60	50	30	27	19	26
% of SSOs greater than 100 gallons, %		41.8	36.8	21.1	18.6	26.2	13.6	17.2	16.7
Category 1 % of Total SSOs, %		0.0	0.0	0.0	0.9	1.0	3.4	3.4	0.0
% of Spill Volume Recovered, %		100	100	100	100	96	84	83	94
% of Spill Volume Reaching Surface Water, %		0.0	0.0	0.0	4.7	1.0	10.0	1.3	0.0

Currently, the City’s SSO Rate has decreased significantly over the current audit time period. As was previously discussed in **Section 3.1**, the City’s SSO Rate is much smaller than the Region 5 average for FY 13/14 and continues to decrease as shown for FY 14/15. Historically, FOG and root growth have been the leading causes of SSO occurrences. While that is still the case for the current audit time period, a more focused approach on dealing with FOG issues and root growth has helped in reducing the number of SSOs related to these causes. The City’s median SSO volume has continually decreased since FY 07/08 up until FY 14/15, when a modest upswing in volume is seen. The percentage of SSOs greater than 100 gallons in volume has increased from FY 12/13, but still remains at an acceptable level when compared to the City’s performance in previous years. Also, the percentage of SSOs reported as Category 1 has decreased during the current audit time period, which goes hand in hand with the decrease in percentage of spill volume reaching surface waters. Lastly, the City has continued to maintain its efficiency in recovering a high percentage of total spill volume. Overall, the City has improved their performance on most of the performance measures found in **Table 5**.

SECTION 4 Audit Procedure

Per SSS WDR Section D.13.x, the objective of this SSMP Audit is to focus on evaluating the effectiveness of implementing the SSMP and the City's compliance with the SSMP requirements identified in the SSS WDR Order. This section describes the procedure used to accomplish this objective.

4.1 Review of SSMP Compliance

An assessment of the City DOU's SSMP against the requirements outlined in the SSS WDR was conducted as part of the audit. The subsections of **SECTION 5** below are organized by SSMP element. Each subsection contains a table which lists the requirements of section D.13 of the SSS WDR and indicates the level of compliance of the SSMP against that requirement. The compliance status of the City's SSMP is indicated with one of the following ratings: **Yes** - *in compliance*, **No** - *not in compliance*, or **N/A** – *not applicable with a written justification in the SSMP*. If there are deficiencies with regard to compliance, an explanation of the deficiency is given. Each deficiency will have associated SSMP enhancements which may include action items, SSMP adjustments, and/or timelines of planned completion.

4.2 Review of SSMP Effectiveness

Subsequent to the indication of the level of compliance of the SSMP in relation to the requirements of the SSS WDR, an evaluation of the effectiveness of the SSMP elements has been conducted to comply with the requirements for SSMP audits per subsection D.13.x of the SSS WDR. The discussion reviews if the plan outlined for each section is being followed, and how effective the plan is at reaching the desired objectives. Where appropriate, recommendations will be made based on the results of this SSMP Audit to identify tasks to improve the effectiveness of SSMP activities. Wherever possible, performance metrics will be used to measure the effectiveness of SSMP elements.

This section will not repeat the information and plans presented in each section of the SSMP. The focus of these sections is to evaluate the effectiveness of the stated plans for each SSMP element. The reader should reference the City's SSMP to obtain the information reviewed by this SSMP Audit.

A summary of the recommended modifications made throughout this SSMP Audit is included in **SECTION 6** – Audit Summary.

SECTION 5 Audit of SSMP Elements

This chapter evaluates all elements of the City’s SSMP. Each section of this chapter is associated with one of the eleven elements of the SSMP required by SSS WDR section D.13. Each element is evaluated for compliance and effectiveness using the procedure described above in **Sections 4.1** and **4.2**, respectively.

5.1 Goals

5.1.1 Compliance

Table 6. Compliance with SSS WDR D.13.i - Goals

SSMP Requirement	Compliance	Deficiencies
i Properly manage, operate, and maintain all portions of the District’s wastewater collection system.	Yes	-

5.1.2 Effectiveness of SSMP Elements and Recommended Modifications

Goals (SSMP Section V Chapter 1.2)

- Level of Effectiveness: The City currently has five general goals identified in the SSMP. The SSMP references the City DOU’s Strategic Plan as the source of the goals. Four actions that the Operations and Maintenance (O&M) Division implement align with the SSS WDR and the Strategic Plan. All of the goals that the City DOU recorded in the SSMP and Strategic Plan have been effective in guiding the activities of the City to properly manage, operate, and maintain all parts of the sanitary sewer system.
- Recommendations: No recommended modifications at this time.

5.2 Organization

5.2.1 Compliance

Table 7. Compliance with SSS WDR D.13.ii - Organization

SSMP Requirement	Compliance	Deficiencies
ii(a) Identify Legally Responsible Official (LRO)	Yes	-
ii(b) SSMP responsibility and organization chart	Yes	-
ii(c) Chain of communication for reporting SSOs	Yes	-

5.2.2 Effectiveness of SSMP Elements and Recommended Modifications

Identify Legally Responsible Official (LRO) (SSMP Section V Chapter 2.2)

- Level of Effectiveness: Both the O&M Division Manager (Mike Malone) and the O&M Division Superintendent – Wastewater Maintenance (Rob Jack) are designated Legally Responsible Officials (LROs) for the City’s separated sewer system. Those positions are authorized to certify all CIWQS electronic

reports. However, in the City SSMP's Section IV SSMP Contact List, the O&M Division Superintendent – Drainage Collection (William Roberts) is also described as an LRO. The current organization of LROs and Data Submitters has proven effective in appropriately reporting SSOs to meet the requirements of the Monitoring and Reporting Program.

- Recommendations:
 - Update the text in Chapter 2.2 of Section V of the City SSMP to state that the O&M Division Superintendent – Drainage Collection position is an LRO.

SSMP Responsibility Organization Chart (SSMP Section V Chapter 2.2)

- Level of Effectiveness: Section IV SSMP Contact List of the City SSMP is referenced in this chapter. Section IV contains a table that provides the title, name, phone number, e-mail address, and a short description of each individual's job responsibilities. The SSMP also includes an organization chart to identify lines of authority. The combination of the table and the chart in the SSMP effectively outlines individuals responsible for implementing the SSMP and their names and contact information.
- Recommendations:
 - Either add a table to the SSMP that lists all of the elements of the SSMP and the responsible party or amend the existing table in Section IV SSMP Contact List to include a column for "SSMP Element(s)" that are applicable to each position.

Chain of Communication Reporting Chart (SSMP Section V Chapter 2.2)

- Level of Effectiveness: The SSMP outlines the chain of communication for reporting all three SSO Categories from the receipt of a complaint to CIWQS reporting. The figures in the SSMP that show the chain of communication for SSO reporting delineate which position within the City's organizational structure is responsible for each action. The City's chain of communication for SSO reporting appears to be effective based on the completeness and thoroughness of the information documented on the CIWQS database.

The City currently does not consistently perform quality assurance / quality control (QA/QC) of SSO data between CIWQS and City records.

The City's internal SSO data is currently tracked through an Excel spreadsheet entitled "SSO TRACK REPORTING." However, the City does not track all of the information required to be entered into CIWQS. The City can benefit from ensuring consistency between the internal SSO records and the CIWQS database. The City should consider tracking the following pieces of data in the "SSO TRACK REPORTING" spreadsheet:

- Spill volume reaching land.
- Spill volume recovered.
- Spill volume reaching surface water.
- Final spill destination.

- SSO start time.
- Agency notification time.
- Operator arrival date and time.
- SSO end date and time.

- **Recommendations:**
 - Develop a process to periodically perform QA/QC to ensure consistency between CIWQS and City records pertaining to SSOs.
 - Consider tracking the pieces of SSO data listed above to ensure consistency between internal SSO records and the CIWQS database.

5.3 Legal Authority

5.3.1 Compliance

Table 8. Compliance with SSS WDR D.13.iii – Legal Authority

SSMP Requirement	Compliance	Deficiencies
iii(a) Prevent illicit discharges	Yes	-
iii(b) Properly designed and constructed sewers	Yes	-
iii(c) Ensure access to laterals owned/maintained by District	Yes	-
iii(d) Limit the discharge of FOG and other debris	Yes	-
iii(e) Enforce any violation of District ordinances	Yes	-

5.3.2 Effectiveness of SSMP Elements and Recommended Modifications

Prevent Illicit Discharges Authority (SSMP Section V Chapter 3.2)

- **Level of Effectiveness:** City Municipal Code 13.08.040 lists the various substances that are prohibited from being discharged to the sewer system. City Municipal Code 13.08.130 prohibits cross connections between sanitary sewer pipes and the storm drain system. City Municipal Code 13.08.160 requires property owners to repair any leak or defect found in a private sewer line and gives the City the power to perform the repair at the cost of the property owner if the property owner fails to do so.
- **Recommendations:** No recommended modifications at this time.

Design and Construction Standards (SSMP Section V Chapter 3.2)

- **Level of Effectiveness:** City Municipal Code 13.08.360 requires that the application requesting City sewer service contain plans and specifications for the proposed sewer facilities that conform to the City Standard Specifications. City Municipal Code 13.08.380 gives the City the right to inspect all work performed, and all work must be approved by the City before connection to the sewer system can be completed.
- **Recommendations:** No recommended modifications at this time.

Sewer Access Authority (SSMP Section V Chapter 3.2)

- Level of Effectiveness: City Municipal Code 13.08.240 prohibits the construction of any permanent structure on top of public water, sewer or drainage pipelines. City Municipal Code 13.08.290 provides the City with the legal authority to inspect private sewer or storm drain facilities to enforce any provision in the sewer service system chapter of the City’s Municipal Code.
- Recommendations: No recommended modifications at this time.

Limit FOG Discharges Authority (SSMP Section V Chapter 3.2)

- Level of Effectiveness: City Municipal Code 13.08.040 lists the various substances that are prohibited from being discharged to the sewer system. City Municipal Code 13.08.090 requires that all Food Service Establishments (FSEs) comply with best management practices (BMPs) that the City Council establishes from time to time by resolution. City Municipal Code 13.08.100 gives the City the legal authority to require businesses other than FSEs to install interceptors of a type and capacity approved by the City.
- Recommendations: No recommended modifications at this time.

Enforcement Authority (SSMP Section V Chapter 3.2)

- Level of Effectiveness: City Municipal Code 13.08.060 describes the City’s legal authority to enforce any violation(s) of its sewer ordinances. City Municipal Code 13.08.340 describes what is considered a violation of its sewer ordinances.

The City’s previous audit included a recommendation to “consider expansion of the City’s legal authority to provide additional tools for FOG enforcement related issues.” The City has drafted proposed edits to the pertinent code sections, and these proposed edits are currently being reviewed by the FOG Program Team. If these edits are accepted and adopted in the City’s Municipal Code, ensure the SSMP is updated to reflect the changes.

- Recommendations:
 - The FOG Program Team should determine if the proposed edits to pertinent code sections are to be accepted and adopted.
 - If the edits to the City’s Municipal Code sections are accepted and adopted by the City, ensure the SSMP is updated to reflect the changes.

5.4 Operation and Maintenance Program

5.4.1 Compliance

Table 9. Compliance with SSS WDR D.13.iv – O&M Program

SSMP Requirement	Compliance	Deficiencies
iv(a) Collection system maps	Yes	-
iv(b) Preventative O&M activities	Yes	-
iv(c) Rehabilitation and Replacement (R&R) plan	Yes	The City does have an R&R plan in place but additional improvements should be implemented (see below).
iv(d) Training	Yes	The City provides regular training but additional improvements to the training program should be implemented (see below).
iv(e) Equipment and critical replacement parts	No	List of critical parts for pump stations still needed.

5.4.2 Effectiveness of SSMP Elements and Recommended Modifications

Collection System Maps (SSMP Section V Chapter 4.2)

- Level of Effectiveness:** The City maintains an updated ArcGIS mapping system that contains the entire separated sewer collection system, the storm drainage system, and applicable sewer appurtenances (e.g. pump stations, valves, etc.). The maps are continually updated by the GIS staff through map corrections from field visits, data review, internal review, and new utility projects.

The electronic (PDF) sewer and drainage map book pages are available through the DOU intranet site. While Wastewater Maintenance crews from the O&M Division can access the intranet map books via the mobile laptop computers provided to them, they (and any other pertinent staff member) can print hard copy map book pages as seen fit.

The City’s Facilities Operations Information System (FOIS), which is maintained by the DOU Engineering and Water Resources Division, is a web-based application on the City’s intranet that serves as the repository for record drawings; improvement plans prepared by staff, outside consultants, and other agencies; specifications; O&M manuals; and facility photographs, etc., as they relate to the collection system. When record drawings or improvement plans are entered into the FOIS, the Engineering Technician determines whether or not a change or revision to the GIS map data is necessary. A map correction request is sent to a GIS staff member, who then makes changes to the GIS data. This process typically takes two to three weeks to complete.

Currently, field identified map corrections are recorded using a simple redline markup tool that is included in CityWorks Computerized Maintenance Management System (CMMS). The redline markup tool provides

a snapshot of the reline which is attached to the work order. If the map correction is complex, and cannot clearly be depicted using the redline tool, a scanned hand drawings may be attached to the work order to provide better clarity. DOU GIS staff updates the GIS data from the work orders that have map corrections. DOU is pilot testing alternative field data collection software that could simplify workflow for this activity.

- Recommendations:
 - Develop an SOP (Standard Operating Procedure) for the process of updating the collection system maps. Currently there is no written SOP for this process.

Preventative Operations & Maintenance Activities (SSMP Section V Chapter 4.3)

- Level of Effectiveness: The City engages in programs to complete routine preventative maintenance activities, which include jet cleaning, root control, FOG inspections, CCTV inspections, and pump station maintenance. Over this audit period, the City has modified these programs.
 - The City's CityWorks CMMS has been configured to schedule daily cleaning and CCTV work orders through unique algorithms within the CMMS. The CMMS also documents cleaning findings for each pipe as they are cleaned.
 - The Root Control Program consists of mechanical and chemical methods. Mechanical rodding is performed on pipes that have been identified as having a potential for root-related blockages, with their frequencies modified based on previous mechanical rodding results and historical knowledge. The City conducted an analysis that identified approximately 250 miles of pipe that had an elevated risk of root-related SSOs. These pipes were chemically treated in FY 13/14.
 - With regard to the use of chemicals in other applications, this SSMP Audit verified that the City no longer uses chemicals to remove FOG buildup in areas prone to accumulation.
 - Lastly, the City continues to perform monthly inspections of pump stations. However, the City's previous SSMP Audit included a recommendation to "...coordinate electrical and mechanical work orders and inspections to coincide with the pump station shut down." Pump stations are shut down for quarterly wet well cleaning, and coordinating the regular electrical and mechanical work orders and inspections with this cleaning will increase the City's efficiency as it relates to pump station preventative maintenance.

The City is currently in the process of developing new SOPs as they relate to the current and developing preventative maintenance activities. This is an important step to take to increase efficiency and consistency of the work product across the entire DOU.

The City's previous SSMP Audit included a recommendation to "provide further QA/QC of pipe attribute information, such as pipe material, that is being identified with CCTV inspection activities." The City currently does not consistently perform QA/QC of CCTV data collected as a part of the preventative maintenance program. Quality data is a foundational element of effective asset management programs.

Overall, the City's preventative maintenance activities have been effective in maintaining the condition of the separated sewer system, which correlates the reduction of in both volume and the frequency of SSOs. This is evidenced by the City's significant reduction in SSOs caused by FOG, roots, debris, and combinations of these factors.

- Recommendations:
 - Finalize the new SOPs that are currently being developed and ensure consistency between them and the SSMP.
 - Update the SSMP to reflect the changes in preventative maintenance activities as previously discussed.
 - Develop an SOP that describes how the CityWorks CMMS decides daily work orders, specifically as it pertains to the newly developed algorithms for daily cleaning and CCTV inspections. As an alternative, the City could describe these algorithms within their respective new SOPs (Scheduled Maintenance and CCTV Survey).
 - Develop a process to periodically perform QA/QC of CCTV data, such as pipe material, to ensure consistency and accuracy across all inspections.
 - Continue implementing the City's Root Control Program, with a focus on pipes with an elevated risk for root-related SSOs. Continue to schedule root control chemical treatment as determined through future analyses.
 - Consider coordinating electrical and mechanical work orders and inspections to coincide with the quarterly pump station shut down for wet well cleaning (recommendation carried over from 2013 audit).

Rehabilitation and Replacement Plan (SSMP Section V Chapter 4.4)

- Level of Effectiveness: The City regularly CCTV inspects pipelines using the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) coding standard. The O&M Division reviews the CCTV inspection reports and determines what type of work is required to address the defects found. This work may entail a re-inspection, a spot repair, or a capital improvement project (CIP).
 - If it is determined that a re-inspection is warranted, condition assessment scores of 1, 2, or 3 are analyzed and scheduled for re-inspection through a pipe assessment decision matrix.
 - With regard to spot repairs, PACP score 5s are immediately scheduled for repair. Score 4s are subject to the afore-mentioned pipe assessment decision matrix in which pipe size and number of defects are evaluated to determine a next inspection date, referral to engineering, and/or whether it makes sense to conduct a field spot repair (resulting in some score 4s being placed into the scheduled repair queue).
 - If it is determined that a CIP is warranted, a CIP work order is created and submitted to the Engineering Division for review. These potential CIPs are then analyzed and prioritized as described in the Capital Improvement Programming Guide (Programming Guide). The Programming Guide includes short-term (5-year) and long-term (30-year) plans for R&R actions.

The funding of these CIPs is assessed by the Integrated Planning and Asset Management (IPAM) Division. If funding is secured, the CIP is put out for bid and constructed. If funding is not secured, the CIP is left on the Approved Funding List for consideration in the next FY. The City's R&R plan appears effective in identifying and planning the projects to be completed in the short- and long-term to address high risk areas of the system.

After discussions with the three DOU disciplines involved with the R&R plan (O&M, Engineering, and IPAM), there were improvements identified that may prove beneficial to the City. The City could benefit from conducting periodic meetings between the aforementioned disciplines to ensure staff are aware of and understand the entire R&R plan and their role within it. These meetings could eliminate confusion and misunderstandings so that the City can more efficiently implement and potentially modify the R&R plan for the betterment of the separated sewer system.

After meeting with Engineering staff, it appears that the analysis and prioritization process for potential CIPs is based on a technical memorandum entitled "CIP Prioritization System." While this document has some similarities with the Programming Guide in regard to ranking and prioritizing CIPs, there are enough differences to warrant an update of the SSMP to reflect the actual methodology used in this process.

The City has developed a flowchart entitled "CIP Project Initiation Workflow" that illustrates how a potential CIP is initiated through its completion. There have been changes in the actual overall process that differ from the flowchart description, but the flowchart has not been updated to reflect these changes. The City can benefit from updating the CIP Project Initiation Workflow and incorporating it within the SSMP itself.

Talks with staff from the IPAM Division revealed that there are work orders that contain multiple condition assessment scores of 4 that are not submitted by the O&M Division specifically as a CIP work order (as noted above). The IPAM Division is planning on analyzing these particular work orders, but has not established a protocol to do this as of yet.

The City is planning on integrating their CCTV inspection software Granite XP with their CityWorks CMMS. Having CityWorks contain CCTV inspection data alongside other data such as cleaning findings and preventative maintenance history will help the City to be more efficient in utilizing the CMMS for processes such as modifying assets' planned preventative maintenance or deciding if an asset is worthy of a CIP.

The City's CIP Prioritization System technical memorandum does not appear to incorporate a capacity-based parameter in its evaluation of CIPs. The City should consider modifying the technical memorandum to include capacity-based scores/parameters in one of the three models (Defect, Vulnerability, and Criticality). Capacity analyses are intended to identify hydraulic deficiencies in the system that should have

short and/or long-term alternative solutions. These alternatives should be prioritized and scheduled for implementation, with the City's CIP Prioritization System suitable for this evaluation.

The City's last internal SSMP Audit recommended that the City "consider the development of a manhole inspection program using NASSCO's Manhole Assessment Certification Program (MACP) defect coding system." The City has stated that consideration was conducted, but that the "development of this type of inspection program is currently low on the priority list." The City should continue to monitor the priority of developing a manhole inspection program that uses NASSCO's MACP defect coding system. The City also stated that summary-level manhole inspections are conducted on a routine basis with CCTV and maintenance programs. However, the SSMP does not include discussion on this process.

The City's last internal SSMP Audit recommended that the City "provide further QA/QC of Granite XP pipe inspection data." This particular recommendation is not being carried over to the current audit because this issue is covered in another recommendation for SSMP requirement iv(b). The recommendation for SSMP requirement iv(b) is as follows: Develop a process to periodically perform QA/QC of CCTV data, such as pipe material, to ensure consistency and accuracy across all inspections.

The City does not have a program in place to perform condition assessment of force mains in the system. The development and implementation of such a program is recommended to ensure the City remains in compliance with this SSMP requirement. The City can begin this program by performing a paper assessment in which all force mains' age, pipe material, maintenance history, etc. is recorded. Further internal discussion is warranted to determine a path forward for procedures to allow for CCTV condition assessment of force mains. Potential options include constructing parallel force mains to allow for temporary shutdown during condition assessment or performing temporary bypass operations during condition assessment. Results shall be recorded in the City's current CMMS.

- Recommendations:
 - Conduct periodic meetings between the O&M, Engineering, and IPAM to ensure that everyone is aware of and understands the entire R&R plan and their role within it.
 - Update the SSMP to reflect the actual methodology used from the CIP Prioritization System technical memorandum to rank and prioritize potential CIPs.
 - Update the flowchart entitled "CIP Project Initiation Workflow" and reference this document within the SSMP as an overall view of a CIP's lifespan.
 - Establish a periodic basis to analyze work orders with multiple condition assessment scores of 4 to determine what type of work is required to address the defects.
 - Consider integrating Granite XP with CityWorks such that CCTV inspection data is accessible through the CMMS.
 - Consider modification of the CIP Prioritization System technical memorandum to incorporate capacity-based scores/parameters.

- Consider development of a manhole inspection program using NASSCO's MACP defect coding system (recommendation carried over from 2013 audit).
- Update the SSMP to reflect the City's current process for summary manhole inspections.
- Consider the development and implementation of a force main condition assessment program.

Training (SSMP Section V Chapter 4.5)

- Level of Effectiveness: The City requires its crews to receive annual maintenance training by an industry professional. This particular training program is focused around best practices for the cleaning, inspection, operation, and maintenance of the City's mainline sewer pipes.

Training on the operation of equipment used by the O&M Division is initially provided by the vendor or manufacturer of the equipment. Continual training afterwards is provided through on-the-job training and rotation among the different maintenance crews and equipment.

The City tracks training mostly through sign-in sheets. The supervisors turn in these sheets to the City Typist Clerk, who then files them away for record-keeping.

Within the last year, the City has begun using a training management software program called TargetSolutions. After talks with staff from the O&M Division, it was found that there is a push for tracking data electronically, including training records. TargetSolutions seems to be a suitable software for this effort.

- Recommendations:
 - Identify the required training for each employee and document that each employee has received their required training in an electronic manner, whether through TargetSolutions or a spreadsheet.
 - Develop a process where pertinent supervisors are notified when required training is coming due for an employee. Either a person needs to be assigned this task, or DOU should investigate if this functionality is programmed within TargetSolutions.
 - Develop a schedule for regular training on the specific equipment that the City owns. The scheduled equipment training should identify the frequency of training, the proposed instructors, appropriate referencing of SOPs and manuals, and the individuals required to take the training.
 - Utilize the newly developed SOPs as a training tool for the City staff. The SOPs should be developed so that they 1) provide a framework for the consistent delivery of required information, skills, and familiarity with equipment and 2) can be used to demonstrate competence of an individual in the particular subject.

Equipment and Critical Replacement Parts (SSMP Section V Chapter 4.6)

- Level of Effectiveness: The Logistics section of the O&M Division is responsible for managing the inventory of major sewer maintenance equipment and critical parts.

While the City maintains multiple spare submersible pumps in its inventory in the event of a pump station failure, the DOU is still in the process of identifying and compiling a list of critical parts for pump stations. The City aims to acquire and store these critical parts in inventory for future use.

The City is capable of quickly fabricating nearly all hard replacement parts for pumps and pump station equipment through their fabrication shops.

In addition, the City is currently making an effort to expand their Condition Assessment efforts to cover pump station mechanical parts and equipment. It is anticipated that CityWorks will track condition assessment comments. The City is planning on sending out an RFP (Request for Proposal) for consultant services to assist with the development and methodology for the Condition Assessment effort as it relates to pump stations.

- Recommendations:
 - Identify critical replacement parts for pump stations. Include a plan to either acquire spare parts in the replacement parts inventories or a timely means for fabricating or acquiring critical spare parts in the event of a failure (outstanding 2011 and 2013 Audit Actions).
 - Implement the Condition Assessment Program for pump stations once it has been finalized. Update the SSMP to reflect this implementation.

5.5 Design and Performance Provisions

5.5.1 Compliance

Table 10. Compliance with SSS WDR D.13.v – Design and Performance Provisions

SSMP Requirement	Compliance	Deficiencies
v(a) Sanitary sewer design and construction specifications	Yes	-
v(b) Procedures and standards for inspecting and testing new and R&R projects	Yes	-

5.5.2 Effectiveness of SSMP Elements and Recommended Modifications

Sanitary Sewer Design and Specifications (SSMP Section V Chapter 5.2)

- Level of Effectiveness: The City DOU’s Standard Specifications and the Design and Procedure Manual (DPM) are effective in ensuring that new or rehabilitated infrastructure is designed and constructed in an acceptable manner. Both of these documents are accessible to interested parties on the City DOU’s website.

The Standard Specifications are periodically updated through addenda as changes are developed, and these addenda are consolidated with the main document every five years. The DPM is currently undergoing major revisions, with the City is planning on completing the updated DPM in 2016.

- **Recommendations:**
 - Update the DPM, post the updated DPM on the City DOU’s website, and ensure the SSMP is updated to reflect this change (carried over from 2013 audit).
 - Continue to post any updated version(s) of the Standard Specifications on the City DOU’s website (carried over from 2013 audit).

Sanitary Sewer Inspection and Testing Provisions (SSMP Section V Chapter 5.3)

- **Level of Effectiveness:** The City DOU’s Standard Specifications include procedures for the testing of new/rehabilitated assets and has been effective in ensuring that recently constructed assets perform as expected.
- **Recommendations:** No recommended modifications at this time.

5.6 Overflow Emergency Response Plan

5.6.1 Compliance

Table 11. Compliance with SSS WDR D.13.vi - OERP

SSMP Requirement	Compliance	Deficiencies
vi(a) Proper notification procedures	Yes	-
vi(b) Program for appropriate SSO response	No	Complete development of pump station failure contingency standard procedures.
vi(c) Procedure for prompt notification to regulatory agencies	Yes	-
vi(d) Procedures for appropriate training of staff and contractors	Yes	-
vi(e) Procedures to address emergency operations (e.g., traffic, crowd control)	Yes	-
vi(f) Program to ensure containment of SSO to prevent discharge and minimize adverse impacts on the environment	Yes	-

5.6.2 Effectiveness of SSMP Elements and Recommended Modifications

Notification Procedures (SSMP Section V Chapter 6.3)

- **Level of Effectiveness:** The average SSO response time (*i.e.*, notification of SSO to operator arrival time) over the period of this SSMP Audit is 43 minutes. The average SSO response time since September of 2007 is 37 minutes. This indicates that the notification procedures employed by the City are effective in facilitating a rapid response from the City’s first responders (Specialists and On Call personnel).

The City's SOP for Sewer Overflow/Outflow Emergency Response clearly outlines the notification procedures for the various situations that may be encountered and lists the contact information of all potentially applicable agencies and City staff. These resources have proven effective for notifying appropriate agencies in response to an SSO.

- Recommendations: No recommended modifications at this time.

Response Program (SSMP Section V Chapter 6.4)

- Level of Effectiveness: The City's SOP for Sewer Overflow/Outflow Emergency Response effectively outlines the program that the City uses to appropriately respond to an SSO event. This SOP has been recently updated and encapsulates the best practices of the City in responding to an SSO. Section II of the SOP for Sewer Overflow/Outflow Emergency Response contains the procedures employed by the City. These procedures include an investigation and debriefing on the spill event after the spill has been appropriately responded to by City staff. This is effective in documenting the level of effectiveness of the SOP, the solutions to unique problems encountered during the response, and suggested improvements to the SOP while the information from the spill event is still fresh in the responders' minds. The SOP for Sewer Overflow/Outflow Emergency Response has been effective in responding to SSOs appropriately.

The City is currently in the process of developing emergency operating procedures for sewer pump station failures. The goal of this SOP is to ensure that pertinent information that is needed for an SSO emergency is available at each sewer pump station.

- Recommendations:
 - Complete the development of pump station failure contingency standard procedures indicating each pump station's location, wet well capacity, estimate of how much storage time the wet wells would provide under different flow conditions, alarm capacities, on-site back-up pumps, back-up power generators, and an operations or bypass approach in the case of a force main failure. For any stations that lack back-up pumps and generators, the procedures should specify a protocol for prompt delivery of portable pumps or generators in the event of a station failure. The procedures should also identify where an SSO will occur if a station fails and where bypass intake and discharge should be set up (outstanding 2011 and 2013 Audit Actions).

Regulatory Notification Procedure (SSMP Section V Chapter 6.5)

Level of Effectiveness: The O&M Division Manager, Wastewater Superintendent, and Drainage Superintendent are the legally responsible officials (LROs) for certification of SSO reports submitted to the CIWQS database. The current arrangement of LROs has met the needs of the City in effectively reporting to the CIWQS database in a timely manner.

The regulatory notification procedure has proven effective because to date, the City has not encountered a situation in which notification information for a required party was not available to City staff responding to an SSO.

- Recommendations: No recommended modifications at this time.

Staff and Contractors Training (SSMP Section V Chapter 6.6)

- Level of Effectiveness: Any new City employee will be trained on the contents of the City's SOP for Sewer Overflow/Outflow Emergency Response prior to being placed in a position that may need to respond to a spill event. Current employees receive annual refresher training on the SOP as well.

The SOP for Sewer Overflow/Outflow Emergency Response will be trained on for all contractor personnel that may have to respond to a spill event, report to the City, and/or mitigate a spill.

Overall, the implementation of the training program has been effective as indicated in recent SSO trends.

- Recommendations:
 - Update SSMP text to state that pertinent contractor personnel will also be trained on the SOP for Sewer Overflow/Outflow Emergency Response.

Emergency Response Coordination (SSMP Section V Chapter 6.7)

- Level of Effectiveness: The City's SOP for Sewer Overflow/Outflow Emergency Response addresses emergency operations such as traffic and crowd control. The measures outlined in the SOP have proven effective for the situations that the City has encountered to date.
- Recommendations: No recommended modifications at this time.

Spill Mitigation and Containment Procedure (SSMP Section V Chapter 6.8)

- Level of Effectiveness: The City's SOP for Sewer Overflow/Outflow Emergency Response includes procedures for activities such as estimating spill volumes, containing and mitigating spills, and an SSO Water Quality Monitoring Plan (Attachment 1 of the SOP). The SOP has been effective in defining the steps to be taken to contain and prevent an SSO from discharging to waters of the United States and to minimize any adverse impact on the environment. This is evidenced by the City's relatively low number of Category 1 SSOs and high rate of spill volume recovery since 2007.
- Recommendations: No recommended modifications at this time.

5.7 FOG Control Program

5.7.1 Compliance

Table 12. Compliance with SSS WDR D.13.vii – FOG Control Program

SSMP Requirement	Compliance	Deficiencies
vii(a) Public education plan	Yes	-
vii(b) FOG disposal plan	Yes	-
vii(c) Legal authority to prohibit SSOs and blockages caused by FOG discharges	Yes	-
vii(d) Grease removal devices, design standards, BMPs, maintenance, recordkeeping, and reporting requirements	Yes	-
vii(e) Authority to inspect and enforce FOG ordinance	Yes	-
vii(f) FOG Characterization Assessment and Associated Cleaning Schedule	Yes	-
vii(g) FOG Source Control Measures	Yes	-

The City is currently in the process of developing the documents that comprise its FOG control program. These documents include a FOG Program Manual, FOG/Collection System Interaction Process Flow Diagram, FSE Conditional Waiver, FOG Inspection SOP, and the FOG Enforcement Response Guide (FOG ERG).

- Recommendations: Complete and finalize the FOG program documents and update the SSMP to reference these documents and their implementation. Ensure consistency between the SSMP and the FOG program documents.

The City’s last internal SSMP Audit included multiple recommendations which are listed below:

- “Develop “FOG Program Rules and Regulations” and refer to these guidelines within the SSMP when discussing FOG related items.”
- “Develop formalized grease interceptor inspection procedures.”
- “Develop standardized grease interceptor sizing requirements in design codes and interceptor requirements for specific locations.”
- “Develop servicing/maintenance requirements of grease interceptors by FSEs.”
- “Develop an enforcement response guide.”

These particular recommendations are not being carried over to the current audit because these issues are covered in the recommendation above that reads: Complete and finalize the FOG program documents and update the SSMP to reference these documents and their implementation. Ensure consistency between the SSMP and the FOG program documents.

5.7.2 Effectiveness of SSMP Elements and Recommended Modifications

Public Education Plan (SSMP Section V Chapter 7.3)

- Level of Effectiveness: The City developed the “Sacramento Fat Free Drains” website (www.sacramentofatfreedrains.com) that provides restaurant owners and managers with useful information and documents that could benefit training programs within these restaurants. There are even multiple versions of videos in different languages to aid City inspectors in explaining the process and reason for their visit. This website is also an important part of the residential outreach program. In addition to the website, the City places informational brochures that show proper FOG disposal techniques in City utility bills annually in the fall. Any apartment complex and/or home that has a FOG-related SSO has a door tag placed on their door to inform them of this problem. Door tags are also placed on the doors of homes that are upstream of the location of a FOG-related SSOs. The City’s commercial and residential FOG outreach and educational programs appear to be effective as evidenced by the City’s significant yearly decrease in FOG-related SSOs since FY 2010/11.
- Recommendations: No recommended modifications at this time.

FOG Disposal Plan (SSMP Section V Chapter 7.4)

- Level of Effectiveness: The City informs the public of multiple FOG disposal options and their respective schedules through the public outreach efforts previously discussed. Examples of these options include landfills for small quantities of grease, Household Hazardous Waste Facilities for larger quantities of grease, and commercial grease hauling companies. Information on disposal can also be found on the “Sacramento Fat Free Drains” website. The City’s FOG disposal plan appears effective as evidenced by the decreasing trend in FOG-related SSOs.
- Recommendations: No recommended modifications at this time.

Legal Authority to Prevent SSOs/Blockages Caused by FOG Discharges (SSMP Section V Chapter 7.5)

- Level of Effectiveness: City Municipal Code 13.08.040 lists the various substances that are prohibited from being discharged to the sewer system. City Municipal Code 13.08.090 requires that all Food Service Establishments (FSEs) comply with best management practices (BMPs) that the City Council establishes from time to time by resolution. City Municipal Code 13.08.100 gives the City the legal authority to require businesses other than FSEs to install interceptors of a type and capacity approved by the City. These City Municipal Codes appear effective in organizing the type of equipment required to reduce FOG discharges from FSEs, as well as indicating the authority of the City to prohibit SSOs and blockages due to FOG.

The City’s previous internal SSMP Audit included a recommendation to “consider expansion of the City’s legal authority to provide additional tools for FOG enforcement related issues. Add language in the legal authority to require FSEs to install grease interceptors as well as language that clearly identify FOG BMPs and FSE inspection procedures.” This particular recommendation is not being carried over to the current audit because this issue is covered in two other recommendations for SSMP requirement iii(e). The

recommendations for SSMP requirement iii(e) are as follows: The FOG Program Team should determine if the edits to pertinent code sections are to be accepted and adopted. If the edits to the City's Municipal Code sections are accepted and adopted by the City, ensure the SSMP is updated to reflect the changes.

- Recommendations:
 - Ensure that grease interceptor and grease removal terminology is consistent between the City Municipal Code and the SSMP.

Grease Removal Device Requirements (SSMP Section V Chapter 7.6)

- Level of Effectiveness: Requirements for the installation of grease removal devices, design standards for the devices, maintenance requirements, BMP requirements, record keeping requirements, and reporting requirements are covered in Title 15 of the City Municipal Code. As it pertains to the FOG program, Title 15 adopts and incorporates into the City Municipal Code the 2013 California Plumbing Code (CPC). The City's Community Development Department, Building Division, is responsible for implementing these requirements and standards. The City's efforts to disseminate information regarding these requirements appear effective as can be seen by the continual decrease in FOG-related SSOs in recent years.
- Recommendations:
 - Develop a process to routinely transmit data regarding building permits involving new or modified grease removal equipment to the DOU for use in updating the FSEs inspection inventory (outstanding 2011 and 2013 Audit Actions).

Inspection and Enforcement Authority – FOG Producers (SSMP Section V Chapter 7.7)

- Level of Effectiveness: City Municipal Code 13.08.290 provides City staff right of entry to inspect FSEs and the proper authority to enforce provisions of pertinent sewer-related ordinances. The City DOU allocated dedicated FOG inspection staff to implement this part of the FOG program. This allocation of staff appears sufficient to inspect and enforce FOG ordinances. The FOG program has a goal to inspect every FSE at least once a year, with 609 FSEs discharging to the combined system and the remaining 500 FSEs discharging to the separated sewer system. The appropriate City Municipal Codes and dedicated FOG inspection staff appear effective in inspecting FSEs and enforcing FOG ordinances if necessary.
- Recommendations: No recommended modifications at this time.

FOG Characterization Assessment and Associated Cleaning Schedule (SSMP Section V Chapter 7.8)

- Level of Effectiveness: The City uses Service Requests, historical knowledge, experience, CCTV inspection, and CMMS data to prioritize its preventative maintenance activities. In regards to FOG-related maintenance, O&M staff analyzes the previously mentioned data along with weekly cleaning findings to adjust scheduled maintenance cleaning frequencies. In principle, finding medium and/or heavy amounts of grease will trigger that pipe asset to be placed on a higher frequency. In contrast, clear findings will trigger that pipe asset to be placed on a lower frequency. The cleaning maintenance schedules for sections

of the separated sewer system subject to FOG blockages appears to be effective, as evidenced by the significant decrease in FOG-related SSOs in recent years.

- Recommendations:
 - Develop an SOP describing the process of how pipeline cleaning frequencies are modified as a result of FOG-related analysis.

FOG Source Control Measures (SSMP Section V Chapter 7.9)

- Level of Effectiveness: The City’s FOG source control measures are comprised of the various elements of the FOG program as a whole, which include public/FSE educational outreach efforts, FSE inspections and enforcement actions, and disposal options.
- Recommendations: No recommended modifications at this time.

5.8 System Evaluation and Capacity Assurance Plan

5.8.1 Compliance

Table 13. Compliance with SSS WDR D.13.viii - SECAP

SSMP Requirement	Compliance	Deficiencies
viii(a) Evaluate hydraulic deficiencies	Yes	-
viii(b) Establish design criteria	Yes	-
viii(c) Establish short- and long-term CIP	Yes	-
viii(d) Develop schedule of completion dates for CIP	Yes	-

5.8.2 Effectiveness of SSMP Elements and Recommended Modifications

Evaluation of Hydraulic Deficiencies (SSMP Section V Chapter 8.3)

- Level of Effectiveness: The City performed a capacity evaluation for each of the 54 separated sewer system basins using a spreadsheet analysis. This analysis differentiated between existing and future land use conditions.

For the existing conditions analysis, 15 basins were found to have potential capacity deficiencies but there was no documented or anecdotal field data to indicate that these basins are experiencing surcharging. This, combined with the fact that the City has had no capacity-related spills in the past four years (and only one total since 2007) and the spreadsheet static models were developed with conservative (high flow) values, the City has implemented a flow monitoring and ongoing analysis program to confirm the spreadsheet results and intend to continue with this approach before constructing improvements that are potentially not needed.

For the future conditions analysis, 12 of these same 15 basins still exhibited potential capacity deficiencies after taking into account future infill and redevelopment (including potential pipe improvements to support increased use) while the other three did not continue to exhibit limitations after development. In addition to the 12, two additional (not part of the original 15) basins were found to have potential future capacity deficiencies. For all of these basins, the City plans to develop hydraulic models through outside consultants to confirm potential future deficiencies and identify required upgrades. To aid the modeling efforts, the City has already performed flow monitoring in several of the identified basins to ensure accurate dry and wet weather flow calibration of the models. The City plans to continue flow monitoring on an as-needed basis to prepare for future models.

The City's efforts in evaluating the separated sewer system for hydraulic deficiencies are ongoing and appear to be effective in determining basins with a potential for capacity issues.

- Recommendations:
 - Continue flow monitoring and development of hydraulic models to confirm and update spreadsheet results. Continue to communicate with field staff on a frequent basis (after every storm) that there are no documented field conditions or anecdotal comments indicating any of the 15 basins identified in the spreadsheet analysis as having "current" capacity limitation are surcharging or showing similar signs of capacity deficiency. If these efforts identify a basin, move that basin immediately to the top of the priority list for evaluation with hydraulic modeling and begin process for making upgrades to system to eliminate deficiency.
 - Continue long-term evaluation process of developing hydraulic models for all basins where the future conditions spreadsheet and/or flow monitoring analysis indicate capacity deficiencies. Utilize hydraulic models to identify/confirm future hydraulic deficiencies and plan, design and construct improvements as needed to eliminate them.

Design Criteria (SSMP Section V Chapter 8.4)

- Level of Effectiveness: Table 8.2 in the City's SSMP shows the proposed design criteria for determining the various flow rates that were used by the spreadsheet analysis. Once these design criteria are adopted in the City DOU's Design and Procedures Manual, they will be used in the development of future hydraulic models. The City established a 10-year 6-hour peak wet weather design storm, which appears to be an appropriate design storm to effectively account for the impact of wet weather events on the separated sewer system for current and future system capital improvement planning.

- Recommendations:
 - Update the Design and Procedures Manual to include design criteria used for hydraulic analysis. (Outstanding 2013 Audit Action.) Ensure the SSMP text reflects the adoption of the updated Design and Procedures Manual.

Short-term and Long-term Capital Improvement Plan (SSMP Section V Chapter 8.5)

- Level of Effectiveness: The City has identified short and long-term CIPs based on sewer basin master plans previously prepared by outside consultants. The SSMP states that the Engineering and Water Resource Division of the DOU will study various CIP alternatives to correct identified hydraulic deficiencies. In addition, the Asset Management Section of the DOU will assist in prioritizing the proposed CIPs. However, the processes used by these divisions/sections to develop the proposed CIPs have not been documented. The City should consider the development of an SOP or Technical Memorandum that documents the procedure(s) used to create and/or modify the capacity-related CIP list. This should include how projects are prioritized, an alternatives analysis, implementation schedules, and sources of funding.
- Recommendations:
 - Develop an SOP to document the procedure(s) used to create and/or modify the list of potential CIPs to address capacity-related deficiencies in the separated sewer system.

Capital Improvement Program Schedule (SSMP Section V Chapter 8.6)

- Level of Effectiveness: Table 8.3 in the City's SSMP shows a schedule for completion of all portions of the Capital Improvement Program. This schedule appears effective in identifying the timing with which certain portions of the Capital Improvement Program are to be completed.
- Recommendations: No recommended modifications at this time.

5.9 Monitoring, Measurement, and Program Modifications

5.9.1 Compliance

Table 14. Compliance with SSS WDR D.13.ix – MMM

SSMP Requirement	Compliance	Deficiencies
ix(a) Maintain information to establish and prioritize SSMP activities	Yes	-
ix(b) Measure effectiveness of SSMP elements	No	The City currently does not maintain a set of clear measurable goals that can be used as performance indicators for specific elements of the SSMP.
ix(c) Assess preventative maintenance program	No	The City currently does not track measures/metrics specific to the activities of the preventative maintenance program.
ix(d) Update elements based on evaluations	Yes	-
ix(e) Identify and illustrate SSO trends	Yes	-

5.9.2 Effectiveness of SSMP Elements and Recommended Modifications

Relevant Information to Establish and Prioritize SSMP Activities (SSMP Section V Chapter 9.2)

- Level of Effectiveness: The City tracks a number of measures to prioritize SSMP activities and assess the associated production and level of effort. The measures listed in the City’s SSMP appear effective in gauging the level of performance and the efficiency of the work completed throughout the year, while also aiding the City to prioritize future activities as they relate to the SSMP.
- Recommendations: No recommended modifications at this time.

Measure Effectiveness of SSMP Elements (SSMP Section V Chapter 9.2)

- Level of Effectiveness: The City currently tracks performance using a number of measures. However, none of these measures are associated with specific SSMP elements. None of these measures have identified targets or goals. These measures can be used to gauge the level of effort, but without associating measures to specific SSMP elements and without setting goals for each measure it is difficult to monitor the effectiveness of the SSMP.

The City may want to consider incorporating the various goals from the California Sportfishing Protection Alliance (CSPA) Consent Decree (CD) with the targets/goals for the performance measures tracked by the City. This would help to ensure that the City continues to maintain the separated sewer system in a proactive manner even after the CSPA CD has ended.

- Recommendations:
 - Identify measures/metrics that correspond with specific elements of the SSMP and develop numerical goal ranges so the data collected and monitored by the City can be used as performance indicators (PIs) to quantitatively monitor SSMP effectiveness. The ultimate measure of SSMP effectiveness is the limiting of SSOs. However, setting goals for activities related to various SSMP elements and measuring performance against those goals will help determine how success in those elements relates to the overall effectiveness of limiting SSOs. Associating measures/metrics with specific SSMP elements will allow for direct assessment of those elements and provide consistency in their evaluation in future audits. Assign the individuals responsible for the various elements of the SSMP to complete the Performance Indicator Assessment Forms that are developed for their SSMP elements. A sample Performance Indicator Assessment Form is included in **Appendix 7.2** of this internal SSMP Audit. Performance Indicator Assessment Forms can be developed for each measure/metric and assessed periodically by the person responsible, according to the suggested audit frequency for that measure/metric. At the time of the next internal SSMP Audit, the completed Performance Indicator Assessment Forms can be used to evaluate the effectiveness of SSMP elements and included as attachments to the audit findings.
 - Evaluate and consider incorporation of various goals established in the CSPA CD with the numerical goals for identified measures/metrics as mentioned above.

Assess Preventative Maintenance Program (SSMP Section V Chapter 9.5)

- Level of Effectiveness: The City's currently-tracked measures/metrics allow for a limited quantitative evaluation of the performance of preventative maintenance activities. The City may benefit from expanding the tracked measures/metrics to include specific preventative maintenance activities such as the miles of sewer main flushed every year or the miles of sewer main CCTV-inspected every year. Setting identified numerical targets or goals for each of these measures/metrics, including those that are already being tracked, will help the City to quantitatively determine how successful the preventative maintenance program has been. This will also allow the City to monitor the performance of particular activities against other measures/metrics (*e.g.*, SSO trends, number of SSOs per cause) to determine correlations between the data.
- Recommendations:
 - Expand the specific measures/metrics tracked by the City to include activities of the preventative maintenance program.
 - Develop numerical goals for the measures/metrics that track preventative maintenance activities and identify the person/position responsible for tracking data against those goals.

SSMP Performance Monitoring and Update Process (SSMP Section V Chapter 9.6)

- Level of Effectiveness: The City performs a comprehensive review and update of the SSMP at least every five years. Based on biennial audits and the annual performance evaluation, the City may determine an increased frequency is required for reviewing and updating the SSMP.

The City’s SSMP has undergone one five-year (major) revision, but does not seem to document changes made to the SSMP, either in the interim or between major revisions. Documenting pertinent information such as the date of the revision, the SSMP element that was changed, a brief description of the change, who made the change, etc., via a “change log” or similar instrument will allow the City to monitor the evolution of the SSMP.

- Recommendations:
 - Develop and document a process for responsible parties to suggest changes to the electronic version of the SSMP through Microsoft Word’s Track Changes and provide training to all responsible parties on how to add Track Changes so that more individuals are involved with the SSMP modification process. The process may also include identifying the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification(s), the process for review, and the process for updating the SSMP on the City website and archiving prior SSMP versions.

SSO Trends – Frequency, Location and Volume (SSMP Section V Chapter 9.7)

- Level of Effectiveness: The City tracks a number of key pieces of information to identify trends in SSO data. The SSMP contains multiple figures and tables that illustrate these trends through information such as SSO frequency, SSO causes, and SSO volumes. These SSO trends appear effective in communicating the highest priorities for attempting to minimize the number of severity of SSOs.
- Recommendations: No recommended modifications at this time.

5.10 SSMP Program Audits

5.10.1 Compliance

Table 15. Compliance with SSS WDR D.13.x – SSMP Program Audits

	SSMP Requirement	Compliance	Deficiencies
x	Conduct periodic audits	Yes	-

5.10.2 Effectiveness of SSMP Elements and Recommended Modifications

Periodic SSMP Internal Audits (SSMP Section V Chapter 10.2)

- Level of Effectiveness: The City conducts an internal SSMP Audit biennially to maintain an effective SSMP in order to properly manage, operate, and maintain all parts of the separated sewer system. The internal SSMP Audits are helpful in identifying areas of improvement. The regular review of the SSMP assures the usefulness of the planned activities.

The City has posted the most current version of the SSMP with the previous two internal audits on the DOU’s website.

The first internal biennial SSMP Audit was conducted in FY 2011/12 and the second internal biennial SSMP Audit was conducted in FY 2012/13. The City should consider setting a specified time to complete the biennial audits moving forward so as to ensure consistency between the audits over time.

The City’s last internal SSMP Audit generated a recommendation that the City “conduct the 2 year audit frequency and annually evaluate the effectiveness and compliance of the operations and maintenance programs.” This particular recommendation is not being carried over to the current audit because this issue is covered in another recommendation for SSMP requirement x. The recommendation can be seen below.

- Recommendations:
 - Schedule the next internal SSMP Audit for October-November 2017 so that the entire two previous fiscal years’ data is available. Continue using this time frame for all subsequent internal SSMP Audits for consistency (*i.e.*, the next audit would be completed October-November 2019, then October-November 2021, and so on).

5.11 Communication Program

5.11.1 Compliance

Table 16. Compliance with SSS WDR D.13.xi – Communications Program

SSMP Requirement	Compliance	Deficiencies
xi(a) Communicate on a regular basis with the public and tributary/satellite systems regarding SSMP	Yes	-

5.11.2 Effectiveness of SSMP Elements and Recommended Modifications

Internal Communication – Staff and Board of Directors (SSMP Section V Chapter 11.2)

- Level of Effectiveness: The City communicates information about the SSMP and its related programs to the public on a regular basis using print media, social media, public hearings, and the City DOU’s website. This website contains the most up-to-date version of the SSMP, with both of the previous internal SSMP Audits attached. There is also a contact provided if the public would like to make comments/suggestions regarding the SSMP and billing inserts are distributed by the City to inform its customers of upcoming issues related to the SSMP.

The City also continually participates in the regional State WDRs’ coordinating committee that includes SASD and SRCSD. SASD provides sewer service to residents inside the City, while SRCSD delivers City flows

to the wastewater treatment plant. In addition, the City attends quarterly coordination meetings at SRCSD. These meetings appear effective in discussing both regional and local collection system issues.

- Recommendations: No recommended modifications at this time.

SECTION 6 Audit Summary

This section summarizes the level of compliance of the SSMP with the SSMP requirements identified in subsection D.13 and the identified deficiencies as described in **Section 4.1**. **Table 17** is a summary of the results of that evaluation.

Table 17. Summary of SSMP Compliance Deficiencies

SSMP Requirement	Compliance	Deficiencies
iv(e) Equipment and critical replacement parts	No	The City is still in need of a list of critical parts for pump stations.
vi(b) Program for appropriate SSO response	No	The City needs to complete the development of pump station failure contingency standard procedures.
ix(b) Measure effectiveness of SSMP elements	No	The City currently does not maintain a set of clear measurable goals that can be used as performance indicators for specific elements of the SSMP.
ix(c) Assess preventative maintenance program	No	The City currently does not track measures/metrics specific to the activities of the preventative maintenance program.

Table 18 summarizes the particular recommendations that will mitigate the City’s non-compliance with the SSMP requirements noted in **Table 17** above.

Table 18. Summary of Recommendations to Mitigate Non-Compliance

SSMP Section V Chapter	Recommendation	Timeline for Completion
4.6	Identify critical replacement parts for pump stations. Include a plan to either acquire spare parts in the replacement parts inventories or a timely means for fabricating or acquiring critical spare parts in the event of a failure (outstanding 2011 and 2013 Audit Actions).	June 2016
6.4	Complete the development of pump station failure contingency standard procedures indicating each pump station’s location, wet well capacity, estimate of how much storage time the wet wells would provide under different flow conditions, alarm capacities, on-site back-up pumps, back-up power generators, and an operations or bypass approach in the case of a force main failure. For any stations that lack back-up pumps and generators, the procedures should specify a protocol for prompt delivery of portable pumps or generators in the event of a station failure. The procedures should also identify where an SSO will occur if a station fails and where bypass intake and discharge should be set up (outstanding 2011 and 2013 Audit Actions).	June 2016

SSMP Section V Chapter	Recommendation	Timeline for Completion
9.2	Identify measures/metrics that correspond with specific elements of the SSMP and develop numerical goal ranges so the data collected and monitored by the City can be used as performance indicators (PIs) to quantitatively monitor SSMP effectiveness. The ultimate measure of SSMP effectiveness is the limiting of SSOs. However, setting goals for activities related to various SSMP elements and measuring performance against those goals will help determine how success in those elements relates to the overall effectiveness of limiting SSOs. Associating measures/metrics with specific SSMP elements will allow for direct assessment of those elements and provide consistency in their evaluation in future audits. Assign the individuals responsible for the various elements of the SSMP to complete the Performance Indicator Assessment Forms that are developed for their SSMP elements. A sample Performance Indicator Assessment Form is included in Appendix 7.2 of this internal SSMP Audit. Performance Indicator Assessment Forms can be developed for each measure/metric and assessed periodically by the person responsible, according to the suggested audit frequency for that measure/metric. At the time of the next internal SSMP Audit, the completed Performance Indicator Assessment Forms can be used to evaluate the effectiveness of SSMP elements and included as attachments to the audit findings.	December 2016
9.5	Expand the specific measures/metrics tracked by the City to include activities of the preventative maintenance program.	December 2016
9.5	Develop numerical goals for the measures/metrics that track preventative maintenance activities and identify the person/position responsible for tracking data against those goals.	December 2016

This section also summarizes the recommended enhancements made during the process of evaluating each SSMP element’s effectiveness as described in **Section 4.2**. **Table 19** is a summary of those recommendations. This table is inclusive of recommendations from previous audits that should continue.

Table 19. Summary of Audit Recommendations

SSMP Section V Chapter	Recommendation	Timeline for Completion
2.2	Update the text in Chapter 2.2 of Section V of the City SSMP to state that the O&M Division Superintendent – Drainage Collection position is an LRO.	April 2016
2.2	Either add a table to the SSMP that lists all of the elements of the SSMP and the responsible party or amend the existing table in Section IV SSMP Contact List to include a column for “SSMP Element(s)” that are applicable to each position.	April 2016
2.2	Develop a process to periodically perform QA/QC to ensure consistency between CIWQS and City records pertaining to SSOs.	December 2016

SSMP Section V Chapter	Recommendation	Timeline for Completion
2.2	Consider tracking the pieces of SSO data listed above to ensure consistency between internal SSO records and the CIWQS database.	April 2016
3.2	The FOG Program Team should determine if the edits to pertinent code sections are to be accepted and adopted.	June 2016
3.2	If the edits to the City’s Municipal Code sections are accepted and adopted by the City, ensure the SSMP is updated to reflect the changes.	July 2016
4.2	Develop an SOP (Standard Operating Procedure) for the process of updating the collection system maps.	December 2016
4.3	Finalize the new SOPs that are currently being developed and ensure consistency between them and the SSMP.	June 2016
4.3	Update the SSMP to reflect the changes in preventative maintenance activities as previously discussed.	July 2016
4.3	Develop an SOP that describes how the CityWorks CMMS decides daily work orders, specifically as it pertains to the newly developed algorithms for daily cleaning and CCTV inspections. As an alternative, the City could describe these algorithms within their respective new SOPs (Scheduled Maintenance and CCTV Survey).	December 2016
4.3	Develop a process to periodically perform QA/QC of CCTV data, such as pipe material, to ensure consistency and accuracy across all inspections.	December 2016
4.3	Continue implementing the City’s Root Control Program, with a focus on pipes with an elevated risk for root-related SSOs. Continue to schedule root control chemical treatment as determined through future analyses.	Ongoing
4.3	Consider coordinating electrical and mechanical work orders and inspections to coincide with the quarterly pump station shut down for wet well cleaning. (Carried over from 2013 audit.)	December 2016
4.4	Conduct periodic meetings between O&M, Engineering, and IPAM to ensure that everyone is aware of and understands the entire R&R plan and their role within it.	June 2016
4.4	Update the SSMP to reflect the actual methodology used from the CIP Prioritization System technical memorandum to rank and prioritize potential CIPs.	April 2016
4.4	Update the flowchart entitled “CIP Project Initiation Workflow” and reference this document within the SSMP as an overall view of a CIP’s lifespan.	April 2016
4.4	Establish a periodic basis to analyze work orders with multiple condition assessment scores of 4 to determine what type of work is required to address the defects.	June 2016
4.4	Consider integrating Granite XP with CityWorks such that CCTV inspection data is accessible through the CMMS.	December 2016
4.4	Consider the modification of the CIP Prioritization System technical memorandum to incorporate capacity-based scores/parameters.	December 2016
4.4	Consider the development of a manhole inspection program using NASSCO’s MACP defect coding system (carried over from 2013 audit).	December 2017
4.4	Update the SSMP to reflect the City’s current process for summary manhole inspections.	April 2016

SSMP Section V Chapter	Recommendation	Timeline for Completion
4.4	Consider the development and implementation of a force main condition assessment program.	December 2017
4.5	Identify the required training for each employee and document that each employee has received their required training in an electronic manner, whether through TargetSolutions or a spreadsheet.	December 2016
4.5	Develop a process where pertinent supervisors are notified when required training is coming due for an employee. Either a person needs to be assigned this task, or DOU should investigate if this functionality is programmed within TargetSolutions.	December 2016
4.5	Develop a schedule for regular training on the specific equipment that the City owns. The scheduled equipment training should identify the frequency of training, the proposed instructors, appropriate referencing of SOPs and manuals, and the individuals required to take the training.	December 2016
4.5	Utilize the newly developed SOPs as a training tool for the City staff. The SOPs should be developed so that they 1) provide a framework for the consistent delivery of required information, skills, and familiarity with equipment and 2) can be used to demonstrate competence of an individual in the particular subject.	December 2016
4.6	Identify critical replacement parts for pump stations. Include a plan to either acquire spare parts in the replacement parts inventories or a timely means for fabricating or acquiring critical spare parts in the event of a failure (outstanding 2011 and 2013 Audit Actions).	June 2016
4.6	Implement the Condition Assessment Program for pump stations once it has been finalized. Update the SSMP to reflect this implementation.	December 2017
5.2	Update the DPM, post the updated DPM on the City DOU's website, and ensure the SSMP is updated to reflect this change (carried over from 2013 audit).	July 2016
5.2	Continue to post any updated version(s) of the Standard Specifications on the City DOU's website (carried over from 2013 audit).	As Needed
6.4	Complete the development of pump station failure contingency standard procedures indicating each pump station's location, wet well capacity, estimate of how much storage time the wet wells would provide under different flow conditions, alarm capacities, on-site back-up pumps, back-up power generators, and an operations or bypass approach in the case of a force main failure. For any stations that lack back-up pumps and generators, the procedure should specify a protocol for prompt delivery of portable pumps or generators in the event of a station failure. The procedure should also identify where an SSO will occur if a station fails and where bypass intake and discharge should be set up (outstanding 2011 and 2013 Audit Actions).	June 2016
6.6	Update SSMP text to state that pertinent contractor personnel will also be trained on the SOP for Sewer Overflow/Outflow Emergency Response.	April 2016
7	Complete and finalize the FOG program documents and update the SSMP to reference these documents and their implementation. Ensure consistency between the SSMP and the FOG program documents.	June 2016

SSMP Section V Chapter	Recommendation	Timeline for Completion
7.5	Ensure that interceptor and grease removal terminology is consistent between the City Municipal Code and the SSMP.	July 2016
7.6	Develop a process to routinely transmit data regarding building permits involving new or modified grease removal equipment to the DOU for use in updating the FSEs inspection inventory (outstanding 2011 and 2013 Audit Actions).	December 2016
7.8	Develop an SOP describing the process of how pipeline cleaning frequencies are modified as a result of FOG-related analysis.	December 2016
8.3	Continue flow monitoring and development of hydraulic models to confirm and update spreadsheet results. Continue to communicate with field staff on a frequent basis (after every storm) that there are no documented field conditions or anecdotal comments indicating any of the 15 basins identified in the spreadsheet analysis as having “current” capacity limitation are surcharging or showing similar signs of capacity deficiency. If these efforts identify a basin, move that basin immediately to the top of the priority list for evaluation with hydraulic modeling and begin process for making upgrades to system to eliminate deficiency.	Ongoing
8.3	Continue long-term evaluation process of developing hydraulic models for all basins where the future conditions spreadsheet and/or flow monitoring analysis indicate capacity deficiencies. Utilize hydraulic models to identify/confirm future hydraulic deficiencies and plan, design and construct improvements as needed to eliminate them.	Ongoing
8.4	Update the Design and Procedures Manual to include design criteria used for hydraulic analysis (outstanding 2013 Audit Action). Ensure the SSMP text reflects the adoption of the updated Design and Procedures Manual.	July 2016
8.5	Develop an SOP to document the procedure(s) used to create and/or modify the list of potential CIPs to address capacity-related deficiencies in the separated sewer system.	December 2016

SSMP Section V Chapter	Recommendation	Timeline for Completion
9.2	Identify measures/metrics that correspond with specific elements of the SSMP and develop numerical goal ranges so the data collected and monitored by the City can be used as performance indicators (PIs) to quantitatively monitor SSMP effectiveness. The ultimate measure of SSMP effectiveness is the limiting of SSOs. However, setting goals for activities related to various SSMP elements and measuring performance against those goals will help determine how success in those elements relates to the overall effectiveness of limiting SSOs. Associating measures/metrics with specific SSMP elements will allow for direct assessment of those elements and provide consistency in their evaluation in future audits. Assign the individuals responsible for the various elements of the SSMP to complete the Performance Indicator Assessment Forms that are developed for their SSMP elements. A sample Performance Indicator Assessment Form is included in Appendix 7.2 of this internal SSMP Audit. Performance Indicator Assessment Forms can be developed for each measure/metric and assessed periodically by the person responsible, according to the suggested audit frequency for that measure/metric. At the time of the next internal SSMP Audit, the completed Performance Indicator Assessment Forms can be used to evaluate the effectiveness of SSMP elements and included as attachments to the audit findings.	December 2016
9.2	Consider the incorporation of the CSPA CD's various goals with the numerical goals for identified measures/metrics as mentioned above.	December 2016
9.5	Expand the specific measures/metrics tracked by the City to include activities of the preventative maintenance program.	December 2016
9.5	Develop numerical goals for the measures/metrics that track preventative maintenance activities and identify the person/position responsible for tracking data against those goals.	December 2016
9.6	Develop and document a process for responsible parties to suggest changes to the electronic version of the SSMP through Microsoft Word's Track Changes and provide training to all responsible parties on how to add Track Changes so that more individuals are involved with the SSMP modification process. The process may also include identifying the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification, the process for review, and the process for updating the SSMP on the District website and archiving SSMP versions.	June 2016
10.2	Schedule the next internal SSMP Audit for October-November 2017 so that the entire two previous fiscal years' data is available. Continue using this time frame for all subsequent internal SSMP Audits for consistency (<i>i.e.</i> , the next audit would be completed October-November 2019, then October-November 2021, and so on).	October 2017

SECTION 7 Appendices

7.1 Appendix – Historical SSO Data

7.2 Appendix – Sample Performance Indicator Assessment Form

7.1 Appendix – Historical SSO Data

Date of SSO	Address of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Recovery Percentage (%)	Spill Cause
9/20/2013	1000 Front Street, Sacramento, CA	Category 3	136	106	78	Grease Deposition (FOG)
9/25/2013	3736 Schutt Way, Sacramento, CA	Category 3	17	17	100	Root Intrusion
10/4/2013	7079 Remo Way, Sacramento, CA	Category 3	30	30	100	Grease Deposition (FOG)
10/24/2013	6661 Fordham Way, Sacramento, CA	Category 3	28	28	100	Grease Deposition & Root Intrusion
10/31/2013	695 Plaza Ave, Sacramento, CA	Category 3	119	119	100	Grease Deposition (FOG)
11/2/2013	6589 Demaret Dr, Sacramento, CA	Category 3	140	140	100	Root Intrusion
11/8/2013	5011 South Land Park Dr, Sacramento, CA	Category 3	6	6	100	Root Intrusion
11/14/2013	5352 Karbet Way, Sacramento CA	Category 3	14	14	100	Debris-General
11/20/2013	2101 Catskill Way, Sacramento, CA	Category 3	10	8	80	Grease Deposition (FOG)
11/23/2013	2101 Catskill Way, Sacramento, CA	Category 3	5	5	100	Grease Deposition (FOG)

Date of SSO	Address of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Recovery Percentage (%)	Spill Cause
12/1/2013	15 Don Merlino Ct, Sacramento, CA	Category 3	19	19	100	Grease Deposition (FOG)
12/9/2013	100 Lindley Dr, Sacramento, CA	Category 3	34	34	100	Grease Deposition (FOG)
12/26/2013	2924 Marysville Blvd, Sacramento, CA	Category 3	20	20	100	Pipe Structural Problem/Failure
1/7/2014	2922 Marysville Blvd, Sacramento, CAs	Category 2	1966	1966	100	Pipe Structural Problem/Failure
1/11/2014	1430 27th Ave, Sacramento, CA	Category 3	5	2	40	Grease Deposition (FOG)
1/18/2014	7020 Wilshire Cir, Sacramento, CA	Category 3	15	15	100	Root Intrusion
1/19/2014	2401 34th Ave, Sacramento, CA	Category 3	19	18	95	Root Intrusion
1/27/2014	6000 Belleau Wood Lane, Sacramento, CA	Category 3	6	4	67	Grease Deposition (FOG)
2/3/2014	135 Baxter Ave, Sacramento, CA	Category 3	35	5	14	Debris-General
2/5/2014	2629 Evergreen St, Sacramento, CA	Category 3	18	10	56	Debris-General

Date of SSO	Address of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Recovery Percentage (%)	Spill Cause
2/18/2014	1806 Los Robles Blvd, Sacramento, CA	Category 3	21	21	100	Grease Deposition (FOG)
2/22/2014	1371 Munger Way, Sacramento, CA	Category 3	3	2	67	Root Intrusion
3/28/2014	883 Parklin Ave, Sacramento, CA	Category 3	52	52	100	Grease Deposition (FOG)
4/1/2014	7266 Amherst St, Sacramento, CA	Category 1	38	0	0	Grease Deposition (FOG)
4/9/2014	4428 Euclid Ave, Sacramento, CA	Category 3	13	13	100	Root Intrusion
5/11/2014	641 45th St, Sacramento, CA	Category 3	17	17	100	Root Intrusion
6/3/2014	3701 Ivy St, Sacramento, CA	Category 3	3	3	100	Debris-General
6/15/2014	5241 25th St, Sacramento, CA	Category 3	115	115	100	Root Intrusion
6/19/2014	3329 Belden St, Sacramento, CA	Category 3	19	0	0	Grease Deposition (FOG)
7/14/2014	6725 Demaret Dr, Sacramento, CA	Category 3	62	62	100	Root Intrusion

Date of SSO	Address of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Recovery Percentage (%)	Spill Cause
10/23/2014	3812 Taylor Ave, Sacramento, CA	Category 3	334	317	95	Grease Deposition (FOG)
10/29/2014	3846 Kern Street, Sacramento, CA	Category 3	23	23	100	Grease Deposition (FOG)
11/17/2014	181 Loveland Way, Sacramento, CA	Category 3	12	12	100	Grease Deposition (FOG)
11/19/2014	1109 2nd St, Sacramento, CA	Category 3	3	3	100	Debris-Rags & Grease Deposition
1/11/2015	4290 Warren Ave, Sacramento, CA	Category 3	28	28	100	Root Intrusion
1/23/2015	567 Garden St, Sacramento, CA	Category 3	15	13	87	Debris-General
2/10/2015	2398 Cambridge St, Sacramento, CA	Category 3	4	4	100	Grease Deposition (FOG)
1/13/2015	4507 Bollenbacher Ave, Sacramento, CA	Category 3	212	212	100	Debris-General
2/13/2015	3253 O'Farrell Dr, Sacramento, CA	Category 3	15	11	73	Grease Deposition (FOG)

Date of SSO	Address of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Recovery Percentage (%)	Spill Cause
2/17/2015	2347 67th Ave, Sacramento, CA	Category 3	10	10	100	Grease Deposition (FOG)
3/11/2015	2011 Oregon Dr, Sacramento, CA	Category 3	85	85	100	Debris-General
3/15/2015	66 Taylor Way, Sacramento, CA	Category 3	5	2	40	Root Intrusion
3/23/2015	1 Capitol Mall, Sacramento, CA	Category 3	150	150	100	Instrumentation Equipment Failure
4/28/2015	1405 Claremont Way, Sacramento, CA	Category 3	48	48	100	Debris-Rags
6/3/2015	1090 Rio Lane, Sacramento, CA	Category 3	127	127	100	Debris-General
6/7/2015	320 South Ave, Sacramento, CA	Category 3	128	118	92	Grease Deposition (FOG)
6/21/2015	7409 Mooncrest Way, Sacramento, CA	Category 3	15	15	100	Grease Deposition (FOG)

7.2 Appendix – Sample Performance Indicator Assessment Form

Goal:		O&M PM – SSS WDR-D.iv.b		
Responsible Person (RP):		O&M Superintendent – WWC		
<u>Description of Performance Indicator(s) (PIs):</u>				
The PIs listed below will be used to measure the effectiveness of the activities outlined in the City SSMP related to the requirements of section D.iv.b of the SSS WDR.				
<u>PIs and Data Analysis Methods:</u>				
1. <i>Miles of sewer main flushed each year.</i> Discussion & Scoring Criteria: This PI measures the miles of separated sewer system flushed with high velocity vacuum cleaning as part of the preventative maintenance program. Cleaning the entire sewer system (~550 miles) every 5 years is acceptable per industry standards, every 3 years is good, and every 2 years is excellent. Query the CityWorks CMMS database to determine the total length of the separated sewer system that was flushed during the previous fiscal year.				
2. <i>Miles of sewer main CCTV inspected each year.</i> Discussion & Scoring Criteria: This PI measures the miles of separated sewer system CCTV inspected as part of the preventative maintenance program. CCTV inspecting the entire sewer system (~550 miles) every 10 years is acceptable per industry standards, every 6 years is good, and every 4 years is excellent. Query the CityWorks CMMS database to determine the total length of the separated sewer system that was inspected during the previous fiscal year.				
PI	Excellent	Good	Acceptable	Below Goal
1	> 275	> 180	> 110	< 110
2	> 135	> 90	> 55	< 55

Performance Tracking		
PI	Measured Value	Performance Assessment Comments / Related Information / Justification
1		
2		

Recommendations for Programmatic or SSMP Updates

PI 1 – Miles of sewer main flushed each year

Recommendation:

PI 2 – Miles of sewer main CCTV inspected each year

Recommendation:

Signature of Responsible Person: (sign when complete)	Date: